

MACINTOSH®

RAPID REFERENCE

G U I D E • T O

System 7, The LaserWriter Family,® and Microsoft® Word 5.0

M I C H A E L **FRAASE**

RAPID REFERENCE GUIDE TO

**System 7,
The LaserWriter® Family,
and Microsoft® Word 5.0**

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**System 7,
The LaserWriter® Family,
and Microsoft® Word 5.0**

Michael Fraase

The BUSINESS ONE IRWIN Rapid Reference Series

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Homewood, Illinois 60430**

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Introduction

Microsoft Word for the Macintosh is the best selling word processor for the Macintosh platform with more than one million users throughout the world. Word for the Macintosh version 5.0 started shipping in late December 1991 and marked the first major update to the program since the April 1989 release of version 4.0.

Word has suffered from a checkered past in the Macintosh community. Previous releases openly violated Apple's human interface guidelines. Microsoft's current philosophy is to provide as consistent a user interface as possible between its programs that run under the Macintosh operating system and the Windows environment under the MS-DOS operating system.

Die-hard Macintosh fans will bemoan some aspects of Word's user interface. Those users that are familiar with Word for Windows, however, will breath a sigh of relief.

At a retail price of \$495, Word is definitely a high-end word processing product. I haven't used Word for several years and I was pleasantly surprised at some of the new features offered in the latest release. I also breathed a sigh of relief at the stability of version 5.0 under System 7.

Who Can Use This Book

This book is intended for anyone who is currently using or contemplating the purchase of Microsoft Word. Two specific groups of users are targeted:

- Individuals and very small workgroups who are using Microsoft Word.
- Network administrators within medium-to-large-sized organizations who are using Microsoft Word.

This book is not meant to be a replacement for Microsoft's documentation set. Nor is this book intended to replace the wide variety of books and other information available for using Word.

I'm assuming that you have at least a passing acquaintance with things Macintosh; that you know how to click and double-click on screen items and that you understand the basic Macintosh operating conventions.

I'm not assuming that you're an expert, but I am assuming that you have read at least the most basic parts of the documentation set that came with your computer and with Microsoft Word. If you haven't, it's OK; go and do it now. This book will still be here when you get back.

About the Series

This book is part of the Business One Irwin Rapid Reference series. Each is designed basically the same way, and with the same intention: to provide coverage of the basic functionality of leading software applications for the Apple Macintosh family of computers.

The underlying idea for this series is that most people are far too busy to wade through enormous amounts of documentation, and that they shouldn't have to; at least not to perform basic tasks within the product.

Each book in this series covers the basic functionality of the product at hand.

The underlying idea at work here is that basic information will enable you to become productive quickly, allowing you to explore the deeper levels of a program's functionality later, when you have more time.

A wide variety of titles is currently under development. If there are specific titles you would like to see, please don't hesitate to contact the publisher or the author.

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Navigating This Book

This book, like the others in the Rapid Reference series, is organized in a series of relatively short chapters for brevity and easy navigation.

The material is thoroughly cross-referenced wherever possible, and a complete table of contents and index are provided.

Conventions Used in This Book

Each title in the Rapid Reference series contains various tips, warnings, and items flagged for your consideration. These items are represented graphically throughout the entire series using the following conventions:



The **checkmark** is used to mark an item for your consideration. It is recommended that you consider this information before going any further in the process described. Items marked with the **checkmark** are important to consider, but will not cause any serious problems if you ignore or disregard them. The checkmark is also used to identify undocumented features as well as tips and shortcuts.



The familiar **caution** icon is used in a manner consistent with Apple's documentation and human user interface guidelines. The **caution** icon is used throughout this book to call your attention to an operation that may have undesirable results if completed.



The **stop** icon is used in a manner consistent with Apple's documentation and human user interface guidelines. The **stop** icon is used to call your attention to an operation that can cause a serious problem. The **stop** icon is used only for information that can cause serious and sometimes irreparable damage. Pay close attention to any stop icons.

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Before You Install...

Several issues must be considered and addressed before you install System 7, regardless of whether you're working with a single Macintosh or several hundred. The best place to start is with a compatibility assessment.

Compatibility Assessment

Forget most of what you've heard about System 7 incompatibilities; they're much fewer and much less severe than what you've been told. While you're at it, you can also forget what Apple says about requirements.

According to Apple, any Macintosh with 2 MBytes of memory and a hard disk drive can run System 7. Technically, that's true, but most observers agree that 4 MBytes of RAM is the practical minimum to perform useful work.

That's not as bad as it seems. 1 MByte SIMMs were selling for about \$35 and 4 MByte SIMMs were selling for about \$150 in the first week of October 1991. As of early June 1992, 1 MByte SIMMs were selling for about \$31 each and 4 MByte

SIMMs were selling for about \$115. A general rule of thumb is that you can *never* have too much RAM. I use 20 MBytes and would be lost with less.



Technology Works is the best source of Macintosh memory modules I've found. They're not the cheapest, but they are of high quality and come well packaged. In addition, the company includes a *Memory Upgrade Installation Guide* that is informative and lucid. (Technology Works, 4030 Braker Lane West, Suite 350, Austin, TX 78759. Phone 800/933-6113 or 512/794-8533; fax 512/794-8520.)

A Crash Course In Memory

Every Macintosh currently sold has sockets to hold memory modules. Memory is upgraded by installing Single In-Line Memory Modules (SIMMs) in these sockets. Various Macintosh models differ in the number of SIMM sockets available and the speed of the SIMMs required.

Compact Macintosh models (Macintosh Plus, Mac SE, Classic, and Classic II) usually have a total of four SIMM sockets in two separate banks of two sockets each.

Modular Macintosh models (Macintosh II, IIfx, IICx, IICi, LC, IISI, and IIfx) usually have either eight SIMM sockets in two banks of four sockets each, or they have 1–2 MBytes of RAM soldered on the motherboard combined with a single two or four socket bank.

SIMMs are rated in nanoseconds of access time. Compact Macintosh models require 150 ns SIMMs. Most modular Macintosh models require 120 ns or 100 ns SIMMs, except for the IIfx and IICi, which require 80 ns SIMMs.



It's just fine to use faster speed SIMMs than required, but using slower speed SIMMs will result in problems. After a short time the Macintosh will begin to crash or lock up unexpectedly. Buying faster speed SIMMs offers the advantage of compatibility with faster Macintosh models or future accelerator upgrades. The best rule of thumb is to buy the fastest SIMMs you can find.

Most SIMMs are interchangeable, although the Macintosh IIfx SIMMs have more connectors on them and will only work in the IIfx. In addition, the various memory configurations for the portable are completely different. The Macintosh Portable and the PowerBooks all require the use of Static RAM or pseudo-static RAM instead of the standard Dynamic RAM (DRAM) used by the other Macintosh models.

SIMMs are currently available in 256 KByte, 512K, 1 MByte, 2 MB, 4 MB, 8 MB, and 16 MB configurations from a wide variety of vendors.

Each SIMM bank must be completely full or completely empty.

Each SIMM bank, if filled, must be filled with SIMMs that are all the same size.

If you're only filling one SIMM bank, fill Bank A. The location of Bank A varies between the different Macintosh models.

In most cases the larger capacity SIMMs should be installed in Bank A. Most of the exceptions to this rule revolve around the use of on-board video on the Macintosh IIfx.

Macintosh SIMMs are relatively easy to install. I'm not much of a propeller-head—I've never soldered anything in my life—and I managed to remove and add SIMMs to both a Macintosh IIfx and a Macintosh SE/30 with no problem. Adding

memory to the IICI was a cake walk; the SE/30 was a bit more difficult, but posed no problem once I convinced myself I wasn't going to get electrocuted and the monitor wasn't going to implode.



Be careful! You *can* get electrocuted and the monitor *can* implode on compact Macintoshes if you're not cautious. In addition, you may void your warranty, and the SIMM clips are notoriously fragile. If you're not comfortable mucking about within the computer's innards, pay someone to do it for you.



Connectix Corp. offers a wonderful publication, *The Macintosh Memory Guide*, free of charge. It covers the memory requirements and possible configurations of all Macintosh models and is indispensable. (Connectix Corp., 2655 Campus Drive, San Mateo, CA 94403. Phone 800/950-5880 or 415/571-5100; fax 415/571-5195.)

32 Bits and What Do You Get?

If you have a Macintosh II, IIX, IICX, or SE/30 you'll need another Connectix product—MODE 32—if you want to use System 7's 32-bit addressing to access more than 8 MBytes of memory. In addition, MODE 32 allows you to access more virtual memory on the older Macintosh models.

In late September 1991, Apple and Connectix announced an agreement whereby Connectix would be made available free of charge and Apple would offer a refund to all users who had already purchased MODE 32.

The Macintosh Plus, SE, and Classic compact models—because they are not equipped with a paged memory management unit (PMMU)—are limited to a total of 4 MBytes of memory and are

unable to use virtual memory in any case unless you install a third-party accelerator.

Hard Disk Drive Capacity

System 7 requires a minimum of about 4 MBytes of hard disk drive space. If you have a 32-bit clean Macintosh (LC, Ilci, IIsi, and Ilfx) and want to use virtual memory, you will need even more hard disk drive space. 80 MByte hard disk drives with Quantum or Maxtor mechanisms were selling for about \$500 in early October 1991. A general rule of thumb is to buy a hard drive with two or three times the capacity you think you'll need. Like memory, you can't have too much hard disk space.

What About Ethernet?

System 7's built-in file sharing capabilities promise to bog down many networks and Ethernet will have to be considered by most large organizations and many small ones.

A working rule of thumb is to consider Ethernet alternatives when your network begins to slow noticeably or when you need faster network access. Even then, try before you buy, or hire a consultant for an hour or two to assess your particular situation.

As of early October 1991, Ethernet cards were selling for between \$200 and \$300 and eight-port Ethernet hubs add between \$750 and \$1000 to the total cost. As of early June 1992, mid-level quality Ethernet cards were selling for as low as \$150 and hubs for as low as \$500 or so.

Pass the Software, Please

While most mainstream software packages are fully *compatible* with System 7, many software applications will have to be upgraded to add additional *functionality* under System 7.

The price of admission for this additional functionality varies wildly. For example, Microsoft wants \$129 per copy to upgrade to Excel v3.0; Claris charges \$30 per copy to upgrade MacDraw II; ACIUS charges \$50 per site to upgrade its 4th Dimension database; and CE Software offered free upgrades for a limited time for its QuickMail electronic mail package.

Apple's Infamous Compatibility Checker

Apple supplies a HyperCard stack—Compatibility Checker—that compares your installed software with a list of System 7-compatible items and produces a compatibility report.

The Compatibility Checker is an excellent idea, but the implementation is terrible. Applications that are fully compatible with System 7 are flagged as incompatible and vice versa. This will hopefully be addressed in the near future.

The best approach to use with the Compatibility Checker stack is to take the report it provides with more than a few grains of salt. Use it as a starting point, and nothing more.

Chances are that most everything will work fine, although there are several notable exceptions. Like Apple's own 8•24 GC video display card; its acceleration features were completely incompatible with System 7 until almost a year after the operating system software was initially released.

Hidden Costs

The cost of installing System 7 tends to grow by orders of magnitude in direct proportion to the complexity of the site. Individual users can upgrade to System 7 in a few hours, but there are hidden costs to be considered and accounted for within larger organizations.

Installing the new LaserWriter drivers alone within a 40-Macintosh site takes about two days. A typical site with between 40 and 50 Macintoshes should count on three full eight-hour days to install System 7 on all machines.

Macintoshes running System 7 and System 6 can coexist on the same network, so all the computers in an organization need not be upgraded at the same time. If you expect to continue to use System 6 on any of your Macs, however, you need to install new printer drivers on all machines that will be sharing LaserWriter printers.

In addition to the costs directly associated with physically updating Macintosh system software there are also training costs to be considered and budgeted for.

Even though the Macintosh is much easier to learn and use than competing hardware platforms, all things Macintosh have gotten much more complicated. Sites upgrading to System 7 should budget for about six hours of training for each user.

Backup Before Installing

When you have determined that you have the necessary hardware horsepower, schedule and

perform a complete backup. Everyone hates backing up, but it's something that will save you many hours of unnecessary work if something goes wrong during installation.



Dantz Development Corp.'s Retrospect and Retrospect Remote are the best backup tools I've found. (Retrospect is for stand-alone Macs, and Retrospect Remote allows you to backup hard disk drives across a network.) The street prices for these software packages are about \$150 and \$250 (for a 10-user pack), respectively. (Dantz Development Corp., 1400 Shattuck Avenue, Suite 1, Berkeley, CA 9470. Phone 415/849-0293; fax 415/849-1708.)

Installing System 7

System 7 is available commercially in two forms: the Group Upgrade Kit and the Personal Upgrade Kit. Additionally, System 7 is available—without accompanying documentation—from many user groups and online services. This chapter will provide installation information for both Upgrade Kits.



Apple states that there is no need to reformat your hard disk drive before installing System 7. Like the RAM issue, that's technically true, but my experience has been that things started to work much more smoothly when I reformatted my main drive, installed System 7, and restored my files from a backup.

The Personal Upgrade Kit

Apple's System 7 Personal Upgrade Kit is designed for individual users. The operating system upgrade is provided on 12- 800 KByte floppy disks, including HyperCard.

Documentation consists of licensing agreements, support program registration materials, a

partial Compatibility List (about as useful as the Compatibility Checker stack discussed in Chapter One), a *What's New in System 7* manual, the *Macintosh Reference*, the *Macintosh Networking Reference*, and *HyperCard Basics*.

Purchase of the System 7 Personal Upgrade Kit entitles you to 90 days of toll-free telephone support Monday through Friday from 6:00 a.m. to 5:00 p.m. Pacific time. The support clock starts with your first call, *not* when you register the software.

The Group Upgrade Kit

Apple's System 7 Group Upgrade Kit is designed for sites with multiple networked users. The operating system upgrade is provided on a CD-ROM as well as 13- 800 KByte floppy disks, including HyperCard. (The extra floppy disk contains the updated CD-ROM software required for use with System 7.)

The CD-ROM comes with a customized installer that allows the network administrator or workgroup members to install System 7 directly from the CD-ROM. In addition, the *Macintosh Electronic Reference* is also included on the CD-ROM. This is an electronic version of the System 7 documentation embodied in a series of HyperCard stacks.

Various administration tools are also provided on the Group Upgrade Kit CD-ROM. The User Instructions folder contains a set of instructions for users accessing the upgrade software across a local area network.

The Network Compatibility Listings folder contains a HyperCard stack that can be used to determine the level of System 7 compatibility of

various networking products. These are not as up-to-date as they could be, but they are still quite useful.

The CD Setup folder contains the new System 7-compatible CD-ROM drivers. This driver software is also provided on a floppy disk.

The Inter•Poll folder contains a utility to monitor various system software versions across the network within an organization.

The Basic Connectivity Set folder contains a group of communications tools for use with the Communications Toolbox.

The Disk Images folder contains disk images that you can use to create installation disks for all operating system software from 6.0.2 through 7.0. The Disk Copy application is also included in this folder.

The EtherTalk Phase 1 folder contains software and documentation for AppleTalk Phase 1-compatible EtherTalk drivers.

The LaserWriter Namer folder contains a utility that allows you to rename LaserWriter printers.

The TrueType folder contains a version of Apple's font scaling software that can be used with System 6.0.7.

The System 7 Presentation folder contains an Aldus Persuasion presentation that can be used to inform workgroup members of the capabilities and advantages of System 7.

The HyperCard 2.1 folder contains HyperCard v2.1 used to run the *Macintosh Electronic Reference* and other HyperCard-based materials.

The HyperCard 1.2.2 folder contains HyperCard v1.2.2 for those users who are upgrading from

System 6.0.4 or earlier. HyperCard v2.1 requires System 6.0.5 or later.



Unfortunately, as of June 1992, the Group Upgrade Kit CD-ROM had not been updated to include the two maintenance releases of System 7. Only the initial release of System 7, version 7.0 is included on the Group Upgrade Kit CD-ROM. Similarly, the utilities contained on the CD-ROM are also out of date.

Documentation consists of licensing agreements, support program registration materials, a partial Compatibility List (about as useful as the Compatibility Checker stack discussed in Chapter One), the *System 7 Group Upgrade Guide*, a *What's New in System 7* manual, the *Macintosh Reference*, the *Macintosh Networking Reference*, and *HyperCard Basics*.

When you purchase of the System 7 Group Upgrade Kit CD-ROM, you are automatically entitled to 180 days of toll-free telephone support Monday through Friday from 6:00 a.m. to 5:00 p.m. Pacific time.

The support clock starts with your first call, *not* when you register the software. A good strategy is to try to work out relatively minor initial problems on your own.

Installing on a Local Disk

System 7 is too big to fit on a floppy disk and must be installed on a hard disk drive. You'll need a minimum of about 4 MBytes of free space on your drive.

This section assumes that you are familiar with the issues already covered in this chapter. You can use the following set of instructions to check

the contents of your drives for compatibility with System 7.

1. Launch HyperCard on your present system configuration.
2. Open the Before You Install stack. The opening screen will be displayed, as shown in Figure 1.

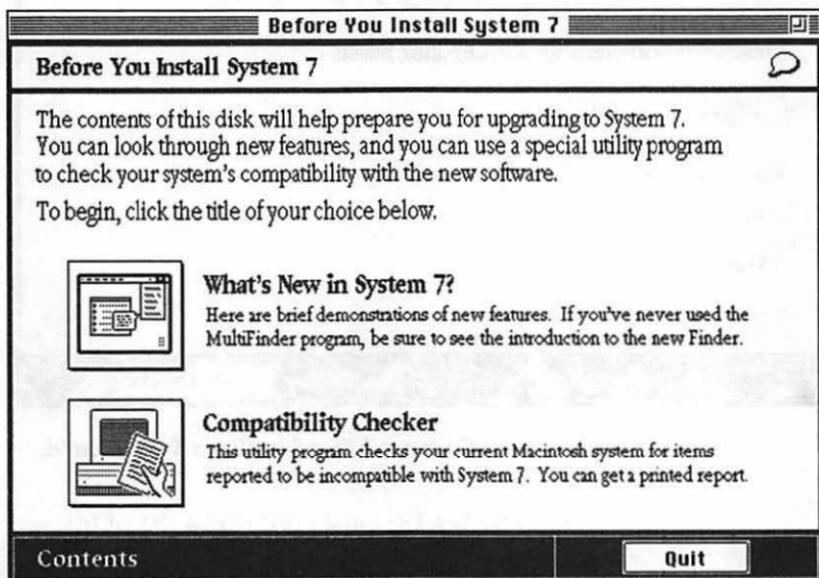


Figure 1 Before You Install stack introduction.

3. Click the **What's New In System 7?** button to explore System 7's new features.
4. Click the **Compatibility Checker** button to generate a System 7 compatibility report for your particular system configuration.
 - An introductory screen will appear and will quickly be replaced by an instruction screen with buttons allowing you to **Quit** HyperCard, return to the **Contents** screen, or **Set Up** your particular system configuration.

5. Click the **Set Up** button. The Compatibility Checker's Set Up card will be displayed, as shown in Figure 2.

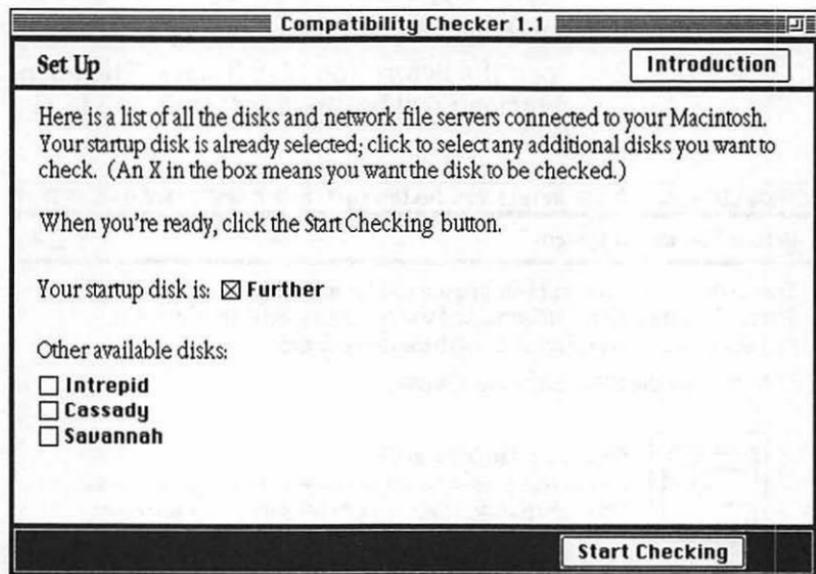


Figure 2 Compatibility Checker's Set Up card.

- The Set Up card contains a list of all available disks and network file servers connected to your Macintosh.
6. Check each of the available disk's checkboxes to select the disks to include.
 7. Click the **Start Checking** button.
 - Your selected disks will be checked and a report will be displayed on screen at the conclusion of the process. You will be presented with an option to save the report to disk or print it.
 8. Evaluate the results of the report.
 - Don't take the Compatibility Checker report too seriously. It's a great idea but notoriously inaccurate.

Updating Hard Disk Driver Software

When you have evaluated the Compatibility Checker's report of your installed software, you are ready to prepare your hard disk drive media for System 7.

Most hard disk drive vendors have updated their formatting and driver software to be fully compatible with System 7, although there are some exceptions. Contact your dealer or vendor for information about your equipment. The most common case of driver incompatibility results in the inability to use virtual memory with the Macintosh models that support it.



All hard disk drives are assembled from a handful of components from a shockingly small number of manufacturers. I've had mixed experiences with every hard drive vendor I've done business with. I wish I could recommend one, but I can't. If you find a great one, let me know.

Apple maintains that it's unnecessary to reformat your hard disk drive for use with System 7, but my own experience is that it's a good idea, and certainly doesn't hurt.

In any case, it's highly likely that you will have to at least update the driver for your hard disk drive. Follow the instructions that came with your drive to either reformat the media or update the driver software. Contact your dealer or vendor for specific information about the level of System 7 compatibility of your drive(s).



The best hard disk drive formatting software currently available is FWB Inc.'s Hard Disk Toolkit. It will format virtually any hard disk drive with an embedded SCSI controller and offers an unprecedented level of user control. FWB's Hard Disk Toolkit also supports the SCSI-2 standard. I ha-

ven't had any experience with FWB's hard disk drives, but I know a lot of people that recommend them. (FWB Inc., 2040 Polk Street, Suite 215, San Francisco, CA 94109. Phone 415/474-8055; fax 415/775-2125.)

Installing the System 7 Software

When you've prepared your hard disk drive for System 7, either by reformatting the media or updating the driver software, you're ready to actually install the System 7 software.



Make sure you check with your dealer or the vendor of your hard disk drive concerning the compatibility of your driver software and any upgrading procedure that may be necessary. Many vendors had to update their driver software, and if you don't upgrade as required, you may lose data. If your vendor charges you for a System 7-compatible driver upgrade, find another vendor.

You can use the following set of instructions to install System 7 on your hard disk drive.

1. Make a new folder to temporarily store System Folder items you want to retain for use with System 7.
 - This folder can be named anything (except System Folder); it's temporary and you will delete it later.
 - If you've reformatted your hard disk drive you can skip this step—and the next—and start with step 3.
2. Delete your existing System Folder.
3. Insert the floppy disk named *Install 1* in your floppy disk drive and restart your Macintosh.

- The Installer application will be launched automatically and the Welcome to the Apple Installer screen will appear. This screen contains some basic information about the installation options available to you.
4. Click the OK button on the Welcome to the Apple Installer screen.
 - The Easy Install dialog box will be displayed with suggested selections for your hardware configuration and a target hard disk drive specified as a default. Figure 3 shows the default selections for a Macintosh IIfx.

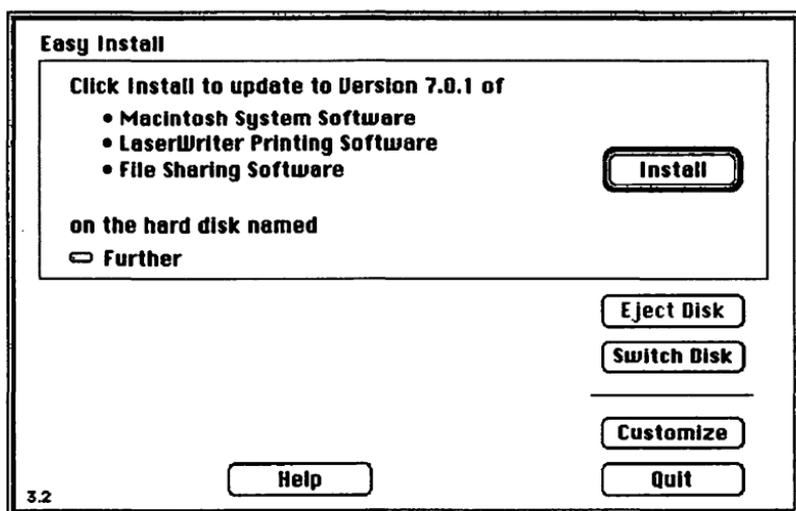


Figure 3 *Installer default selections for Macintosh IIfx.*

5. Click the **Install** button to accept the suggested System software selections and begin the installation procedure.
 - If you select this option you can skip the next two steps—6 and 7—and advance to step 9.

6. Click the **Switch Disk** button to install System 7 on another hard disk drive.
7. Click the **Customize** button to customize the installation for your needs. Items can be selected from the scrolling list.
8. Click the **Install** button to begin the actual installation of the System 7 files.
9. Follow the instructions that appear on the screen and insert the appropriate floppy disks as they are needed.
10. Click the **Quit** button when a dialog box appears at the end of the installation process reporting that the procedure was successful.
 - If the installation procedure was unsuccessful, you'll be notified and can begin the installation again.
11. Click the **Restart** button in the dialog box that appears when you quit the Installer.
 - Your Macintosh will restart using the system software you just installed.

You can finish up the installation procedure by dragging the items from your temporary folder onto the new System Folder icon.



Do not open the System Folder *window* to install the System Folder items you have retained; if you do so they will be placed loose within the System Folder and may not work properly. Instead, drag the items onto the System Folder *icon*. System 7 has an intelligent System Folder that automatically places most items where they belong. In all but a very few cases, this intelligence really does its job well and items are almost always placed where they belong.

For more information on System Folder items, refer to Chapter Three: The Intelligent System Folder, beginning on page 25.

Installing on a Network

Installing System 7 within a networked environment is somewhat different than updating a single Macintosh. The good news is that the System 7 Group Upgrade Kit obviates the need for a lot of floppy disk swapping, and is accessible across a local area network.

The bad news is that the System 7 Group Upgrade Kit CD-ROM hasn't been updated to include any maintenance releases of System 7.

The rest of this chapter will deal with installing System 7 within a workgroup setting.

Begin the workgroup upgrade process by upgrading your own Macintosh. You can do this in one of two ways:

- You can follow the instructions in the previous sections, using the floppy disks included in the System 7 Group Upgrade Kit.
- You can use the CD-ROM included with the System 7 Group Upgrade Kit.



It's highly recommended that you install System 7 on your own Macintosh or a test machine before upgrading your entire network. This will allow you to get comfortable with both System 7 and the actual installation process and enable you to answer inevitable questions posed by other workgroup members.

Upgrading Your Local Macintosh from the CD-ROM

There are two precautions you may want to consider before installing System 7 on any Macintosh within a networked environment:

- If you're using EtherTalk on an AppleTalk Phase I network, you will not be able to use any network services until the entire workgroup has been upgraded to System 7.
- Be careful not to print to any LaserWriter shared by workgroup members. Doing so will prevent anyone from printing to that LaserWriter under System 6.

You can follow this set of instructions to upgrade your Macintosh from the CD-ROM supplied with the System 7 Group Upgrade Kit.

1. Update your hard disk drive driver software as explained in the previous section (beginning on page 15).
2. Insert the *System 7 CD-ROM* in your CD-ROM drive and wait for it to be mounted (appear) on the desktop.
3. Open the System 7.0 Installer folder.
4. Launch the Installer application.
5. Click the **Install** button to accept the default Installer settings and begin the installation procedure.
 - If you select this option you can skip steps 6 and 7 and advance to step 9.
6. Click the **Switch Disk** button to install System 7 on another hard disk drive.
7. Click the **Customize** button to customize the installation for your needs. Items can be selected from the scrolling list.
8. Click the **Install** button to begin the actual installation of the System 7 files.
9. Click the **Quit** button when a dialog box appears at the end of the installation process reporting that the procedure was successful. If the installation procedure was unsuccessful,

you'll be notified and can begin the installation again.

10. Click the **Restart** button in the dialog box that appears when you quit the Installer. Your Macintosh will restart using the system software you just installed.

When you have successfully updated your Macintosh to System 7 you should immediately update your CD-ROM software to the version included with the System 7 Group Upgrade Kit by following these steps.

1. Insert the *Macintosh CD Setup* floppy disk in your floppy disk drive.
2. Launch the Installer application.
3. Click the **Install** button.
4. Click the **Quit** button when a dialog box appears at the end of the installation process reporting that the procedure was successful.
 - If the installation procedure was unsuccessful, you'll be notified and can begin the installation again.
5. Click the **Restart** button in the dialog box that appears when you quit the Installer.

Upgrading Network Macintoshes from the CD-ROM

Any number of Macintoshes can upgrade across the network. You can follow these steps to make the *System 7 CD-ROM* available to remote workgroup members.

1. Open the Sharing Setup control panel.
2. Identify your Macintosh to the network.
3. Set the Owner Password.

- Click the **File Sharing Start** button.
- Insert the *System 7 CD-ROM* in your CD-ROM drive and wait for it to appear.
- Select the CD-ROM within the Finder.
- Select the **Sharing...** command from the File menu. The Sharing window will appear, as shown in Figure 4.

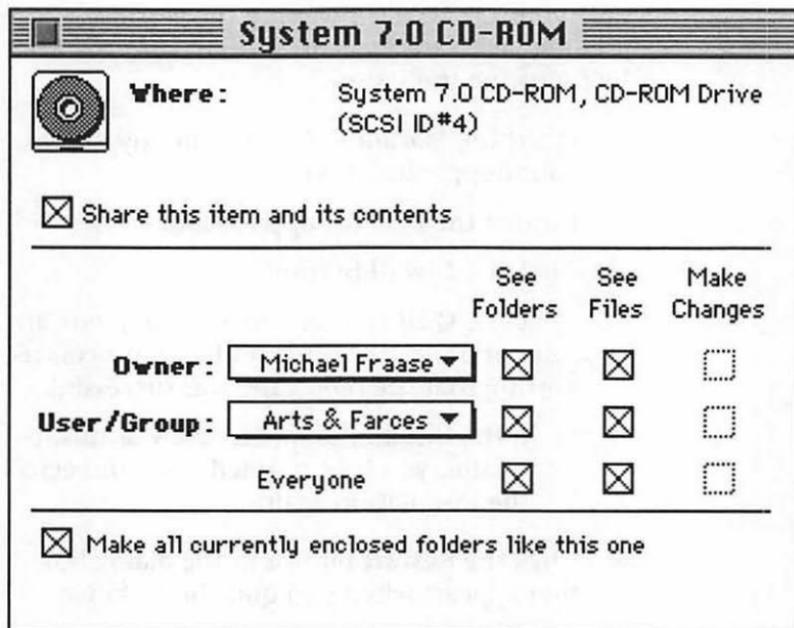


Figure 4 Sharing window.

- Check the **Share this item and its contents** checkbox.
- Specify the access privileges for the remote workgroup members using the remaining settings as necessary.
- Close the Sharing window.
 - System 7's built-in file sharing capability is covered in-depth in Chapter Seven: File Sharing, beginning on page 53.

11. Provide the rest of the workgroup with instructions on how to perform the update.

Remote workgroup members on the local area network can access the *System 7 CD-ROM* with the following set of steps. (*Note: more complete information about System 7's file sharing features and capability is provided in Chapter Seven: File Sharing, beginning on page 53.*)

1. Select the **Chooser** item from the **Apple** menu. The **Chooser** window will appear.
2. Select the **AppleShare** icon within the **Chooser** window.
3. Select the file server or shared disk you want to use from the scrolling list in the right panel of the **Chooser** window.
4. Click the **OK** button. The **User Identification** dialog box will be displayed.
5. Click the **Guest** radio button if you are not a registered user and proceed to step 7.
 - If the **Guest** radio button is dimmed, guests are not permitted access to this computer or server.
6. Click **Registered User** radio button, enter your user name, and your password.
7. Click the **OK** button. A list of available shared disks and file servers will appear.
8. Select the **System 7 CD-ROM** item from the scrolling list.
9. Click the **OK** button. The **System 7 CD-ROM** will be mounted and its icon will appear on your desktop.
10. Follow steps 3 through 10 in the **Upgrading Your Local Macintosh** from the **CD-ROM** section beginning on page 19.

Licensing and Support

Purchase of the System 7 Group Upgrade Kit entitles you to install System 7 on any number of machines at a single site. Apple defines a “single site” as any location in the same organization within a 25 mile radius.

Although Apple supports any number of machines with the System 7 Group Upgrade Kit, only two people can access Apple’s telephone support per Group Upgrade Kit.

Apple’s System 7 telephone support group is surprisingly knowledgeable and very helpful. The level of support and information provided by the representatives is well worth the price of either upgrade kit.

The Intelligent System Folder

If you've been using a Macintosh for more than a year you probably have not-so-fond memories of the infamous rat-nest System Folder. Thankfully, much of that clutter has finally been organized with System 7's intelligent System Folder.

Drag anything that belongs in the System Folder—fonts, sounds, desk accessories, system extensions, etc.—onto the System Folder icon within a Finder window, and chances are it will be automatically placed where it belongs. Or at least where it can't do any harm.

This is a much more powerful concept than it appears on first thought. Once you see it work, you'll wonder why it wasn't always like this. Especially for beginners, this is one of the best new features of System 7.

This chapter offers a strategy for dealing with—and sometimes working around—System 7's intelligent System Folder.

Most of the time System 7 does the right thing and places items appropriately within the System folder as long as you remember to drag the item to the System Folder *icon*, not the System Folder *window*.

Installing system extensions, sounds, and control panels is completely automated and works flawlessly. Figure 5 shows a minimal System Folder with callout text indicating what goes where within the new operating system.

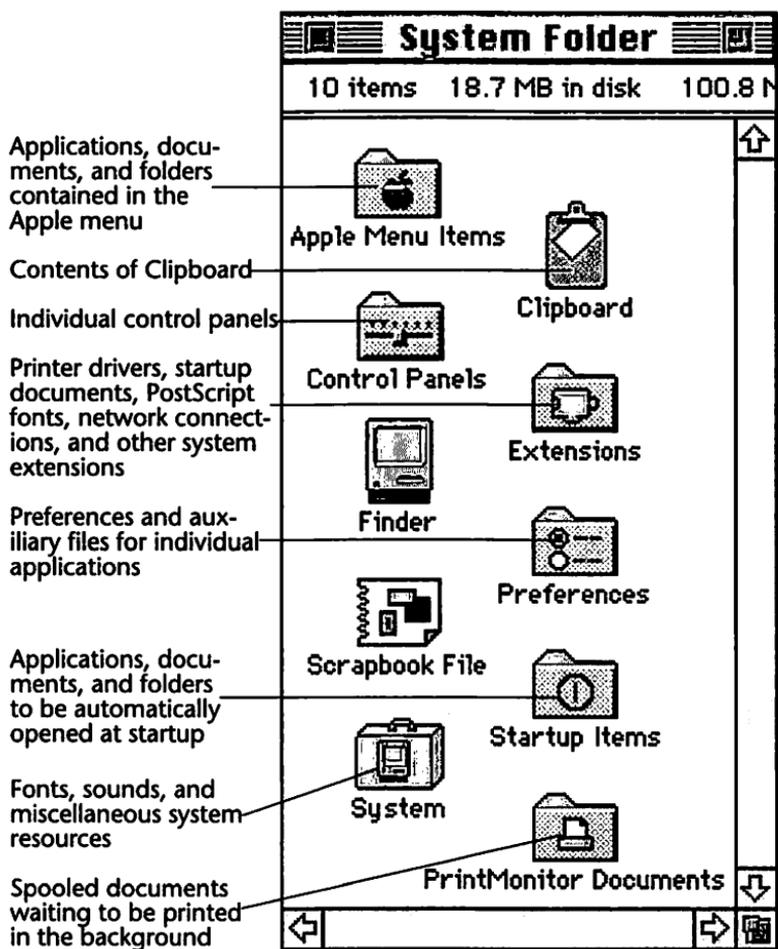


Figure 5 System 7's System Folder.

You can override the System Folder's intelligence by opening the folder and manually placing items where you want them within the System Folder window.

System File

The System file behaves differently than any other Macintosh file. In addition to containing needed system resources for the operation of the Macintosh, it also acts as a sort of folder for fonts, sounds, and localized international system resources (keyboard layouts and language scripts). You can open the System File, like a folder, by double-clicking on it.

Figure 6 shows a minimal System file that has been opened.

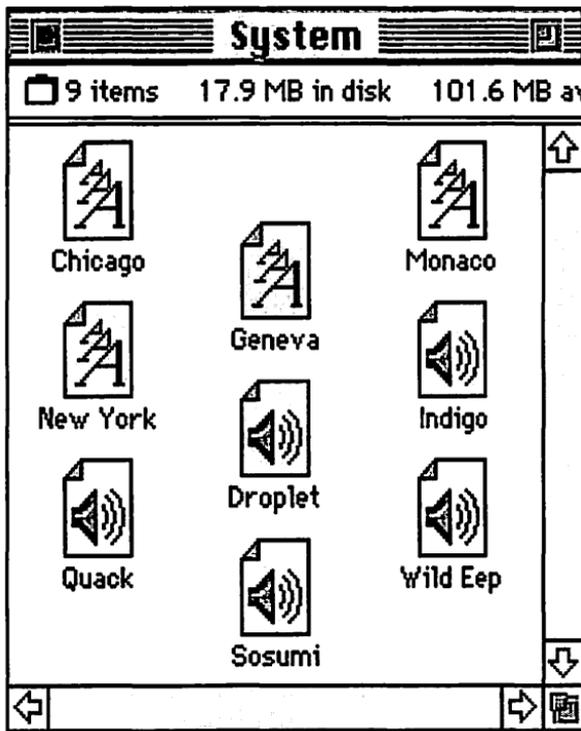


Figure 6 Opened System File.

When you drag fonts or sound files onto the System Folder icon, they are automatically placed

within the System file. Alternatively, you can drag fonts and sound files directly onto the System File or window. To remove fonts and sounds from your System file, select them and drag them to the trash.

The only limitation to opening the System file is that the Finder must be the only active application when you do so. System 7 prevents you from moving items into or out of the System file if other programs are open. In addition, fonts cannot be renamed.

Like a set of interlocking boxes, fonts and sound files can also be opened by double-clicking on them. Opening a TrueType font displays a typography sample in a window like the one for Geneva shown in Figure 7.

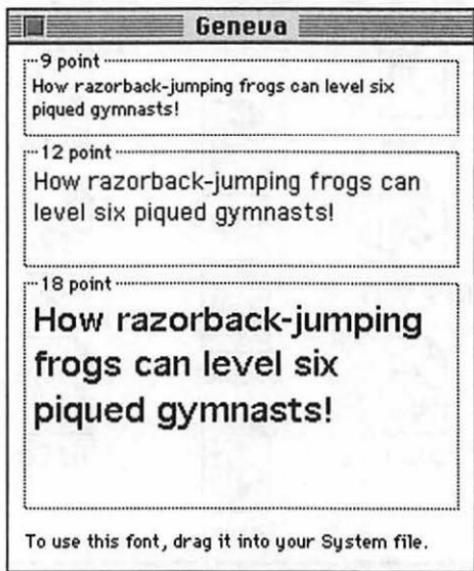


Figure 7 Open TrueType font.

When fonts are installed in the System file they become available in all software applications that let you select fonts.

System 7 font issues are covered more completely in Chapter Four: Fonts And System 7, beginning on page 33.

Opening a sound file causes the sound to be played through the Macintosh speaker. When a sound is installed in the System file it becomes available as a system alert sound via the Sound control panel. These sounds are not the same format as HyperCard sounds and cannot be used within that environment.

Apple Menu Items Folder

The Apple Menu Items folder is useful as a repository for virtually any item you use often—applications, documents, or folders. In addition, desk accessories also live in the Apple Menu Items folder, as shown in Figure 8.

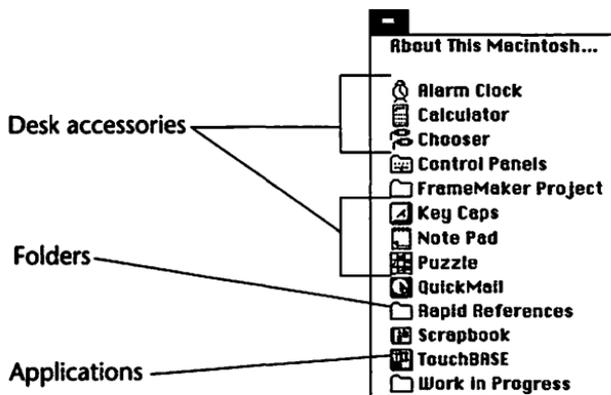


Figure 8 Apple menu.

Items stored within this folder appear on the Apple menu. You do not have to restart your Macintosh for the items to appear; the Apple menu is updated automatically whenever items are added or removed.

Selecting an item from the Apple menu has the same effect as opening the item in the Finder.

Control Panels Folder

The Control Panels folder, shown in Figure 9, serves as a container for items that give you control over your system's appearance.

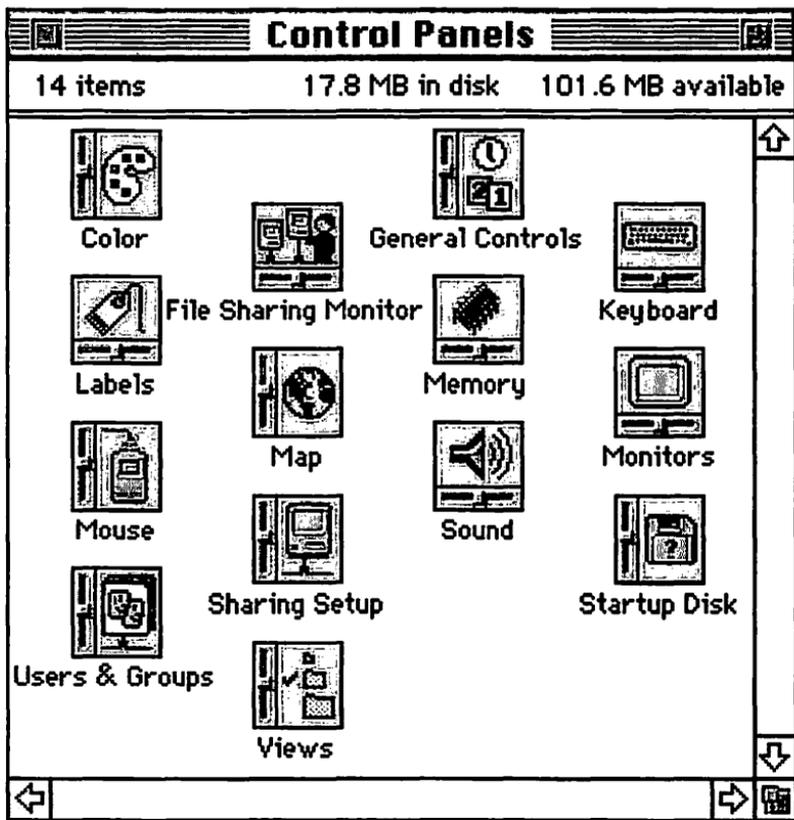


Figure 9 Control Panels folder.

The Control Panels folder can also contain specialized control panels that add functionality to the basic system software during startup.

Extensions Folder

The Extensions folder contains system extensions that provide additional functionality. Printer drivers, PostScript printer fonts, the PrintMonitor program, network device drivers, and networking extensions are examples of the items found in the Extensions folder.

To use an extension, you simply drag it onto the System Folder *icon* (not the System Folder *window*) and restart your Macintosh. The extension will be automatically loaded or made available during the startup process.



Adobe Type Manager and some applications cannot locate PostScript printer fonts in the Extensions folder. If you experience problems accessing PostScript printer fonts, take them out of the Extensions folder and place them loose in the System Folder. Better yet, get Suitcase II to manage your PostScript fonts; then you can put them anywhere. (Fifth Generation Systems Inc., 10049 North Reiger Road, Baton Rouge, LA 70809. Phone 800/873-4384 or 504/291-7221; fax 504/295-3268.)

Startup Items Folder

The Startup Items folder holds all the items that you want to be automatically opened when you start your Macintosh. Any application, document, desk accessory, or control panel that you put in the Startup Items folder will be opened when you start your Macintosh.

Applications and documents (or their aliases) contained within the Startup Items folder are loaded in alphabetical order. They are followed

by desk accessories, control panels, and folders (or their aliases), again in alphabetical order.



The key to managing memory effectively on the Macintosh is to load the items that you are likely to use the most first. This strategy allows you to quit lesser used applications or desk accessories and load new ones without having to constantly monitor memory fragmentation.

You can alter the loading sequence of items in the Startup Items folder by renaming them or adding prefix characters, forcing certain items to load before others.

Preferences Folder

Preference settings from your applications are stored in the Preferences folder. When you install System 7, four preference files are automatically placed in the Preferences folder: DAL Preferences (settings for Data Access Language-compliant databases); File Sharing Folder (access privilege information); Finder Preferences (settings for Finder attributes); and Users & Groups Data File (user name and privilege information for registered users and groups you have defined).

Some applications may also store a Last Edition Used alias within the Preferences folder. This file is updated each time an edition is created or changed when using the Publish and Subscribe features of System 7.

Fonts And System 7

Typography is one of the most widely misunderstood topics in the Macintosh community. Apple Computer has been of very little help in this matter, having consistently underestimated the importance of effective typography within the desktop computing environment. In the short history of the Macintosh and desktop publishing, Apple has almost single-handedly managed to cloud the issues beyond the point of chaos.

In this book, the terms *font* and *typeface* are used interchangeably. I know it's wrong, but it's the way Apple started things. Changing now would only cause even more confusion.

Adobe Type Manager

Adobe Type Manager (ATM) allows PostScript Type 1 fonts to be rendered automatically for screen display. Installing any single size of any Type 1 PostScript font and ATM allows any type size to be rendered automatically. In September 1991 Apple and Adobe announced that ATM would be folded into future versions of the Macintosh operating system.

PostScript Level 2

In 1990, Adobe Systems released the specifications for PostScript Level 2. It incorporates ATM and features better color calibration between display and output devices, and better screen angles for halftones and color separations. File compression and improved memory management are also built-in components of the latest version of PostScript.

TrueType

In 1987, Apple began work on a new font format that would be an extension to QuickDraw. This project evolved into what we now recognize as TrueType. At the same time Microsoft was working on a new imaging model for Windows, known as TrueImage. In 1989, Apple and Microsoft swapped technologies resulting in Apple's release of TrueType fonts. Microsoft threw in the towel on the TrueImage page description language in the late spring of 1991.

The TrueType hinting techniques include all the information in the font outlines required to optimize the font at any resolution. PostScript hinting, in comparison, is minimal because most of the optimizing is done in the printer's Raster Image Processor (RIP).

TrueType allows the weight of any font to be adjusted, making it legible at smaller sizes. Conversely, as a larger size is specified, TrueType thins the weight, making it more elegant. This is known as optical scaling, and many believe Adobe will add the feature to future versions of the PostScript font specification.

Adobe Multiple Master

Adobe's answer to the optical scaling feature of TrueType is the Multiple Master series of typefaces. Due in the first quarter of 1992, Multiple Master typefaces will allow you to create virtually instantaneous variations of a single typeface. The Multiple Master typefaces contain definitions for weight, width, style, and size.

A Multiple Master font can be scaled along a specified axis, allowing faces in the same font family to be combined to create completely new typefaces. For example, a bold condensed face could be combined with a bold expanded face to create any weight in between.

What You Need to Know

If you already own a PostScript printer, or if your service bureau offers PostScript output on an imagesetter, the best solution is to stay as far away from TrueType as possible. If you're shopping for a printer, get PostScript. Even though most applications fully support TrueType, your best bet is to avoid it if you can use PostScript.

A PostScript device will try desperately not to have to deal with TrueType and the TrueType rasterizer is designed to be re-downloaded to the PostScript output device each time a new page is imaged. This results in dreadfully slow output on PostScript devices and as of early 1992, most service bureaus were refusing to run TrueType jobs. TrueType may be free, but it's more trouble than it's worth.

If you're running System 7.0, remove the TrueType versions of any PostScript fonts in your Sys-

tem file (usually Courier, Helvetica, Times, and Palatino) and replace them with the PostScript equivalents. Adobe Type Manager gives you all the advantages of first-generation TrueType with none of the headaches.



If you use a lot of fonts, one of the best purchases you can make is Fifth Generation's Suitcase II at a street price of about \$50. Suitcase II allows you to control your font collection and place your screen fonts and printer fonts virtually anywhere on your hard disk drive. (Fifth Generation Systems Inc., 10049 North Reiger Road, Baton Rouge, LA 70809. Phone 800/225-2775 or 504/291-7221; fax 504/295-3268.)

TrueType is quickly developing into little more than a nuisance in the Macintosh world. Apple chief executive John Sculley didn't even bother to mention the built-in TrueType rasterizer in the company's new printers when they were introduced in early October 1991.

The New Finder

The Finder is the aspect of Macintosh System software that we most closely associate with “Macintosh-ness.” Actually, the Finder is a Macintosh application, albeit a very specialized one. The Finder has come to embody what we call the Macintosh user interface with its familiar icons, windows, and menus. It’s also the part of System 7 that visually differentiates it from earlier versions of System software. Until System 7 there were no major features added to the Finder since MultiFinder in 1987.

System software versions prior to System 7 used an invisible Desktop file to keep track of icons and their positions. Because the Desktop file relied on the Resource Manager there were problems with a large number of resources resulting in slow and unreliable operation.

Finder 7.0 uses the same technology employed in AppleShare, dividing desktop management tasks between two files: Desktop DF and Desktop DB. Speed and reliability of file handling operations is much improved.

If you have a color monitor, one of the first things you’ll notice about System 7 is support for color windows and icons on the desktop.

Custom Views

The various list views available in the new Finder make it easier for you to see the hierarchical structure of your workspace.

A triangle is displayed next to each folder in all list views. This triangle provides a visual cue as to the state of the outline view. It also acts as a toggle switch between the collapsed and expanded outline states.

Figure 10 shows a Finder window in both collapsed and expanded outline views.

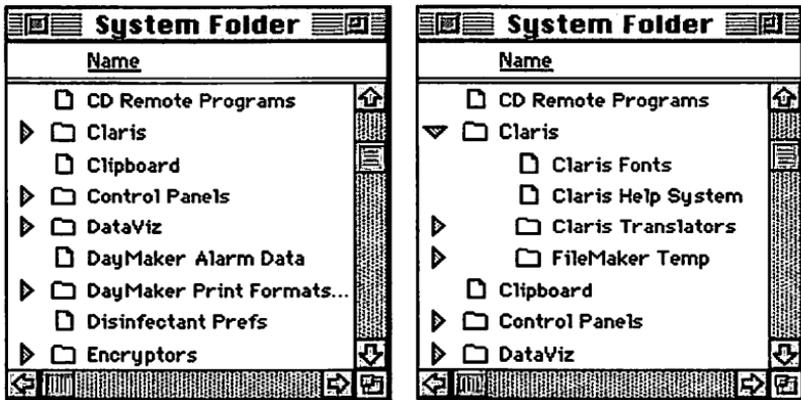


Figure 10 Collapsed (left) and expanded (right) outline views.

To expand an outline view, click on the right-pointing triangle icon next to the folder you want to expand. To collapse an outline view, click on the down-pointing triangle icon.

The most important aspect of the new outline view folder structure is that you can now select multiple items from several folders within the same window simultaneously. This makes working with files in various sub-folders much easier.

Another new feature of System 7 is that a selection rectangle can be used to select multiple items in any Finder view.

The Views control panel, shown in Figure 11, can be used to customize how items are displayed within Finder windows.

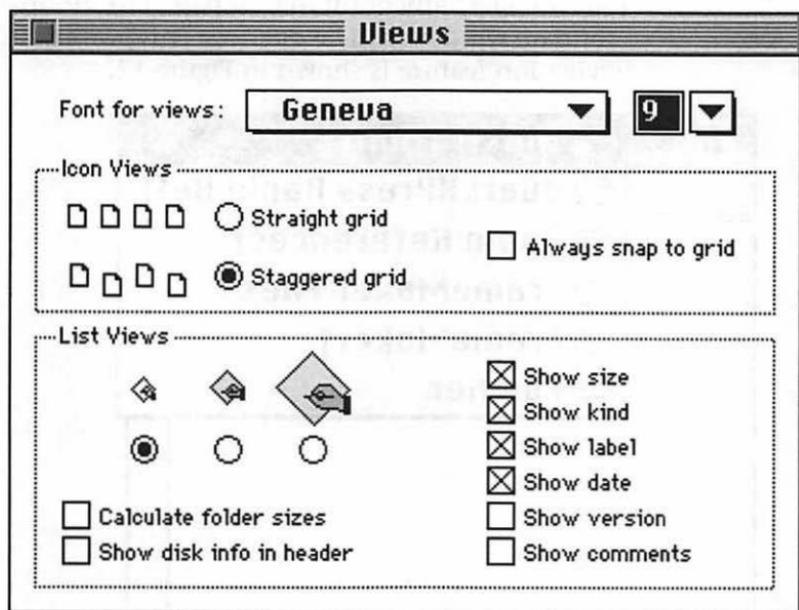


Figure 11 Views control panel.

You can sort a Finder window's contents in any list view by clicking on the column head by which you want to sort. Clicking on the Type column head, for example, sorts the window's contents by file type. Similarly, clicking on the Size column head sorts the window's contents by size, listing the largest files at the top.

In any of the icon views you can sort a Finder window by holding the Option key and selecting the Clean Up command from the Special menu. The Clean Up command will vary depending on which view you used last.

Finder Navigation

When you Command-click on any window title within the Finder, a pop-up menu appears, displaying the path to that window.

You can select any point in that path and the appropriate window will be opened. This powerful navigation feature is shown in Figure 12.

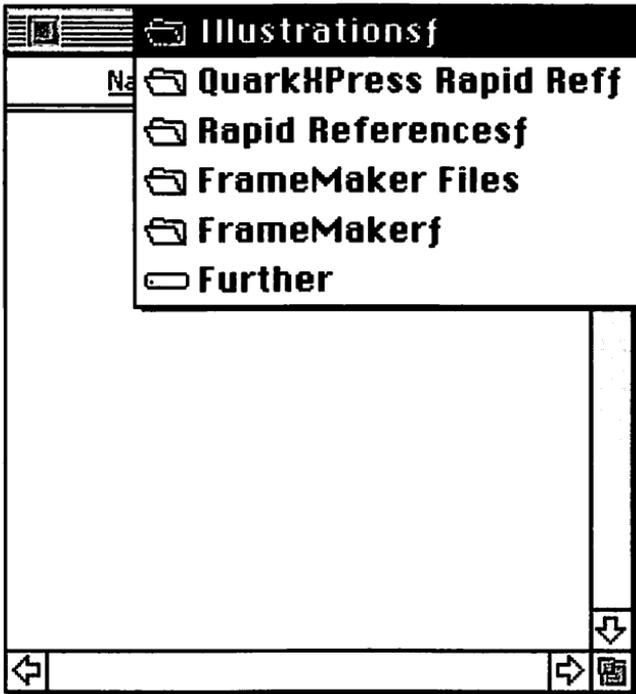


Figure 12 Finder window navigation menu.

When you click on any icon in the Finder, the window containing the icon will not be brought to the front until you release the mouse button.

This allows you to copy or move multiple items from any number of overlapping windows within the Finder.

Clicking the zoom box of a Finder window causes the window to grow to the smallest size needed to display all the contents of that folder. In previous versions of the Finder, the window would grow to the full size of the screen.

You can scroll any Finder window automatically by dragging an item contained within the window to any edge of the window. You can also use the Home, End, PgUp, and PgDown keys on the extended keyboard to scroll any window within the Finder.

If you have an extended keyboard, get QuicKeys. QuicKeys actually lets you use that top row of fifteen function keys. And a whole lot more. (CE Software Inc., 1801 Industrial Circle, P.O. Box 65580, West Des Moines, IA 50265. Phone 515/224-1995; fax 515/224-4534.)

You can navigate to and select specific files or folders within a Finder window by typing the first few letters of its name. Typing a single letter will select the first item in the active window that begins with that letter. Pressing the Tab key advances to the next item in alphabetical order, and pressing Shift-Tab selects the previous item in alphabetical order.

The Applications Menu

The Application menu is displayed at the extreme right of the menu bar and is identified by its display of the small icon of the currently active application. This menu allows you to easily navigate between any application that is open within your workspace. When you launch an application its name and small icon are added to the Application menu. Figure 13 shows an example of the Application menu with callout text

providing information about its additional features.

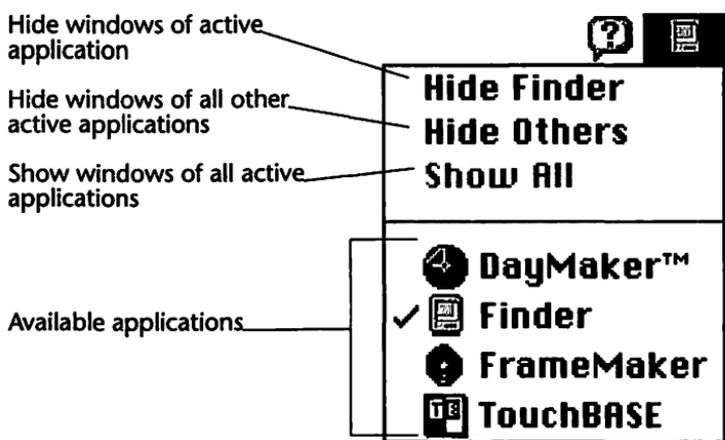


Figure 13 Application menu.

Two keyboard shortcuts are also available for navigating through the Finder's windows:

- You can hold the Option key as you select an available application from the Applications menu to automatically hide the windows of the current application.
- You can hold the Option key and click anywhere on the desktop to hide all open application windows.

As an alternative to navigating through a sometimes-complex hierarchy of folders within the Finder, you can drag a document on top of an application icon and it will be opened within that application if possible.

Another alternative is to put aliases of your most commonly used documents and applications inside of the Apple Menu Items folder which itself is found within the System Folder. Anything you put in this folder will appear on the Apple Menu when you pull it down.

You can leave your most commonly used applications (or aliases of them; see Aliases beginning on page 46) on the desktop and drag document icons on top of them. This offers the additional benefit of opening documents that are native to applications you do not own.

Dragging a MacWrite document on top of the Microsoft Word icon (or alias), for example, will automatically convert and open the document within Microsoft Word.

File Finding

For the first time the Macintosh Finder incorporates an integrated file-search function within the operating system that offers two levels of complexity.

- The basic Find function looks for file names that match the text you specify.
- The expanded Find function allows you to customize the search to include modification dates, creation dates, kind, version, label, and user comments.

If you select the Find... command from the File menu within the Finder, the basic Find dialog box, shown in Figure 14, will appear.

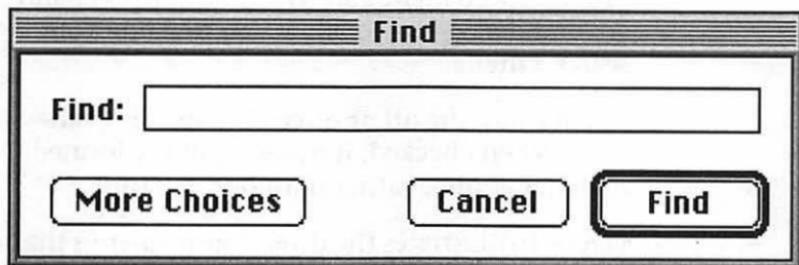


Figure 14 Basic Find dialog box.

If you have a pretty good idea of what you're looking for, the basic Find dialog box is a quick way to locate items that are misplaced or that are buried inconveniently deep within the folder hierarchy.

Typing a group of characters in the search field and pressing the **Find** button will search your hard disk drive for the first instance of whatever you typed.

When a match is located, the Finder opens the window that contains the found item and highlights it.

You can click the **More Choices** button to expand the Find dialog box to display additional options, as shown in Figure 15.

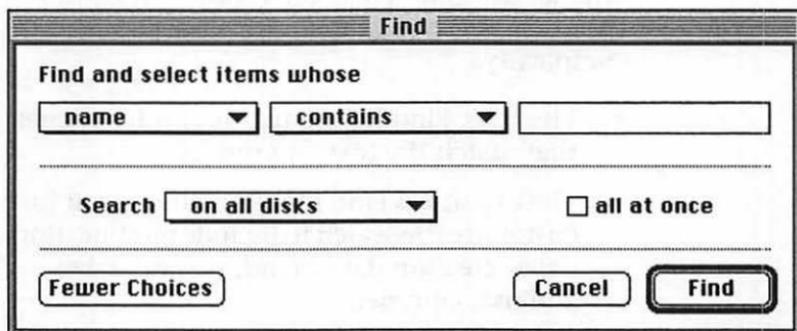


Figure 15 Expanded Find dialog box.

Three pop-up menus are available in the expanded Find dialog box to allow you to refine your search criteria.

In addition, the **all at once** checkbox is available. When checked, it presents all the located matches at once rather than one at a time.

Figure 16 illustrates the three pop-up menus that are available within the expanded Find dialog box. The name, contains, and search menus are

shown in their relative position within the expanded Find dialog box.

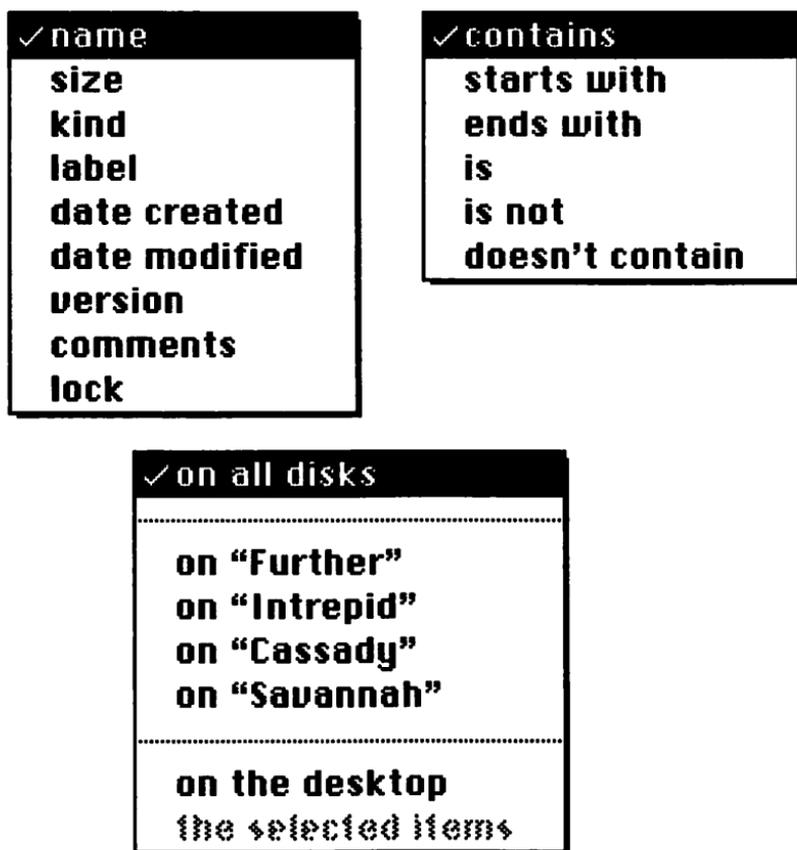


Figure 16 Expanded Find dialog box pop-up menus.

The file finding functionality built into System 7 is exceptionally flexible and remarkably efficient. When matched items are displayed, you can move them as a group by dragging a single item (the selected group is a single item). You can return them to their original locations by selecting the Put Away command on the File menu (or using the Command-Y keyboard shortcut) within the Finder.

Background File Copying

System 7 provides you with the ability to copy any number of files—in the background—while you continue to do other work on the computer. The only limitation to this capability is that you cannot open an application while the files are being copied.

The key to working within this limitation is a simple four step process.

1. Launch the application or applications that you want to use while the background file copying is taking place.
2. Switch out to the Finder.
3. Start the file copy operation.
4. Switch back to your application.

Aliases

Aliases are simply stand-in icons that represent a volume, folder, application, or document. They are not copies of the items they represent, but rather an actively linked pointer to the actual item. Performing an operation on an alias—except for deleting it—performs the operation on the actual file, not the alias. A single file—or even an entire hard disk—can have any number of aliases located virtually anywhere.

The biggest advantage of using aliases is that because they take up a minimal amount of storage space (no more than 1–3 KBytes) you can keep multiple aliases in any number of locations. This can help you manage your hard disk drive much more efficiently.

You can, for example, put aliases of your most commonly used applications in the Apple Menu Items folder or out on the desktop. If you have a core group of applications that you work with most of the time, you can place their aliases in the Startup Items folder and the items they represent will be opened automatically each time you start your Macintosh.

Aliases also work across a network. This allows you, for example, to double-click on an alias of a server to mount the server on your desktop.

To create an alias, follow these steps.

1. Select the item.
2. Select the Make Alias command on the File menu within the Finder.

An alias will be created, as shown in the file server and folder examples shown in Figure 17.

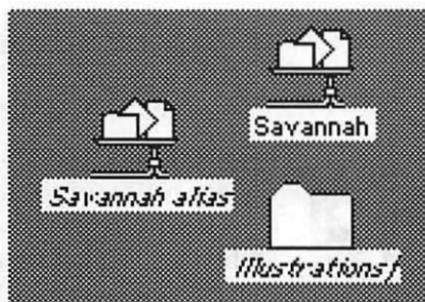


Figure 17 *Alias of a file server.*

Note: the only apparent difference is the italicized name and the “alias” suffix. In all other ways, the alias works exactly the same as the item it represents.

If you move the original item to another location, the link between it and the alias will be updated automatically. If you throw an alias away, only the alias is deleted, not the item the alias

represents. This can lead to one of the problems inherent in working with aliases: you have to remember to manually delete any aliases for the files you delete.

What's Missing?

As remarkable as System 7 is, there is room for improvement.

1. The Undo command should be more intelligent. We should be able to undo renaming a file or emptying the trash.
2. Any comments we create for our files disappear when the desktop is rebuilt.
3. We should be able to drag the menu bar between multiple monitors without having to restart.
4. Typing keys in a Finder window should scroll the window with the selected file at the top of the list, not the bottom.



Finally, here's a welcome addition: You can halt the execution of some processes by pressing Command-Option-Escape. In some cases this will let you to cancel a hung process, thereby allowing you to save information in other concurrently running applications. It would be nice to see this standardized.

Virtual Memory

System 7 supports virtual memory on most of the higher-end Macintosh models. You can use virtual memory on any Macintosh with a 68030 processor or a 68020-based Macintosh that is also equipped with a Paged Memory Management unit (PMMU).

Virtual memory acts to extend the amount of available memory by treating part of your hard disk drive as an extension to RAM.

System 7's virtual memory feature works best with 4 MBytes or more of RAM, and requires hard disk space equivalent to the total memory specified. In other words, a Macintosh with 8 MBytes of physical RAM and 8 MBytes of virtual memory would require 16 MBytes of hard disk drive space. It's a trade-off you may find appropriate; I can't afford to give up that much hard disk drive real estate.

Although you can specify almost any amount of available hard disk space for use as virtual memory on 32-bit clean Macintosh models, you shouldn't attempt more than twice the physical RAM you have installed in your Macintosh. Macintosh models that are not 32-bit clean are limited to a total of 14 MBytes of virtual memory

minus 1 MByte for each installed NuBus card. For information on physical memory, refer to A Crash Course In Memory beginning on page 2.

You can use the Memory control panel to manage virtual memory with these steps.

1. Select the Control Panels item from the Apple menu. The Control Panels folder will be displayed.
2. Double-click on the Memory control panel within the Control Panels folder to open it, as shown in Figure 18.

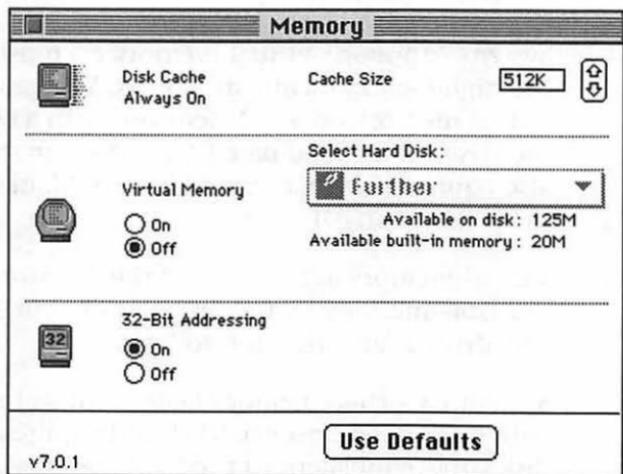


Figure 18 Memory control panel.



If your Macintosh does not support virtual memory, the settings associated with it will not appear in the Memory control panel. In those Macintoshes that do not support virtual memory, only the Disk Cache portion of the Memory control panel will appear.

3. To turn on virtual memory click the **Virtual Memory On** radio button in the left-center portion of the Memory control panel. The control panel display will be updated to re-

flect the new setting, similar to the example shown in Figure 19.

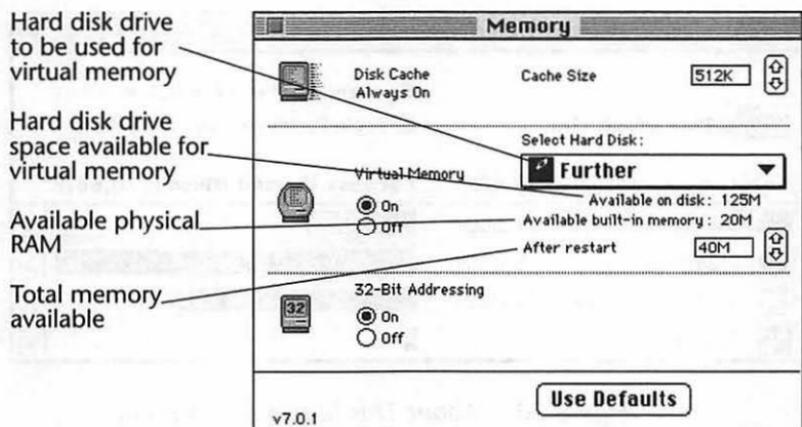


Figure 19 Memory control panel with virtual memory enabled.

4. Select the hard disk drive to be used for virtual memory from the pop-up menu.
5. Adjust the total amount of memory to be available with the arrow buttons.
 - The total memory available—physical RAM plus virtual memory—cannot exceed 14 MBytes unless you turn on the **32-bit Addressing** radio button.
6. Close the Memory control panel.
7. Restart your Macintosh.

System 7's virtual memory feature is most appropriately used only in circumstances that would cause you to run out of physical memory. If you find yourself using the maximum virtual memory available most of the time, you would do well to invest in more physical RAM.

You can see how much memory you are using by selecting the About This Macintosh command from the Apple menu from within the Finder.

The About This Macintosh window, shown in Figure 20, will be displayed.

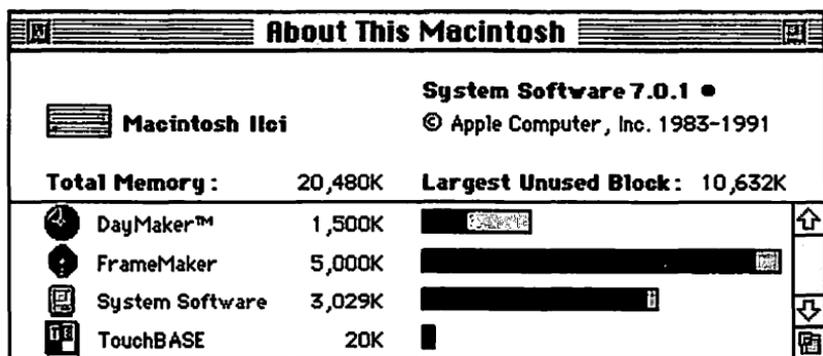


Figure 20 About This Macintosh window.



Be careful using virtual memory. My experience has been that it can cause more problems than it is worth in many situations. Some software programs, for example, create their own virtual memory disk files. Performance in these instances can be degraded if these programs cannot create this virtual file because you have set System 7's virtual memory too high.

Try to use the fastest hard drive you can for the virtual memory swap file. Also, be aware that the drive space you allocate for virtual memory cannot be on a removable hard disk.

File Sharing

The file sharing capabilities built into System 7 allow you to share files, folders, and whole disks with other people whose computers are connected with yours on a network. You can use System 7's file sharing to share disks, a selection of files, or only the files in a particular folder with just one other person, a subset of your workgroup, or the entire workgroup.

System 7's file sharing is not meant to be a replacement for AppleShare file service because of four basic deficiencies:

- A total of only 10 users can be logged on at any one time.
- A practical limit of 50 users can be defined.
- Only 10 volumes or folders can be shared.
- There is no way to remotely manage or alter access privileges.

Many small workgroups, however, will find that System 7's file sharing capabilities are perfectly adequate for their needs.

You use a number of control panels to initiate and manage file sharing on your Macintosh and

you access shared files on other Macintoshes through the Chooser.

Starting File Sharing

Before you can share your files with other members of your workgroup, you have to identify yourself and your Macintosh to the network and turn on File Sharing.

1. Select the Control Panels item from the Apple menu. The Control Panels folder will be displayed.
2. Double-click on the Sharing Setup control panel within the Control Panels folder to open it, as shown in Figure 21.

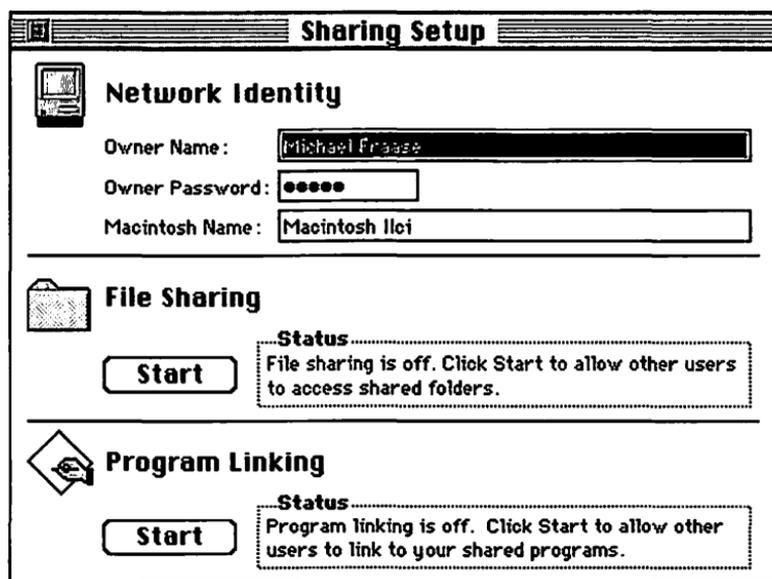


Figure 21 Sharing Setup control panel.

3. Enter the name you want to be identified to the network as in the Owner Name field.

4. Enter a unique password in the Owner Password field.
5. Enter a name for your Macintosh in the Macintosh name field.
6. Click the File Sharing **Start** button.
7. Close the Sharing Setup control panel.

Your Macintosh is now accessible to other workgroup members on the network.

At this point you can elect to share your files with anyone on the network, or you can define a set of users and groups to manage various levels of access to your files. Most workgroups will opt for the latter alternative.

Defining Users & Groups

By defining a set of users and groups for file sharing activities, you retain control over access to the material you choose to share with the rest of your workgroup.



Apple's file sharing features within System 7 offer very limited security. This may be a problem within some organizations. If the files on your Macintosh are confidential, you should seriously consider not using System 7's file sharing. It may look secure, but it's not.

You manage access to your files by setting *access privileges* that control which workgroup members have access to which of your files, folders, and disk.

You can define a set of users by repeating these steps for each user.

1. Select the Control Panels item from the Apple menu.

2. Double-click on the Users & Groups control panel to open it, as shown in Figure 22.

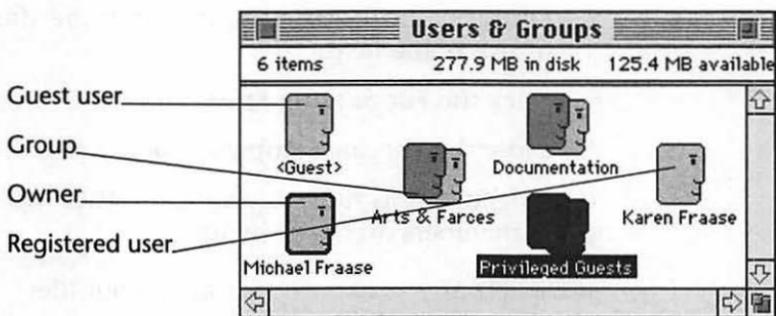


Figure 22 Users & Groups control panel.

3. Select the New User command on the File menu to define a new user.
4. Rename the new user icon appropriately.
5. Double-click on the user icon to open it as shown in the example in Figure 23.

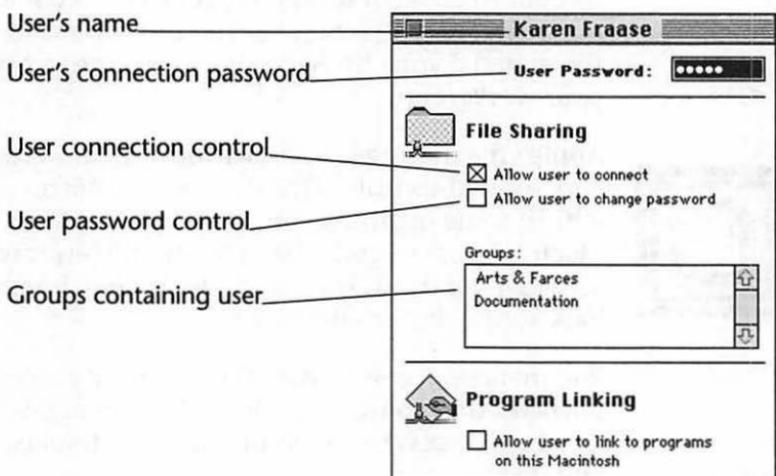


Figure 23 Opened user window.

6. Assign a password for the user in the User Password field.

7. Check the **Allow user to connect** checkbox to allow the user to connect to your Macintosh. Uncheck the checkbox if you wish to restrict the user from all access.
8. Check the **Allow user to change password** checkbox to allow the user to change his or her password. Uncheck the checkbox if you wish to prevent the user from changing the password.
9. Close the user's window.
10. Click the **Save** button to save the changes you made to this user.

Defining Groups

If your organization is comprised of groups of people who work collaboratively and share a need for access to the same information, you can define a group of users with the same access privileges for your shared files.

You can define a set of groups by repeating these steps for each group you want to create.

1. Select the **Control Panels** item from the **Apple** menu. The **Control Panels** folder will be displayed.
2. Double-click on the **Users & Groups** control panel to open it, as shown in Figure 22 on page 56.
3. Select the **New Group** command on the **File** menu to define a new group.
4. Rename the new group icon appropriately.
5. Drag the user icon of each workgroup member you want to include within the group to the group's icon.

6. Double-click on the group icon to open it as shown in the example in Figure 24.

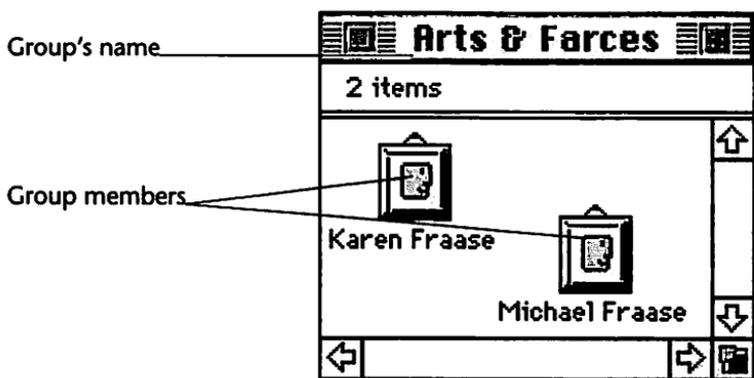


Figure 24 Opened group window.

You can open any user icon within the opened group window by double-clicking on it.



You don't need to add your own user icon to any group you define because as the Macintosh's owner, the entire contents of the computer are accessible to you from any point on the network. Similarly, you don't need to add the <Guest> user icon to any group you create.

You can remove group members from any group at any time with these steps.

1. Open the group icon within the Users & Groups control panel
2. Drag the member icons to the trash.

Setting Access Privileges

The idea of making volumes and files available to other workgroup members can be a little intimidating to some people. Specifying the *access privileges* for your disks and folders allows you to

maintain control over which volumes, folders, and files are available to other workgroup members.

Every folder on each volume can be assigned an Owner, a Group, and a collection of settings that allow the Owner to control which folders and files are available to other individuals or workgroup members.

Settings are available to prevent anyone from even *seeing* selected folders and their contents, let alone *accessing* them.

Figure 25 illustrates the access privilege settings for the *FrameMakerf* folder residing on the Savannah shared volume.

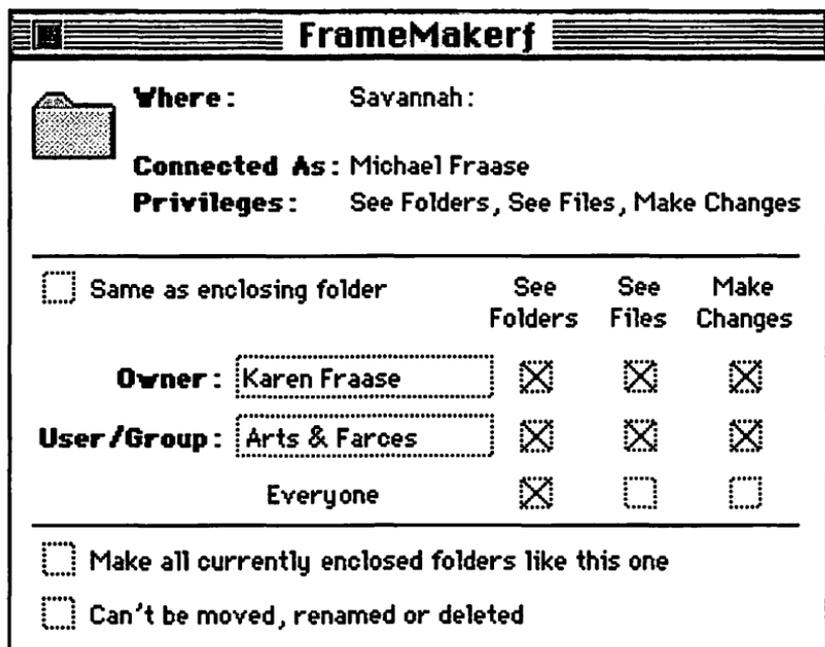


Figure 25 Access privileges for a shared folder.

To set the access privileges for your own volumes and folders, use these steps.

1. Select the volume or folder that you want to share within the Finder.
2. Select the Sharing... command from the File menu. The Access Privileges window for the selected item, like the example shown in Figure 26, will appear.

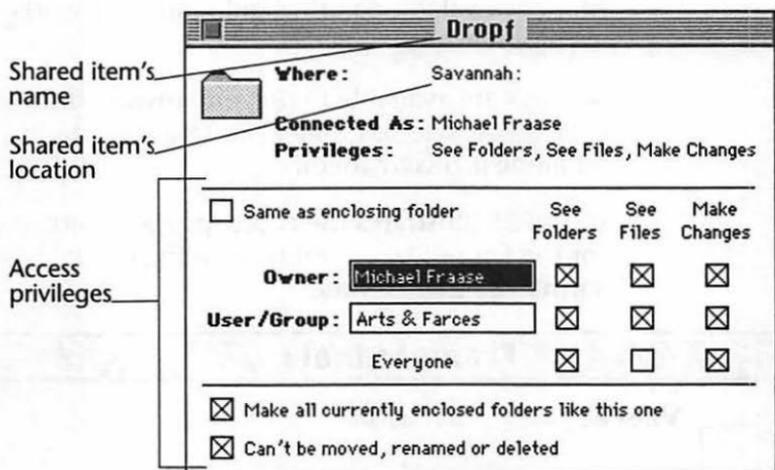


Figure 26 Access Privileges window.

3. Check the **Share this item and its contents** checkbox.
4. Select a user or a group from the User/Group pop-up menu.
 - the User/Group pop-up menu contains the names of each user and group you have created.
 - You can select only one of the items on the pop-up menu.
 - If you find that you need more flexibility, you can create more restrictive groups.
5. Uncheck all three checkboxes in the bottom row (the Everyone privileges) if you want to

prevent anyone other than the user or group you have specified to have access to the item.

- Refer to Figure 27–Figure 29 for information about the effects of the various access privilege settings.

6. Close the Access Privileges window.
7. Click the **Save** button to save the changes you made to this disk or folder.

| Access Privilege | Effect |
|---|--|
| See Folders | Checked: shows folders Unchecked: hides folders |
| See Files | Checked: shows files in folder Unchecked: hides files in folder |
| Make Changes | Checked: designated user can copy, delete, or save files Unchecked: prevents designated users from copying, deleting, or saving files |
| Make all currently enclosed folders like this one | Checked: assigns the enclosing folder's access privileges to folders that have been moved into it Unchecked: retains the original access privilege settings assigned to the items within the enclosing folder |
| Can't be moved, renamed or deleted | Checked: prevents anyone from moving, renaming, or deleting this folder Unchecked: allows anyone with a high enough access level to move, rename, or delete this folder and its contents |

Figure 27 Access privilege settings.

Once the access privileges have been set, they provide visual cues that are immediately apparent to everyone accessing the shared folders across the network.

The icons that represent the shared folders reflect the state of the access privileges that have been assigned to them. You can tell at a glance, for instance, which folders on someone else's disk you have access to and which folders are inaccessible to you (even though you can see them).

The table in Figure 28 provides a quick reference to shared folder icons as they appear to a workgroup member across the network.

| Icon | Description |
|---|---|
|  Tabbed folder | Seen by the owner of the folder who also controls access to it |
|  Plain folder | Seen by all workgroup members who have some level of access to this folder |
|  Not accessible | Seen by all workgroup members who cannot see files or make changes to this folder's contents |
|  Drop folder | Seen by all workgroup members who cannot open the folder but can copy files and folders into it |

Figure 28 Shared folder icons.

Figure 29 provides a quick visual reference to the access privilege settings required to obtain the results shown the table in Figure 28. Each access privilege setting is accompanied by the folder

icon that appears to workgroup members across the network.



| <input type="checkbox"/> Same as enclosing folder | See Folders | See Files | Make Changes |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| Owner: Michael Fraase | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| User/Group: Arts & Farces | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Everyone | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



| <input type="checkbox"/> Same as enclosing folder | See Folders | See Files | Make Changes |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| Owner: Karen Fraase | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| User/Group: Michael Fraase | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Everyone | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



| <input type="checkbox"/> Same as enclosing folder | See Folders | See Files | Make Changes |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| Owner: Karen Fraase | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| User/Group: Michael Fraase | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Everyone | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



| <input type="checkbox"/> Same as enclosing folder | See Folders | See Files | Make Changes |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| Owner: Karen Fraase | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| User/Group: Michael Fraase | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Everyone | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Figure 29 Access privilege settings for Figure 28.

Access Privilege Examples

You can control network access to the files and folders on your Macintosh by granting specific access privileges to certain users within your

workgroup. Regardless of any access privileges you may grant to other workgroup members, you retain complete access to your computer and everything on it across the network.

Drop Folder

A drop folder is a private repository that other workgroup members can use to deposit files or folders within your workspace without being able to see, change, or delete the contents.

Drop folders are useful within a workgroup environment and can even be used as a substitute for electronic mail in very small networks.

The access privilege settings for a public drop folder (everyone on the network—including guests, if allowed—can deposit files or folders within it but are prevented from seeing the folder's contents) are shown in Figure 30.

| <input type="checkbox"/> Same as enclosing folder | See Folders | See Files | Make Changes |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| Owner: <input type="text" value="Karen Fraase ▼"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| User /Group: <input type="text" value="Arts & Farces ▼"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Everyone | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 30 Public drop folder access privileges.

Private Folder

If you're sharing one or more folders on your hard disk drive across the network, you may find a need for a private folder—one that is accessible only to you.

The access privilege settings shown in Figure 31 can be used to prevent anyone else on the network from opening or even seeing the folder or its contents.

| <input type="checkbox"/> Same as enclosing folder | See Folders | See Files | Make Changes |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| Owner : Karen Fraase ▼ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| User /Group : Michael Fraase ▼ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Everyone | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Figure 31 Private folder access privileges.

Bulletin Board

You can define the access privileges for a folder (or several folders) to create a bulletin board on your network. Setting up a bulletin board folder allows anyone with access to the network to open and read any file placed within the folder, but prevents anyone except the owner from changing any of the files.

Potentially useful variations of the bulletin board access privileges are easy to implement.

- You can, for example, define several folders with different topic or project headings for specialized uses.
- Another variation might be to limit access to a workgroup-based bulletin board folder to only those workgroup members who have a direct need for the information contained in the folder.

Figure 32 shows the access privileges for a public bulletin board folder. Everyone on the network

can open and read any file within the folder, but only the owner can make changes.

| | | | | |
|---|---|-------------------------------------|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> Same as enclosing folder | | See Folders | See Files | Make Changes |
| Owner : | <input type="text" value="Karen Fraase"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| User /Group : | <input type="text" value="<None>"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | Everyone | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Figure 32 Public bulletin board access privileges.

Figure 33 shows the access privileges for a bulletin board folder that is available only to registered users of the "Arts & Farces" group.

| | | | | |
|---|--|-------------------------------------|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> Same as enclosing folder | | See Folders | See Files | Make Changes |
| Owner : | <input type="text" value="Michael Fraase"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| User /Group : | <input type="text" value="Arts & Farces"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | Everyone | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Figure 33 Workgroup bulletin board folder access privileges.

Workgroup Folder

You may find it appropriate to share certain folders on your hard disk drive with the members of a single registered group. You can accomplish this by creating a workgroup folder.

Figure 34 shows the access privilege settings for a folder that is completely accessible to registered users of the "Arts & Farces" group and invisible

and completely inaccessible to anyone else on the network.

| | | | | |
|---|--|-------------------------------------|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> Same as enclosing folder | | See Folders | See Files | Make Changes |
| Owner : | <input type="text" value="Karen Fraase"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| User /Group : | <input type="text" value="Arts & Farces"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| | Everyone | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Figure 34 Workgroup folder access privileges.

Accessing Shared Folders

System 7's file sharing capabilities allow you to access *shared* folders and volumes across a network. These shared resources can belong to any workgroup member who has granted you access to their workspace.

Network etiquette demands that you use common sense when accessing shared folders and volumes on a remote computer's hard disk drive. It is not polite, for example, to transfer huge amounts of files when the owner of the shared resources is attempting to get work done.

It's a good idea to ask permission from the owner if you need to grab an abnormally large file (or a lot of relatively smaller ones). Both network and computer performance can be severely degraded if everyone's copying big files back and forth.

You can follow these steps to connect to a shared disk across an AppleTalk network.

1. Select the Chooser item from the Apple menu. The Chooser window will be opened

and will appear similar to the example shown in Figure 35.

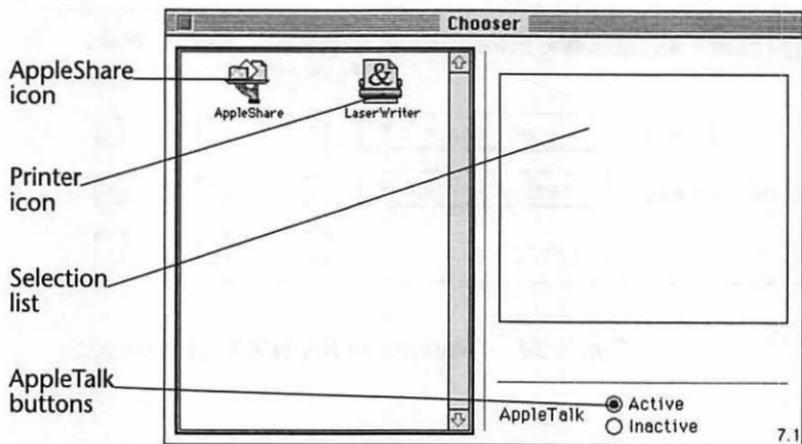


Figure 35 Chooser window.

2. Select the AppleShare icon. A scrolling list of available computers will appear in the right panel of the Chooser window, as shown in Figure 36.

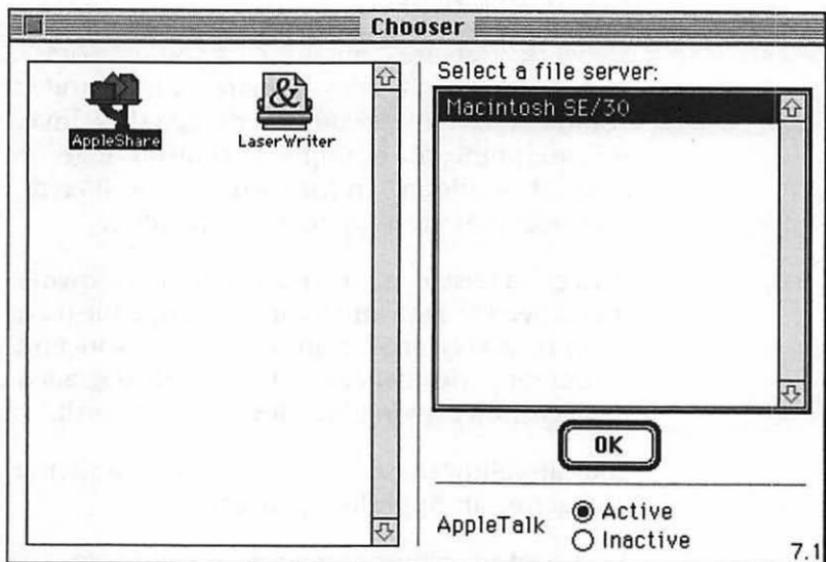


Figure 36 Available computers.

3. Select the name of the computer with the shared folders or disks you want to use from the scrolling list in the right panel of the Chooser window.
4. Click the OK button. The User Identification dialog box, similar to the one shown in Figure 37, will be displayed.

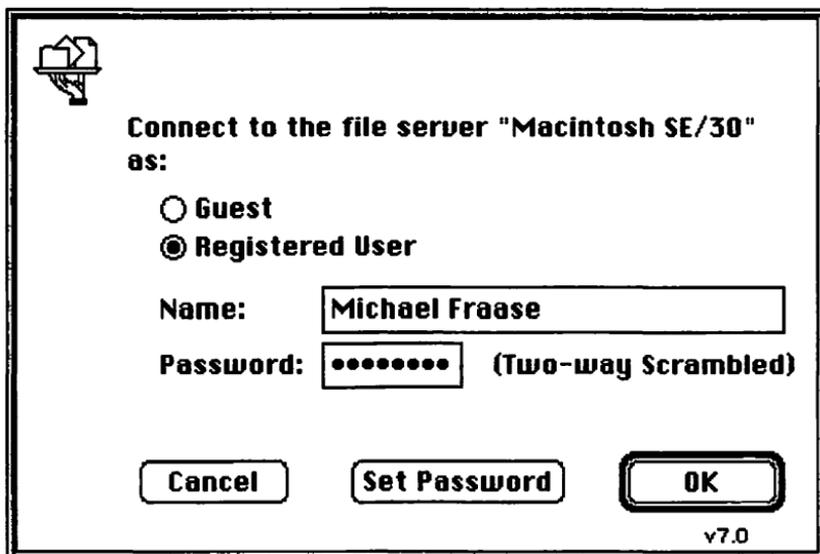


Figure 37 User identification dialog box.

5. Click the **Guest** radio button if you are not a registered user and proceed to step 7.
 - If the **Guest** radio button is dimmed, guests are not permitted access to this computer or server.
6. Click **Registered User** radio button.
7. Enter the name with which you are registered on the remote Macintosh in the Name field. This may vary from Mac to Mac.
8. Enter your password for use with this computer in the Password field.

9. Click the **OK** button. A list of available shared folders and disks will appear, similar to the example shown in Figure 38.

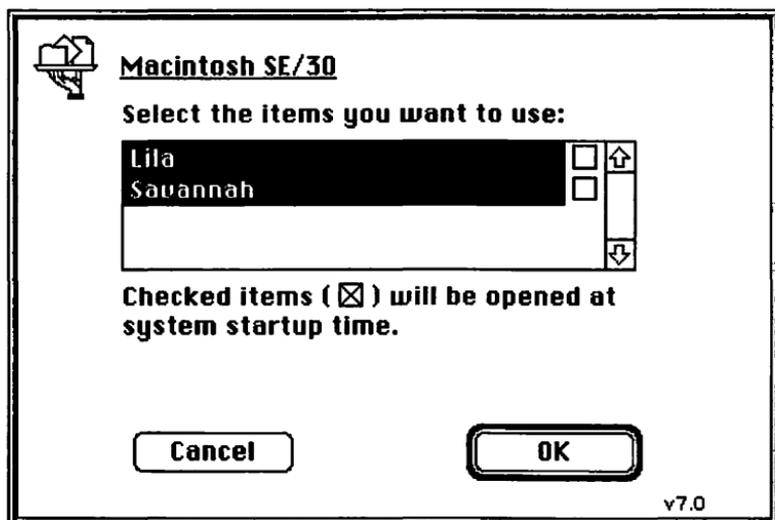


Figure 38 Available shared disks.

10. Select the name of the shared folder or disk you want to use from the scrolling list. You can select multiple items.
 - If an item in the list appears dimmed, you are already connected to the disk or it is not available to you.
11. Click the **OK** button. The selected disk will be mounted and its icon will appear on your desktop.

Automatic Access

You can use either of the following methods of automatically connecting to another computer. Either technique is especially useful if you use specific disks on a regular basis.

Automatic Connection at Startup

You can automatically connect to any available remote volume on the network each time you start your Macintosh by performing this set of steps.

1. Connect to the remote computer and select the items you want to use as explained in steps 1 through 10 in the previous section, Accessing Shared Folders, beginning on page 67.
2. Check the available disk's checkboxes to select the disks you want to mount automatically each time you start your Macintosh, as shown in Figure 39.

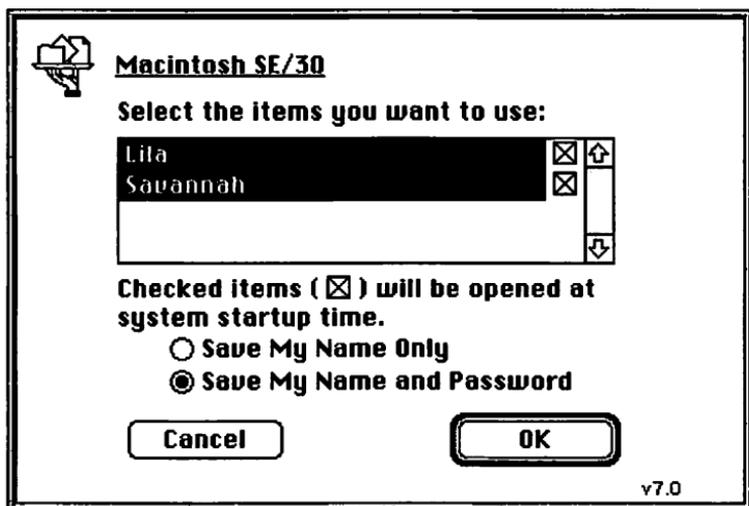


Figure 39 Automatic connection items.

When you check a shared disk's checkbox in the scrolling list, two radio buttons will appear.

- Check the **Save My Name Only** checkbox to be prompted to enter your password each time you connect to the shared disk.

- Check the **Save My Name and Password** checkbox to completely automate the connection process each time you access the shared disk.

Automatic Connection with an Alias

A potential problem with System 7's file sharing is the potential for users to create a mess of networked folders that is virtually unmanageable.

If you have access to a folder on a machine that is several zones away and nested several layers deep, you can make an alias for it and leave it on your desktop.

When you double-click the alias you will be automatically connected to the remote volume.

You can automatically connect to any available remote volume on the network via an alias with this set of steps.

1. Connect to the remote computer as explained in steps 1 through 11 in the section named *Accessing Shared Folders*, beginning on page 67.
2. Select the Finder icon of the shared disk that you will want to connect to later.
3. Select the *Make Alias* command from the File menu. An alias icon will be created and will appear next to the shared disk's icon. The alias icon will have an italicized name and the "alias" suffix.
4. Rename the alias if you like and locate it anywhere that you find convenient.

You can automatically connect to the volume represented by the alias at any time by double-clicking the alias icon.



Note: if you were connected to the volume as a registered user at the time you created the alias, you will be prompted for your password each time you connect to the remote volume. There is no way to connect to and automatically mount a remote volume on the desktop without being prompted for your password.

Disconnecting

You can disconnect from any remote volume by selecting the volume's icon within the Finder and dragging it to the trash icon. Alternatively, you can disconnect by selecting the volume's icon and selecting the Put Away command on the File menu.

You can disconnect any user from your shared volumes with these steps.

1. Open the File Sharing Monitor control panel by double-clicking on its icon.
2. Select the user you want to disconnect from the Connected Users scrolling list.
3. Click the **Disconnect** button.
4. Specify the number of minutes before disconnecting the user. The remote user will be alerted to the pending disconnection.
 - Specifying 0 minutes results in an immediate disconnection with no alert given to the remote user.

Network Follies

- When you turn on file sharing, you can no longer eject removable media such as CD-

ROMs, optical discs, or SyQuest cartridges. This is a “feature” built into System 7 that ensures that the Macintosh’s owner can get remote access to all drives, even those that have not been explicitly shared. The solution is to start up with all removable media removed from all devices. Doing so will preclude the removable media from being accessed remotely unless it is specifically shared after start up.

- If you leave your Mac on, an interloper can come in your office, alias your hard disk drive, place the alias in a shared folder, and root through your disk from any point on the network without your knowledge or your control.
- Changing the master file-sharing password does not require you to enter the previous password. All an interloper needs to do is change the password and root through the disk from any point on the network.

Publish & Subscribe

Publish and Subscribe is a logical extension to the information transfer capabilities inherent in the Clipboard, automating the exchange of information between documents. It's easiest to think of System 7's Create Publisher and Subscribe To commands as a *live* Copy and Paste.

To initiate Publish and Subscribe you *publish* a document (or a section of a document), resulting in the creation of an *edition* file. You (or other workgroup members with access to the edition file) *subscribe* to the edition, inserting its information into other documents.

When the linking has been completed, changes to the original document are propagated to the subscribing documents automatically.

Documents do not have to be open in order to receive edition updates. Edition updates are forwarded automatically when the document is opened. System 7's Publish and Subscribe capabilities also work in a seamless manner across a network. Edition updates are stored on non-shared disks and are automatically forwarded to the appropriate subscribers the next time you share the volume or folder.

Both the publisher and subscriber have some control over when the updating takes place, but the subscriber generally cannot modify the source published information.

It's easiest to remember that edition information always flows from the publisher to the subscriber. Subscribers can request edition updates, but they flow from the publisher.

Creating a Publisher

At the time of this writing, relatively few Macintosh applications support System 7's Publish and Subscribe capabilities. This is sure to change in the very near future.

This section and the next will use Deneba Software's Canvas as an example as it follows Apple's interface guidelines relatively closely.

Although the following two sections use Deneba Software's Canvas drawing program as an example, the Publish and Subscribe processes are very much the same in most applications.

You can use the following set of steps to create a Publisher within Canvas.

1. Launch Canvas.
2. Open the document containing the object you want to publish.
3. Select the object you want to publish within the Canvas window.
 - The Create Publisher... command on the Edit menu will be enabled.
4. Select the Create Publisher... command on the Edit menu. The Canvas Edit menu, com-

plete with the Edition Options submenu, is shown in Figure 40.

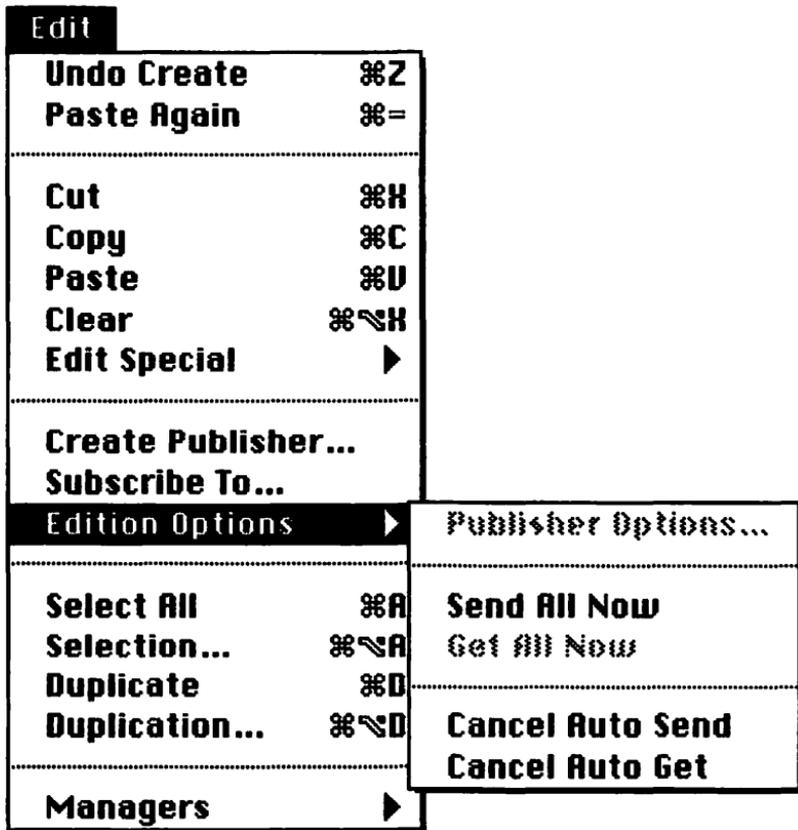


Figure 40 Canvas Edit menu and Edition Options submenu.

- *Note:* the Create Publisher... command is always disabled until you select an object or group of objects within a Canvas window. This is true for most programs, although some—Claris MacWrite Pro, for example—allow you to publish an entire document as well as sections.

5. Select the Create Publisher... command on the Edit menu. The Edition Preview dialog

box, similar to the one shown in Figure 41, will be displayed.

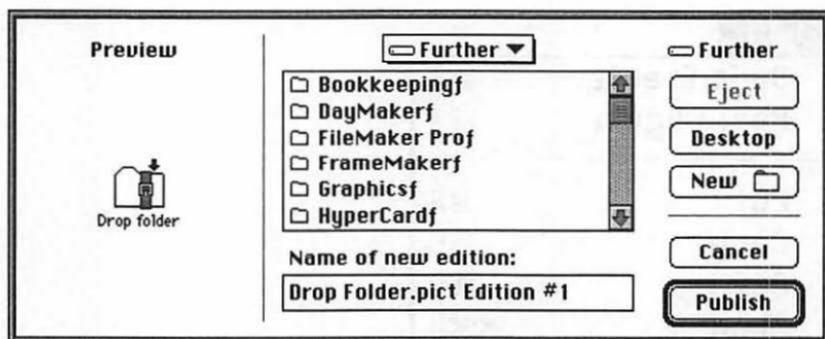


Figure 41 Edition Preview dialog box.

- *Note:* a thumbnail Preview image of the publisher material is available in the left panel of the dialog box.
6. Enter a name for the new edition.
 - When you create a publisher, you also create an edition at the same time. An edition is the separate file that you named in step 6; it can be located anywhere on your hard disk drive.
 7. Click the **Publish** button. The selected object in the Canvas window becomes a publisher, and the edition file is saved to the location on disk that you specified.

The Canvas window is updated to display a light gray box surrounding the borders of the publisher you have successfully created.

The edition file that is saved to disk when you create a publisher has a unique icon and can be opened but not edited.

You can edit the material contained in the edition by changing the publisher in the original file. Double-clicking on the Drop Folder.pict Edi-

tion #1 edition file icon opens its Edition window, shown in Figure 42, displaying the Preview of the publisher.

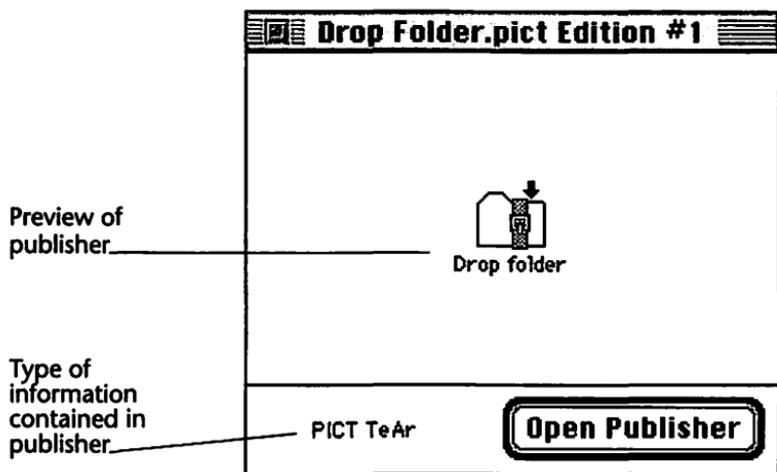


Figure 42 Edition window.

The publisher (in this case the Canvas file named Drop Folder.pict) is linked to the edition file (Drop Folder.pict Edition #1, in this example). The edition file is automatically updated each time you change the publisher.

A document can contain any number of publishers that are independent of each other. Some software applications let publishers overlap, allowing one publisher to include all or part of the information contained within another publisher.

- A *nested* publisher contains *all* the information contained within another publisher.
- An *overlapped* publisher contains only *part* of another publisher.

Apple's interface guidelines call for word processors to permit nested publishers, but not overlapped publishers. A drawing application, on the

other hand, should permit both nested and overlapped publishers.

Creating a Subscriber

You can use System 7's subscribe capability to use any edition file that you have created or to which you have access. You can even subscribe to edition files across a local area network.

The biggest advantage of using Publish and Subscribe to subscribe to an edition file—especially within networked workgroup situations—is consistency. Every workgroup member can be assured of using the same information.

A single edition file can be used—subscribed to—by any number of subscribers.

The following sequence explains the use of the edition file created in the previous section, *Creating a Publisher*, beginning on page 76.

This set of steps is non-application specific, but uses an edition file that contains only PICT-format information.

You can use the following set of steps to create a Subscriber within any application that supports System 7's Publish & Subscribe feature.

1. Launch the application you want to use.
2. Open the document in which you want to insert the edition. This document will contain the subscriber.
3. Set an insertion point where you want the edition to be placed.
4. Select the *Subscribe To...* command on the Edit menu. The Edition Preview dialog box,

similar to the one shown in Figure 43, will be displayed.

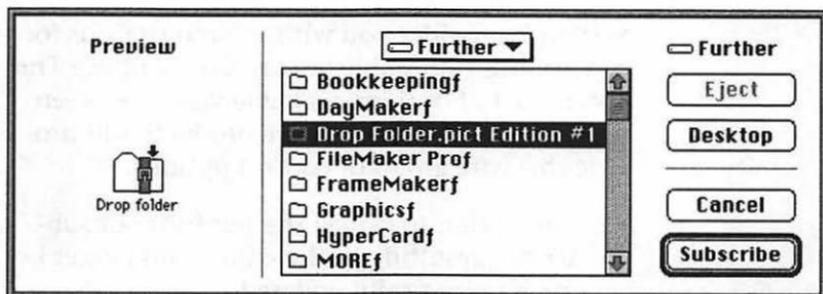


Figure 43 Edition Preview dialog box.

5. Navigate within the dialog box to locate the edition file you want to use.
6. Select the edition file you want to use.
 - *Note:* a Preview of the edition file is available in the left panel of the Edition Preview dialog box.
7. Click the **Subscribe** button. The edition file's contents are placed within your document at the insertion point.

The document window is updated to display a dark gray box surrounding the borders of the edition to which you have subscribed. You can reposition the subscriber anywhere within your document with the Cut and Paste commands on the Edit menu. The subscriber remains in the document until you cancel it or the publisher to which it subscribes.

The subscriber is linked to the edition file (Drop Folder.pict Edition #1 in this example). The edition file is automatically updated each time you change the publisher.

A document can contain any number of subscribers that are independent of each other.

Controlling Editions

System 7 provides you with various options for controlling your publishers and subscribers. The specific set of options available varies between programs, but most software products will provide this core group of control options.

- The option to cancel the publisher or subscriber, resulting in the edition no longer being automatically updated
- The option to see the date and time of the last edition update
- The option to open the publisher of any selected edition
- The option to see the disk location of the current publisher or subscriber
- The option to automatically update editions
- The option to manually update editions

For specific information about the various options available for controlling publishers and subscribers within your application programs, refer to the documentation that came with your specific software.

System 7 Tips

At about 100 pages, this book can only cover the major aspects of System 7; those things that you really need to know to become productive quickly. Important parts of System 7—Data Access Language (DAL), AppleEvents, and others—have not been covered in this book, because they are not yet of critical importance to most System 7 users. Others, such as Balloon Help, have not been covered because they are next to useless.

This chapter serves as a sort of collection area for important information that doesn't fit in any of the other chapters and yet doesn't warrant its own chapter.

Desk Accessories

Macintosh desk accessories have always been small application programs with a single menu. In System 7 desk accessories are treated just like any other application, and there is no need to install them in the System file. Many desk accessories were created for use before the advent of System 7, however, so there are some caveats to be aware of.

Older-style desk accessories are easily identified by their familiar suitcase icon. Before they can be used with System 7, they must be removed from the suitcase. You can accomplish this with a simple three-step procedure.

1. Double-click on the suitcase icon to open the suitcase file.
2. Drag the desk accessory out of the window and place it anywhere on your disk that you find convenient.
 - *Note:* if you drag the desk accessory to the System Folder icon, it will automatically be placed in the Apple Menu Items folder. This is not a requirement; desk accessories can reside anywhere on your disk.
3. Discard the empty suitcase file by dragging it to the trash.

Fortunately, most desk accessories that have been created since System 7 was released come with two versions: one for System 6.x users and one for System 7.x users. The System 7 versions are usually identical, but not “packed” in a desk accessory suitcase. They also usually have a unique icon.

Stationery Pads

A *stationery pad* is a template of a document that you can use an unlimited number of times as a master template or format pattern.

Many new applications, designed specifically for use with System 7, offer a **stationery** button in the Save As dialog box.

Here's how you can create a stationery pad from any existing document.

1. Select the document within the Finder.
2. Select the Get Info command from the File menu. The Info window for the document will be displayed, as shown in Figure 44.

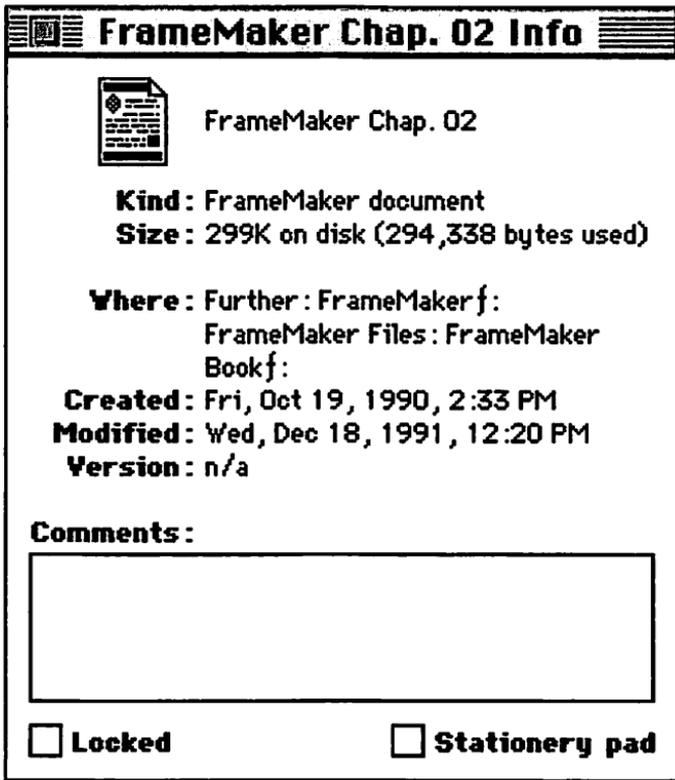


Figure 44 Document Info window.

3. Check the **Stationery pad** checkbox.
4. Click the close box in the Info window to save the document as a stationery pad.

You can open a stationery pad like any other document. If the application you're using supports stationery, a new, untitled document will be opened. If the application does not support stationery, you will be prompted to supply a name for the new document.

Memory Management

Most software applications work significantly better if you can give them a larger memory partition. The best rule of thumb is to give the applications you use most often the largest memory partition you can.

You can increase any inactive application's memory partition with these steps.

1. Select the application within the Finder.
2. Select the Get Info command from the File menu. The Info window for the selected application will be appear, as shown in the example in Figure 45.

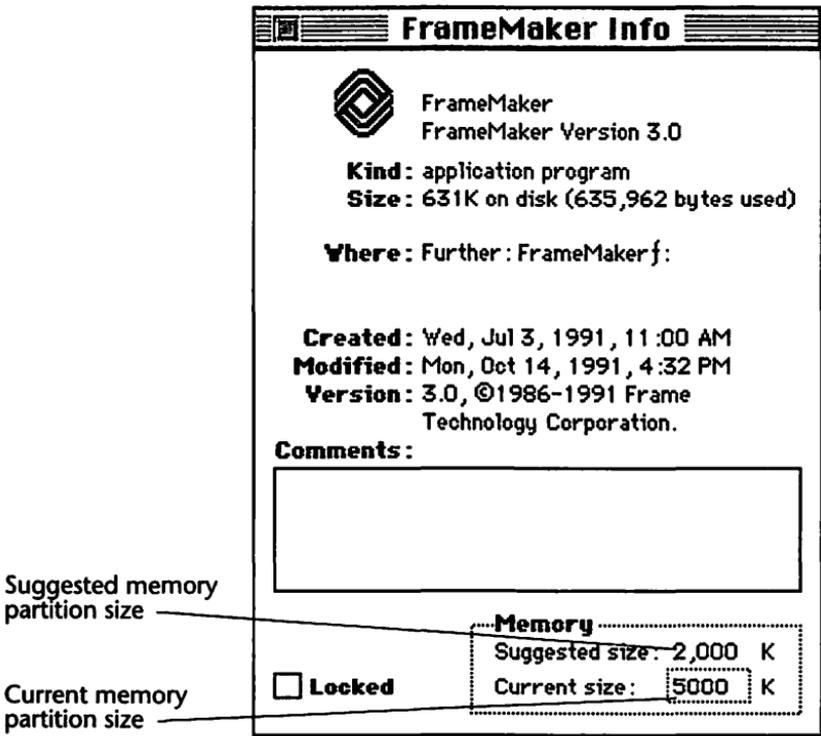


Figure 45 Application Info window.

3. Enter a number larger than the Suggested size in the Current size field.
4. Click the close box in the Info window to save your changes.

You can check the amount of memory your applications are using by selecting the About This Macintosh command from the Apple menu within the Finder.

The About This Macintosh window will be displayed with a graphic representation of the amount of memory used and available for each application that is currently open.

The more white space showing in each application's memory partition display, the better. Too much white space, indicates a waste of resources.

An example About This Macintosh window is shown in Figure 46.

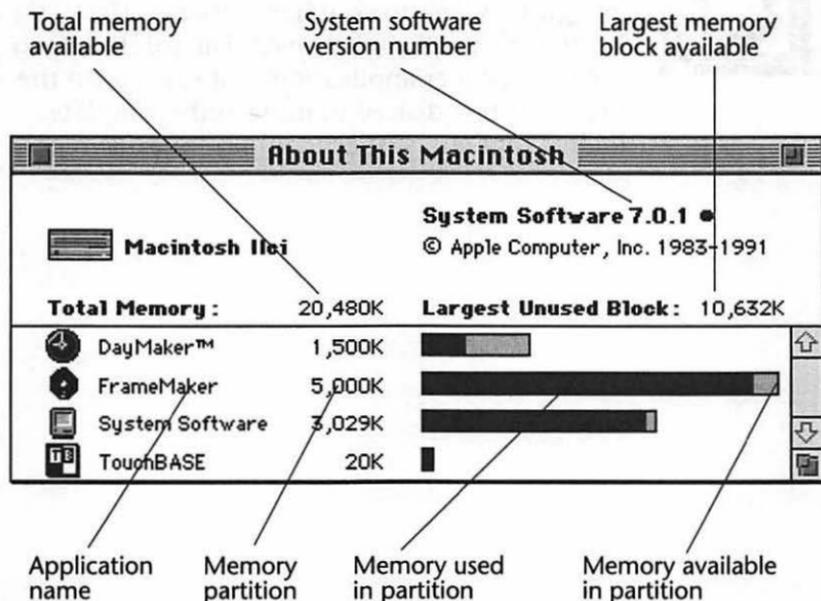


Figure 46 About this Macintosh window.

A Hidden Bug

For the most part, System 7 is the most stable and reliable system software release in Apple Computer's history. Given the immensity of a system software development project, Apple is to be highly commended for the hardiness of the most significant system software release in the company's history.

There is, however, one very significant bug in System 7 that can cause no end of grief if you don't understand what is happening. Frank Van Alstine, the patient soul who has output the camera-ready mechanicals for several of my books, found this bug.



System 7's disk-to-disk copy mechanism in the Finder doesn't copy invisible files. If you copy a master floppy disk that contains invisible files by dragging its icon to your hard disk drive icon, *the invisible files will not be copied*. The solution is to use the installer application that came with the master floppy disk or to move only complete folders that you suspect contain invisible files.

System 7 Tune-Up

Instead of issuing full incremental updates to System 7, which would require nine or more 800 KByte floppy disks, Apple Computer has begun to release System 7 Tune-Up disks.

The good news is that so far the Tune-Up disks have been distributed on a single 800 KByte floppy disk. This makes the software easily obtainable from the online services and user groups.

The bad news is that the Tune-Up adds one more potentially troublesome INIT (startup document) to the System soup.

The worst news is that the first System 7 Tune-Up could cause more problems than it solved in some circumstances.

As of June 1992, the current System 7 Tune-Up is version 1.1.1. The community consensus is that it is quite stable and addresses these issues:

- Printing is faster and less problematic. The version 1.1.1 Tune-Up disk contains a new LaserWriter driver. This is still a PostScript Level 1 driver; we're still waiting for the promised Level 2 drivers for the LaserWriter IIf and IIg.

- You can turn off AppleTalk to free up memory on computers that are not connected to a local area network. This is especially useful for the PowerBook notebook Macintoshes.
- Overall, memory is managed much better and fewer “out of memory” conditions will be encountered.
- A bug in the initial releases of System 7 caused files and folders to disappear in certain circumstances, with some hardware configurations. This has been fixed.

The Tune-Up software is installed using Apple’s Installer utility, although you can simply drag the software components to their proper locations. Information on using Apple’s Installer is provided in the Installing System 7 chapter beginning on page 9.



If you have installed an earlier version of the Tune-Up software than version 1.1.1, you must run the Disk First Aid program (found on the Disk Tools disk) before installing the new Tune-Up software. If Disk First Aid reports a problem with your hard disk that it cannot repair, some files and folders on the disk may appear to be lost. Use these steps to repair your disk.

1. Use the Finder’s Find command to locate lost files and folders.
2. Copy these items to a floppy disk.
3. Back up your hard disk drive.
4. Reformat your hard disk using the software that came with your drive.
5. Install System 7.0.1.
6. Install System 7 Tune-Up version 1.1.1.
7. Restore the contents of your hard disk from your backup.

How a LaserWriter Works

All laser printers work by combining light, electric charges, and plastic particles to produce a printed page, and the Apple LaserWriters are no exception.

All laser printers use the following sequence to produce a printed page.

1. The printer receives an image.
2. Inside the printer, a series of laser beams strike a drum that carries a negative electrical charge, creating areas of positive charge on the drum.
3. Negatively charged bits of black-plastic toner are attracted to the areas where the light beams have drawn an image.
4. Positively charged paper is passed through the roller, attracting the particles of toner from the drum.
5. The paper passes between two or more heated fusing rollers, causing the toner to bond to the paper.

All of the members of the Apple LaserWriter II family use similar imaging controllers and engines and identical paper paths.

The paper path for the LaserWriter II family is shown in Figure 47.

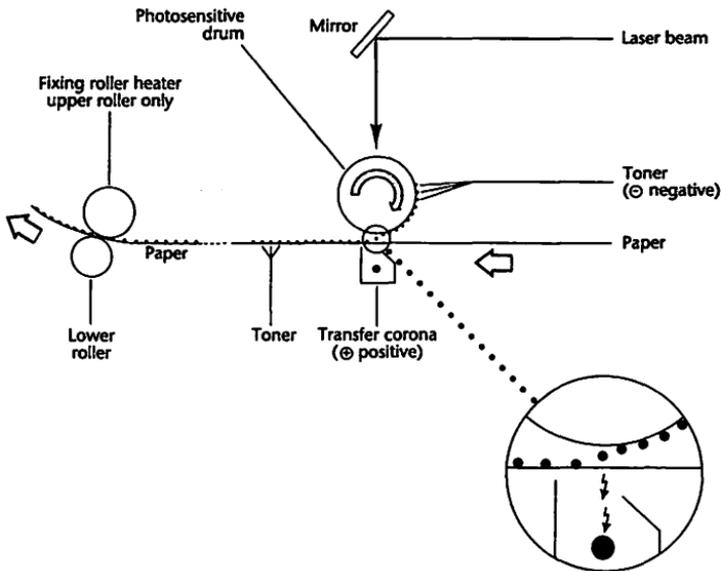


Figure 47 LaserWriter II paper path.

Printer performance is directly attributable to two components.

- The printer's engine
- The printer's controller

The Engine

The LaserWriter's engine is the part of the printer that actually marks and creates the printed page. Apple's LaserWriters are built around either the Canon LBP-LX or LBP-SX engine.

A laser printer's engine is usually rated in the number of pages per minute it can produce. Individuals or organizations that produce moder-

ately large amounts of documents need a printer with an engine that is capable of printing between 6–10 pages per minute.

The good news is that laser printer engines are getting faster and sharper. It is important to bear in mind, however, that most laser printers—especially those in the Macintosh environment—do not reach their rated speed except on the most simple documents.

The Resolution Issue

Most laser printers offer 300 dot-per-inch (dpi) resolution. Printers that offer higher resolution output produce documents that are sharper because the stair-stepped jagged edges are reduced. In addition, a higher resolution printer makes it possible to output halftone screens with more lines per inch.

There are three generally recognized ways, all currently in use, to increase the resolution of a laser printer engine.

- *Shorten the pulse of the printer engine's laser to apply more horizontal dots.* Printers that use this method are usually easy to recognize because they offer a horizontal resolution that is twice as high as the vertical resolution. Printers that shorten the laser pulse offer smoother characters and vertical lines, but produce landscape-format documents that are of lower quality.
- *Use software resolution enhancement tricks.* Some manufacturers, most notably Apple and Hewlett-Packard, increase a given printer engine's resolution by adjusting the size of the dots the printer prints, rather than increasing the number of dots that are output.

- *Use an engine that offers a higher resolution.* Some printers are a sort of hybrid. These printers are built around engines capable of producing higher resolution output combined with shortened laser pulses.

All of the Apple LaserWriters use a standard 300-dpi engine. The high-end LaserWriter IIf and LaserWriter IIg have additional proprietary circuitry that enhance resolution (covered in the FinePrint and PhotoGrade chapters).

The Controller

The LaserWriter's controller is the part of the printer that processes all print jobs and tells the printer's engine where to apply toner on the printed page.

Apple's LaserWriters use controllers based on the same Motorola processors that are used in the company's personal computers. In fact, the controller for the LaserWriter IIg is essentially a Macintosh Ici motherboard with added print-specific and networking features.

How well the printer can handle complex pages is a direct result of the printer's controller. A general rule of thumb for Macintosh printers is that a printer with a fast controller and a relatively slow engine is faster than a printer with a slow controller and a fast engine.

Controllers are getting faster and smarter. Only a few years ago, state of the art controllers were based on the Motorola 68020 processor. Now, most engines use fast 68030s or RISC (reduced instruction set computing) chip sets.

In some cases, most or all of the processing related to a print job takes place in the computer that

is connected to the laser printer. In these cases, the host computer is actually the laser printer controller.

A Hard Disk Connection

A Small Computer System Interface (SCSI) hard disk drive connection on the laser printer can be quite important if you work with a lot of downloadable fonts. Both the LaserWriter II_f and LaserWriter II_g offer a SCSI port.

A hard disk drive connected to your printer and loaded with fonts can speed most print jobs considerably, especially those documents that use fonts other than the ones included in the printer's ROM.

Using a hard disk drive connected to the laser printer eliminates the need to download fonts over the local area network. Fonts generally take about 30 seconds each to download across a LocalTalk network, and take less than a second when downloaded from a hard disk drive connected to the LaserWriter.

Laser Printer Classes

Laser printers can be classified as fitting into one of five broad categories.

- *Personal Printers* are non-PostScript printers that use a 4- to 6-page-per-minute engine. They cannot be shared across a network, and generally use the host computer to control the print engine. These printers use inexpensive print engines that are slow and rated for a relatively light duty cycle.

- *Personal PostScript Printers* use the same type of 4- to 6-page-per-minute print engine found in personal printers, but add PostScript to the equation. These printers sometimes have network ports, but their slow print engines preclude their use across a local area network.
- *Light-Duty PostScript Printers* are usually built around an 8-page-per-minute engine, and employ a controller based on a 68000 processor. These printers are inexpensive enough to be distributed among small workgroup members on a single network.
- *Medium-Duty PostScript Printers* are based on an 8- to 12-page-per-minute engine, and use a 68020-, 68030-, or RISC-based controller. They are appropriate for a five to ten-member workgroup.
- *Heavy-Duty PostScript Printers* use 12- to 22-page-per-minute engines coupled with 68030- or RISC-based controller. They usually have large or multiple paper trays and are capable of large volume printing.

The LaserWriter Family

Apple Computer's LaserWriter family of printers all fall within the Laser Printer Classes presented on page 95, with the exception of the heavy-duty PostScript category. At this time, Apple does not market a printer with large enough paper trays to be appropriate for heavy-duty use.

Apple's LaserWriters can be categorized as either personal printers or workgroup printers. The categories are based on the capabilities of the print engines and controllers they use and their ability to be shared by workgroup members across a local area network.

Personal LaserWriters

The personal LaserWriters (Personal LaserWriter LS and Personal LaserWriter NT) are designed for use by an individual, even though the Personal LaserWriter NT has a built-in LocalTalk port.

The personal LaserWriters are built around an engine—the Canon LBP-LX—that is too slow for use by most workgroups. The engine is rated at an output capacity of 4 pages per minute. In a

real-world setting, the actual throughput of printed pages is significantly less.

Either of Apple's Personal LaserWriters are appropriate for use by a single user and a good choice if your printing needs are moderate and not likely to grow in the foreseeable future.

Personal LaserWriter LS

Apple's Personal LaserWriter LS is positioned as an inexpensive, entry-level, non-PostScript laser printer offering modest performance and no expandability. The Personal LaserWriter LS cannot be upgraded to PostScript.

The closest competitor to this printer is the Hewlett-Packard LaserJet IIP, a printer that can be upgraded to PostScript and used on a network for less money.

The Personal LaserWriter LS is truly a personal printer; it cannot be shared across a local area network, and instead is connected to the serial port of any Macintosh.

The Personal LaserWriter LS, like the other members of Apple's Personal LaserWriter family, is built around the Canon LBP-LX engine. The Canon LBP-LX engine is rated at 4 pages per minute. You can expect output speed at about one page per minute when the Personal LaserWriter LS is attached to a low-end Macintosh such as the LC or Classic and about two pages per minute with 68030-based Macintosh models such as the IIsi or IIfx.

The output capability of the Personal LaserWriter LS—because it is a “dumb” printer (relying on the processing power of the computer to which it is attached to rasterize a page)—is dependent

on the host Macintosh's processing power. According to Apple, the minimum configuration would be a 1 MByte Macintosh with a hard disk drive running System 6.0.7.

The Canon LBP-LX engine has a rated life cycle of 150,000 pages over five years with no monthly maximum, and each toner cartridge is rated for about 3,500 pages.

The print controller used in the Personal LaserWriter LS is based on a Motorola 68000 processor running at 8 MHz.

The Personal LaserWriter LS comes with 512 KBytes of RAM installed, and there is no provision for adding more memory.

According to Apple, the printer incorporates proprietary data compression/decompression technology that allows the Personal LaserWriter LS to work as if it had 2.5 MBytes of RAM installed. This appears to be a valid claim.

A 50-page paper tray is built into the printer. You can adjust the paper tray to accommodate letter, legal-, A4-, and B5-size paper. The Personal LaserWriter LS paper tray can also be used to feed envelopes to the printer.

A 250-sheet paper cassette is available for \$79, but requires the addition of a paper feeder, available for an additional \$120. A legal-sized paper tray costs \$79, and an envelope cassette that holds 15 envelopes costs \$89.

Apple has always been fairly competitive with its laser printer pricing, and the Personal LaserWriter LS is an indication of Apple's renewed interest in the lower end of the market.

The Personal LaserWriter LS carries a suggested retail price of \$1299—\$700 less than its LaserWriter IISC predecessor.

Instead of attaching to the SCSI port, like the Personal LaserWriter SC does, the LS attaches to any Macintosh's serial port.

This isn't nearly as bad as it sounds, because the printer externally clocks the Macintosh's serial port to achieve a transfer rate of 909 KBits per second; almost four times the speed LocalTalk can accomplish.

QuickDraw vs. PostScript

Apple's Personal LaserWriter LS is the only member of the LaserWriter family that uses Apple's proprietary QuickDraw to image a page instead of Adobe Systems Inc.'s PostScript page description language.

QuickDraw is a set of graphic routines stored within the Macintosh ROM and system software. The routines are used by all Macintosh applications—including PostScript applications—to display images on the screen.

A QuickDraw printer works in basically the same way. The printer's driver software takes the 72-dpi QuickDraw screen image and converts it into a 300-dpi bit map image that is then sent to the printer.

The standard rule of thumb for QuickDraw printers is that the faster the Macintosh used, the faster the printing results.

QuickDraw is appropriate for many business tasks, especially those that are text-based. QuickDraw printers are incapable of printing PostScript images, however, so they are inappropriate for most desktop publishing and graphic design tasks. If you print mostly spreadsheets and letters, a QuickDraw printer will serve you well. If your work entails printing any other sort of doc-



uments, however, you would do well to consider a PostScript printer.

QuickDraw printers like the Personal LaserWriter LS are less expensive than PostScript printers for two reasons.

- Adobe PostScript licenses are avoided
- The Macintosh is used to rasterize images instead of the printer

Apple's Personal LaserWriter LS comes with a TrueType startup document for use under System 6.x, and the printer utilizes the TrueType technology built into System 7. Four TrueType fonts are also included with the Personal LaserWriter LS: Courier, Helvetica, Times, and Symbol; the original LaserWriter font set.

Adobe Systems Inc.'s Adobe Type Manager can also be used with the Personal LaserWriter LS with no problem, giving you access to the entire PostScript Type 1 font library.

For more information on TrueType and PostScript Type 1 fonts, refer to TrueType vs. Type 1 Fonts beginning on page 131.

Personal LaserWriter NT

Apple's Personal LaserWriter NT is positioned as an entry-level PostScript laser printer offering modest performance and limited expandability.

The Personal LaserWriter NT is a PostScript Level 1 printer, and carries a retail price of \$2599, about double that of the Personal LaserWriter LS.

The extra money is well spent, however, since you get a true PostScript printer and a little room for growth.

Built around the Canon LBP-LX engine, rated at 4 pages per minute, the Personal LaserWriter NT is Apple's least expensive PostScript printer. The Canon LBP-LX engine has a rated life cycle of 150,000 pages over five years with no monthly maximum, and each toner cartridge is rated for about 3,500 pages.

The controller used in the Personal LaserWriter NT is based on a Motorola 68000 running at 12 MHz and PostScript v51.8. The ROMs in the printer are mounted on removable SIMMs.

Because the version of PostScript in the Personal LaserWriter NT includes the type-rasterizing code developed for Adobe Type Manager, the printer actually outperforms earlier Apple PostScript LaserWriter models in some areas.

The printer also offers Diablo 630 and Hewlett-Packard LaserJet Plus emulation.

When printing pages composed of all text, however, the Personal LaserWriter NT quickly bumps into the limitations of its 4-page-per-minute engine. In fact, the printer is able to image text pages faster than the Canon LBP-LX engine is capable of keeping up with.

The Personal LaserWriter NT is networkable with a built-in LocalTalk port. The LocalTalk connection is accomplished with a special co-processor, the Peripheral Interface Controller (PIC) chip. The PIC chip off-loads all LocalTalk traffic handling from the printer's main processor, resulting in faster throughput than competing printers with faster controllers.

A 25-pin RS-422 serial port is also provided. This port can be used to connect to computers without LocalTalk. The serial port settings and emulation modes are selected with a push-wheel switch on the back of the printer.

A 250-sheet paper cassette is standard. A legal cassette is available for \$79, and an envelope cassette costs \$89.

Apple's Personal LaserWriter NT comes standard with 2 MBytes of RAM which is barely adequate for a PostScript printer.

The Personal LaserWriter NT's RAM limitation is especially apparent when working with a lot of downloadable fonts. When a PostScript font is downloaded from the computer to the printer, it is sent as an outline. The printer then creates a bit map from the outline description.

The bit maps are stored in the printer's memory for as long as possible, but they are relatively large and when memory is needed for another task, the bit maps are flushed from the printer's memory. When the font is needed again, the printer has to create the bit map from scratch.

A simple rule of thumb is that the more RAM a PostScript printer has, the less likely font bit maps will be flushed, resulting in significantly faster printing times.

The good news is that the Personal LaserWriter NT uses standard SIMM slots for both RAM and ROM. You can upgrade the printer's RAM by replacing the two 1 MByte RAM SIMMs with 4 MByte SIMMs, bringing the RAM capacity up to a very respectable 8 MBytes. Future versions of PostScript would only require a ROM swap, although anything that even remotely resembles a ROM upgrade is something Apple historically has been very hesitant to provide.

Apple's Personal LaserWriter NT is best suited for the individual that works alone and needs PostScript output. Because it has a LocalTalk port, it can be shared between two or three users with very light-duty printing needs.

Workgroup LaserWriters

Apple's workgroup LaserWriters (the LaserWriter IIf and LaserWriter IIg) are designed for use by networked members of workgroups. Both models come with built-in networking (the LaserWriter IIg offers Ethernet support) and relatively fast engines and controllers.

The LaserWriter IIf and LaserWriter IIg represent Apple Computer's initial entry into the resolution enhancement laser printer market. Although both printers use the standard 300-dpi Canon LBP-SX engine—the same engine used in their predecessors—software enhancements are provided to boost the quality level of text, line art, and gray scale images.

Both printers use FinePrint to perform anti-aliasing on text. This significantly reduces the jagged edge effect that is common with 300-dpi laser printers. Apple claims that FinePrint has no impact on printing performance, and tests bear this out. For more information on Apple's FinePrint technology, refer to the information beginning on page 115.

PhotoGrade provides almost 70 shades of gray, allowing you to create artwork that previously was available only on printers that offered resolutions of 1000 dpi or higher. PhotoGrade is standard on the LaserWriter IIg and optional on the LaserWriter IIf with a RAM upgrade. For more information on PhotoGrade, refer to the information beginning on page 117.

The workgroup LaserWriters are built around the Canon LBP-SX engine, rated at 8 pages-per-minute. Although based on the same engine as the discontinued LaserWriter IINT and LaserWriter IINTX, a new toner cartridge has been designed for use with the newer models.

The new toner cartridge design addresses four problems with the original cartridge design.

- Toner leakage on the right edge of the page
- Horizontal banding and streaking as the toner cartridge ages
- Ghosting effects on filled areas of the page
- Insufficient black density



Because banding and streaking is more apparent on the LaserWriter IIg, the newly designed toner cartridge is required on that printer. Its use is optional on other LaserWriter II-family printers, although strongly recommended for the LaserWriter IIf.

The LaserWriter IIf and LaserWriter IIg are appropriate for all but the largest workgroups.

LaserWriter IIf

The LaserWriter IIf provides full PostScript Level 2 support and uses a controller based on a Motorola 68030 processor running at 20 MHz—the same processor used in the Macintosh IIsi. This is a significantly faster controller than those used in earlier LaserWriter models.

For more information about Adobe Systems Inc.'s PostScript Level 2, refer to the PostScript Level 2 chapter beginning on page 125.

The LaserWriter IIf performs at about the same speed as the LaserWriter IINTX on text-intensive documents, but about 25% faster on graphics-intensive pages.

Two MBytes of RAM is standard on the LaserWriter IIf, and you can upgrade to a total of 32

MBytes of memory using 4 MByte SIMMs. There are eight standard SIMM slots on the LaserWriter IIf motherboard, and standard configuration 80 ns SIMMs can be used.

Because of the increased efficiency of PostScript Level 2, Apple claims that the standard 2 MBytes of RAM on the LaserWriter IIf should allow most users to download more fonts than was possible with the LaserWriter IINTX. Preliminary testing validates this claim.

Apple's LaserWriter IIf supports memory configurations of 2, 4, 5, 8, 16, 17, and 32 MBytes.



The LaserWriter IIf does not come with enough installed RAM to support Apple's PhotoGrade technology. You must upgrade to a total of at least 4 MBytes of memory in order to use the enhanced gray scale technology offered by Apple's PhotoGrade.

Both the LaserWriter IIf and LaserWriter IIG offer a built-in TrueType rasterizer, although very little mention of this was made when the printers were introduced. TrueType versions of the standard LaserWriter Plus font set—Avant Garde, Bookman, Courier, Helvetica, Helvetica Narrow, New Century Schoolbook, Palatino, Symbol, Times, Zapf Chancery, and Zapf Dingbats—are included on floppy disk.

For more information on TrueType and Adobe Type 1 PostScript fonts, refer to TrueType vs. Type 1 Fonts, beginning on page 131.

Both the LaserWriter IIf and the LaserWriter IIG automatically arbitrate connections between the available communications ports (serial and LocalTalk on the LaserWriter IIf; serial, LocalTalk, and Ethernet on the LaserWriter IIG). This allows each port to be physically connected to a different source. This feature is called All Ports Active

and more information is provided in the LaserWriter IIg section, beginning on page 108.

The LaserWriter IIf features 2 MBytes of ROM and a SCSI port for hard disk drives.



Because ROM space is severely limited in the LaserWriter IIf and LaserWriter IIg, the ITC Zapf Dingbats PostScript Type 1 font was removed from the ROM of both printers. The font is included—on the font disk—as a downloadable font.

LaserWriter IIf/IIg Driver

As of late 1991, the LaserWriter driver that ships with the LaserWriter IIf and LaserWriter IIg is the System 7.0 LaserWriter driver. This driver does not support any of the PostScript Level 2 features. A new driver is being developed by Adobe that is scheduled to be available in the first quarter of 1992.

The new Adobe printer driver will take full advantage of the PostScript Level 2 features and will be made available to LaserWriter IIf and LaserWriter IIg owners free of charge. When it becomes available, the Adobe driver will become the standard LaserWriter driver and will be distributed by Apple.

For more information on PostScript Level 2 and its advantages, refer to the information beginning on page 125.

The LaserWriter IIf and LaserWriter IIg each offer a minimum duty cycle of 300,000 pages, with no monthly page limit. This is the rough equivalent of printing 200 pages per day, five days a week, for more than five years. The toner cartridge is rated to produce 4,000 pages at a five percent print density.

LaserWriter IIf/Ilg Utility Software

You can use the utility software provided with the LaserWriter IIf and LaserWriter Ilg to control these functions:

- *Disable Start:* Disable/enable startup page each time the LaserWriter is turned on.
- *Calibrate:* Download an alternate hardware gray-scale enhanced calibration table and print a test page.
- *Select Halftone:* Set the PostScript screen interpreter to use a specific halftone screen and print a test page.
- *Enable:* Enable/disable the FinePrint text and line anti-aliasing feature.
- *Configuration:* Set the parameters for user defined switch settings (emulation, baud rate, data length, handshaking, port, and cut sheet feeder). Also provides a way to set Ethernet network addresses.
- *Naming:* Change the name of the printer.
- *Download Fonts:* Download PostScript and TrueType fonts to the printer's memory or hard disk drive.

LaserWriter Ilg

The Apple LaserWriter Ilg offers all of the features of the LaserWriter IIf and adds more standard memory, standard PhotoGrade, a faster processor, and support for Ethernet.

The LaserWriter Ilg uses a controller built around the Motorola 68030 processor running at 25 MHz—the same processor and speed used in the Macintosh IIfx.

In fact, the LaserWriter IIg's motherboard is for all practical purposes identical to the Macintosh IIfx motherboard with additional chips for printing-specific tasks.

The standard configuration allows the LaserWriter IIg to perform at about the same speed as the LaserWriter IINTX on text-intensive documents, but about 25% faster on graphics-intensive pages. When the Ethernet port is used, performance is about 35% faster than the LaserWriter IINTX and about 10% faster than the LaserWriter IIf.

5 MBytes of memory is standard on the LaserWriter IIg. You can upgrade the printer to a total of 32 MBytes (using 4 MByte SIMMs). There are 8 standard SIMM slots, and standard 80 ns SIMMs can be used.

Although the LaserWriter IIg ships with more than twice as much RAM as the LaserWriter IIf, it's important to note that the PhotoGrade gray scale printing offered by the LaserWriter IIg requires four times more memory to store a full page of text and graphics.

The LaserWriter IIg supports memory configurations of 4, 5, 8, 16, 17, and 32 MBytes.

Apple's LaserWriter IIg supports both TrueType and PostScript outline fonts, and includes a built-in TrueType rasterizer.

For more information on TrueType and Adobe Type 1 PostScript fonts, refer to TrueType vs. Type 1 Fonts, beginning on page 131.

EtherTalk Port

The LaserWriter IIg uses the National SONIC chip running at 25 MHz to provide EtherTalk support.

The EtherTalk implementation on the LaserWriter IIg is identical as on Apple's original Ethernet NB card.

The LaserWriter IIg offers a feature Apple calls All Ports Active, that allows the printer to be connected simultaneously to a LocalTalk and an EtherTalk network as well as to a PC via the serial port. All Ports Active monitors the ports and switches automatically between the ports based on incoming traffic. (The LaserWriter IIif can switch automatically between its LocalTalk and serial ports.)

Because Adobe's PostScript language is limited to processing only one job at a time, all ports are polled in turn until activity is sensed on one of the ports. Port polling is then terminated as the job begins. When the print job finishes, polling of all ports resumes.

Paper Handling

Both workgroup LaserWriters share identical paper handling characteristics. Apple recommends 16- to 20-lb. paper in normal mode, and up to 36-lb. paper stock in manual mode with the face-up tray open. I've been running 24-lb. bond paper stock through my LaserWriter II for over four years with no problems.

The LaserWriter IIif and LaserWriter IIg each come with a 200-sheet capacity paper cassette, and an optional 15-envelope cassette is available. An adjustable manual feed is also standard for use with single pages and envelopes. All standard envelope sizes are supported, with a 3.5- by 7-inch minimum.

All of the Apple LaserWriters are incapable of printing to the edge of a page, making bleeds im-

possible. The minimum margins on all four sides—top, bottom, left, and right—is 0.197 inches (5.0 mm).

Power Consumption

Laser printers require a lot of power to generate enough heat to fuse the toner to the paper. This can be a concern if you live in a building with older wiring.

The LaserWriter IIf and LaserWriter IIg are typical of most laser printers in their electricity consumption. In North America, either model requires about 170 watts in standby mode and about 900 watts while printing.

This is a lot of electricity consumption. Turn your LaserWriter off if you're not going to use it for the next couple of hours. The LaserWriters generate a lot of heat as well, and your workspace will be more comfortable with the printer off.

Surge suppression devices become very important if you are using laser printers in your work environment. They provide protection for the printer as well as your computer and peripheral devices.

LaserWriter II Upgrades

Apple markets the LaserWriter IIf and LaserWriter IIg controllers as upgrade products for owners of discontinued LaserWriter II-family printers (LaserWriter IISC, LaserWriter IINT, and LaserWriter IINTX).

The LaserWriter IIf upgrade is an especially attractive bargain for most owners of older LaserWriter II models.

LaserWriter Family Comparison

Figure 48 shows a table comparing the various members of Apple's LaserWriter family.

| | Personal LaserWriter LS | Personal LaserWriter NT | LaserWriter IIf | LaserWriter IIg |
|-----------------------|-------------------------------|-------------------------------|--------------------|-----------------------|
| Retail price | \$1,299 | \$2,599 | \$3,599 | \$4,599 |
| Engine | Canon LBP-LX | Canon LBP-LX | Canon LBP-SX | Canon LBP-SX |
| Engine speed | 4 ppm | 4 ppm | 8 ppm | 8 ppm |
| Memory | 512 KB | 2 MB | 2 MB | 5 MB |
| Monthly duty cycle | 2,500 pages | 2,500 pages | Unlimited | Unlimited |
| Engine life | 150,000 pages | 150,000 pages | 300,000 pages | 300,000 pages |
| Network support | No | LocalTalk | LocalTalk | LocalTalk Ethernet |
| PostScript | No | Yes | Yes | Yes |
| Outline fonts | 13 TrueType | 35 PostScript | 35 PostScript | 35 PostScript |
| Toner copies | \$99 3,500 | \$99 3,500 | \$129 4,000 | \$129 4,000 |
| Cost per page | \$0.02 | \$0.02 | \$0.03 | \$0.03 |

Figure 48 LaserWriter family comparison.

Selecting a LaserWriter

If you work by yourself, print only basic text and graphics, and print less than 100 pages per day, the Personal LaserWriter LS is an appropriate choice and will meet your printing needs.

If you work with one or two other people and produce more complex documents that still total less than 100 pages per day, the Personal LaserWriter NT is your best choice.

If you are part of a small workgroup or if you produce longer documents that contain sophisticated text and graphics, the LaserWriter IIf with at least 5 MBytes of RAM is your best option. The LaserWriter IIf is the most appropriate choice for most Macintosh users.

If you are part of a workgroup of moderate size, producing documents with complex text and graphic elements, you will need the Ethernet capabilities offered only by the LaserWriter IIG.

The Apple LaserWriter family compares favorably with competing printers from other vendors. Hewlett-Packard's LaserJet III, for example, enjoys approximately an 80 percent market share in the IBM PC and compatible market.

The LaserJet III was the first laser printer on the market to offer edge smoothing (Hewlett-Packard's proprietary Resolution Enhancement Technology) for improved text quality.

The LaserJet III is designed primarily as a PCL printer, however, and when PostScript is added to the Hewlett-Packard printer, performance suffers. In addition, when used in a mixed computing platform environment, the Hewlett-Packard LaserJet III must be restarted to switch between PostScript and its native PCL.

For most Macintosh users, the LaserWriter IIf is a significantly better choice than the Hewlett-Packard LaserJet III. The LaserWriter IIf was designed as a high-speed shared printer offering roughly seven times the performance of the Hewlett-Packard LaserJet III. Additionally, Apple's LaserWriter IIf offers PostScript Level 2 and much better support for mixed computing platform environments.

Problems with Legal Size Printing



Note that the standard LaserWriter IIf and LaserWriter IIg do not support full legal size printing. At the standard RAM configuration of 2 MBytes the LaserWriter IIf is incapable of printing a full legal page. Similarly, the LaserWriter IIg is incapable of printing a full gray-scale legal page with its standard RAM configuration of 5 MBytes.

In order to print full legal pages, the LaserWriter IIf must be upgraded to at least 5 MBytes and the LaserWriter IIg must be upgraded to at least 8 MBytes of RAM.

FinePrint

FinePrint is Apple's proprietary text-smoothing algorithm that images type in a more pleasing manner. The technology is standard on both the LaserWriter IIf and LaserWriter IIg.

Apple claims its FinePrint technology is better than Hewlett-Packard's Resolution Enhancement Technology (RET), and this seems to be an accurate claim, except at small point sizes.

FinePrint output on a LaserWriter IIf or LaserWriter IIg looks significantly better than output from previous LaserWriter models, but it doesn't improve legibility of type at less than 8 points. Hewlett-Packard's competing Resolution Enhancement Technology produces better looking type at small point sizes.

Even though Hewlett-Packard's Resolution Enhancement Technology produces better small-size type, FinePrint offers three distinct advantages over Hewlett-Packard's RET:

- FinePrint works on any kind of text or line; RET operates only on a fixed set of patterns. Letterforms or lines that fall outside of the specific patterns are not enhanced by the Hewlett-Packard technology.

- FinePrint maintains the integrity of letterforms to a significantly greater degree than RET. Hewlett-Packard's RET enhances serif type, for example, by actually extending the serif of the letterform.
- FinePrint smooths edges at more than 2400 dpi; Hewlett-Packard's RET smooths edges at up to 900 dpi.

Apple's FinePrint technology works by expanding or contracting the pixels of a letterform to create smoother edges, using the logic shown in Figure 49.

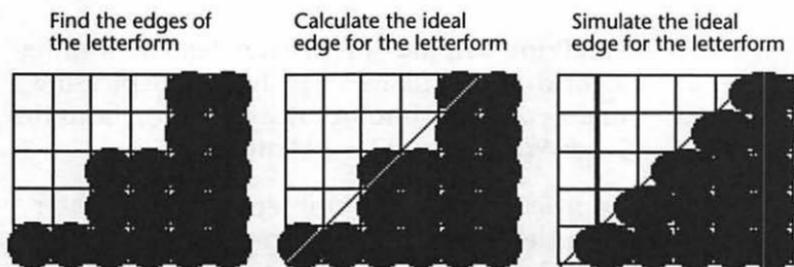


Figure 49 *FinePrint typographic logic.*

Apple claims that FinePrint is capable of altering individual pixels at a horizontal resolution of more than 2400 dpi.

FinePrint manipulates existing dots rather than using smaller individual dots because Apple believes that currently available printer engines and toner are incapable of translating smaller theoretical dots to the page.

PhotoGrade

Apple Computer's proprietary gray-scale enhancement technology—PhotoGrade—is one of the most impressive features of the LaserWriter IIf and LaserWriter IIg. PhotoGrade is a standard feature of the LaserWriter IIg and is available as a user-installable option (with a simple memory upgrade) on the LaserWriter IIf.



To upgrade a LaserWriter IIf to support Apple's PhotoGrade gray-scale enhancement technology, you need only add at least 3 additional MBytes of memory. PhotoGrade technology is built into both the LaserWriter IIf and LaserWriter IIg, but requires a minimum of 5 Mbytes of memory.



A memory upgrade to support PhotoGrade is the most important addition you can make to the LaserWriter IIf. In fact, if you do not need the faster networking offered by the LaserWriter IIg, the LaserWriter IIf may be a better choice. The 5 MHz difference in the processor's clock speed is all but unnoticeable, and the printers are otherwise identical.

Even though the LaserWriter IIf and LaserWriter IIg are based on the same Canon LBP-SX engine as Apple's earlier printers, PhotoGrade doubles

the LaserWriter II family's default screen frequency from 53-lines-per inch (lpi) to 106-lpi.

PhotoGrade also more than doubles the range of achievable gray shades from 33 to 67—twice the number of gray shades that a standard 600-dpi printer can image at the same line frequency. Also impressive is that PhotoGrade accomplishes this in only 5 MBytes of RAM; a standard 600-dpi printer requires 8 MBytes to image the same page.

PhotoGrade significantly improves the appearance of gray scale images. A standard 300-dpi printer's optimum halftone screen is from 50–60-lpi, allowing for about 30 levels of gray. PhotoGrade is capable of screens up to 106 lpi, allowing for 67 shades of gray.

Apple's PhotoGrade technology is theoretically capable of dividing a single 300-dpi pixel into 16 discrete pixel sizes. The practical capability is limited to about 8 discrete pixel sizes, however, because charged toner particles tend to attract more toner particles.

Gray Scale Printing

Face the fact that regardless of the laser printer you are using, it cannot match the quality of the gray scale image you can display on your screen. Gray scale monitors are capable of producing up to 256 shades of gray. Laser printers are incapable of producing anything other than black (or other colored toner) dots on paper. Laser printers use a process called *half-toning* to simulate gray shades by using dots of varying sizes.

The printer combines the smallest dots it can create into clusters called cells. The printer then

turns on different numbers of dots within each cell. The number of cells per square inch corresponds to the screen frequency, and is usually measured in lines per inch (lpi).

As dots are combined into cells, resolution drops drastically:

- A 300-dpi laser printer's optimal halftone screen frequency is about 53-lpi.
- Newspapers generally use an 85-lpi halftone screen.
- Magazines use 133- to 150-line screens.

To create halftones with higher screens, the printer is forced to use fewer dots per cell. The fewer the dots available, the fewer the grays each cell can represent. At 53-lpi, for example, a 300-dpi printer is capable of producing only 30 gray levels. At 100-lpi, the same printer is limited to producing only 9 gray levels.

As the resolution of the printer is increased, halftone screen capability also increases:

- A 600-dpi printer is capable of producing 85-lpi halftones.
- PhotoGrade allows the LaserWriter IIg to produce 106-lpi halftones.
- Imagesetters produce 120-lpi halftones.

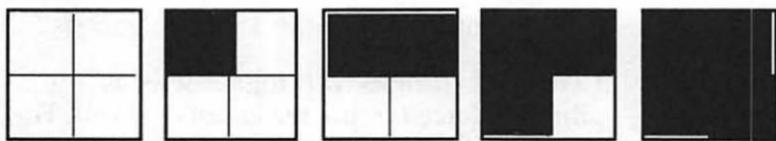
Screens and Halftones

A laser printer is capable of printing only black and white, not shades of gray. A PostScript printer simulates gray shades by a process known as *screening*. A *screen* is comprised of a group of pixels grouped together, called a halftone cell.

The illustration in Figure 50 shows two simple halftone cells. The upper-most example is a 1 x 1 halftone cell; the lower-most example is a 2 x 2 halftone cell.



1 x 1 halftone cell



2 x 2 halftone cell

Figure 50 Simple halftone cells.

As Figure 50 clearly illustrates, the total possible number of gray shades increases as the number of pixels in the halftone cell is increased.

The size of the halftone cell determines what is called the *screen frequency*. The screen frequency is the effective resolution available for a halftone cell of a given size.

Because PhotoGrade employs multiple pixels to simulate shades of gray in an image, the effective resolution decreases as the size of the halftone cell increases.

Screening then, is a trade-off between resolution and the number of shades of gray that can be imaged. The higher the resolution, the more grays that can be imaged.

A standard 300-dpi printer that uses a 1 x 1 halftone cell provides a 300-line screen and two

shades of gray. An enhanced 300-dpi printer such as the LaserWriter IIg—using a 2 x 2 half-tone cell—is capable of producing a 150-line screen and five shades of gray.

The result is that the LaserWriter IIg is capable of providing a significantly wider range of gray scales than typical 600-dpi printers, as illustrated in Figure 51.

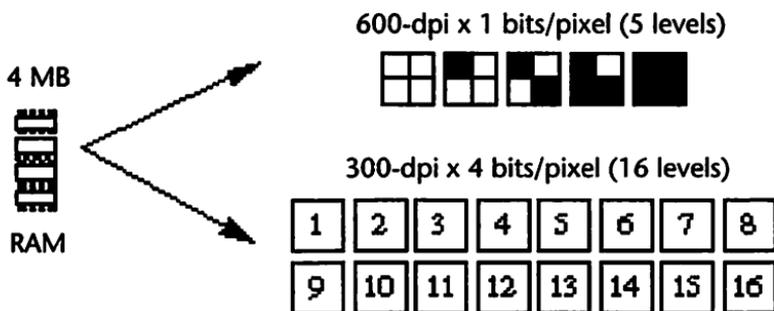


Figure 51 Available gray levels.

Because laser printers can only print black dots on the page, the key to getting better quality gray scale images is to exert more control over the size of the dots laid down on the page.

PhotoGrade is theoretically capable of providing 16 gray shades for each 300-dpi pixel, although this is not attainable with currently available print engines.

Using the Canon LBP-SX engine found in the LaserWriter IIf and LaserWriter IIg, PhotoGrade is capable of attaining a maximum of about eight distinct levels of gray for each pixel. This figure is significantly more impressive than it sounds.

According to Apple, the eight-level gray scale is roughly equivalent to the gray levels provided by a standard 800 x 800 dpi (toner on paper) printer with an 8 MByte page buffer.

The LaserWriter IIG's default halftone cell, as defined by the PhotoGrade technology, has eight elements, as shown in Figure 52.

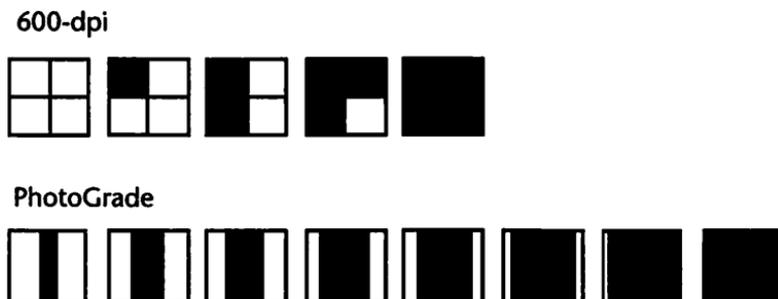


Figure 52 *LaserWriter IIG default halftone cell.*

Each LaserWriter IIG halftone cell can deliver about eight levels of saturation. This results in a 106 line screen with 67 gray levels.

A 106 line screen is appropriate for just about any application short of offset printing. The printing company that printed this book, for example, recommends using 110 to 150 line screens, depending on the type of paper that will be used. As a general rule of thumb, you can get by with a coarser screen when using lower grade ground wood and magazine papers although higher grade book and coated papers require the use of a finer screen.

An Application Specific Integrated Circuit (ASIC) in the LaserWriter IIF and LaserWriter IIG (available in the LaserWriter IIF, but accessible only with the memory upgrade mentioned on page 117) controls the timing of the laser pulse in the printer engine.

The LaserWriter IIF and Laser Writer IIG ASIC is capable of pulsing the laser at a fraction of the time needed for a single pixel. This allows a smaller area of the drum in the toner cartridge to be ex-

posed, resulting in more control of the dot on the page, as illustrated in Figure 53.

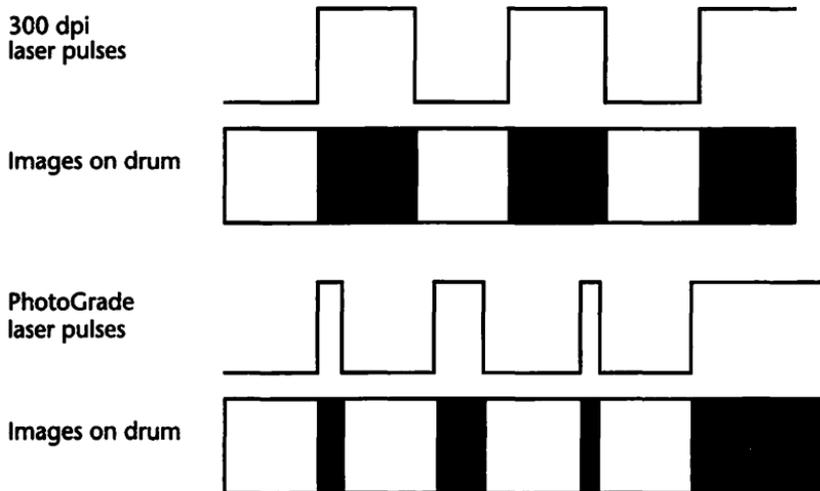


Figure 53 PhotoGrade laser pulse control.

Hype or Substance

Apple's PhotoGrade technology is very good. So good, in fact, that you have to see it to believe it. If you own—or are considering the purchase of—a LaserWriter IIf, the memory upgrade required to utilize PhotoGrade is one of the best computer bargains available.

Nevertheless, toner on paper cannot rival the quality of output available from even the lowest imagesetter. The technologies involved are different and given the current technology, printers that put bits of plastic on pieces of paper will always be inferior to the chemical photographic process involved with imagesetters.

Apple's claims of equivalency with 600- and even 800-dpi printers is potentially misleading. Reso-

lution is resolution, and the higher the better. Apple's LaserWriters are all built around 300-dpi print engines. PhotoGrade's gray scale output may *look* like the equivalent of 800-dpi resolution, but it's still 300 dots wide by 300 dots tall. Most people will be pleased with the benefits offered by Apple's new technology, however.

PhotoGrade is a powerful addition to the Apple LaserWriter family and individuals and businesses will find many applications for it. It is most appropriate for proofing pages that will be output on an imagesetter and for those applications that don't require the quality of imagesetter output.

Perhaps what's most remarkable about PhotoGrade is that it is capable of even better results with a higher-resolution print engine. The output achieved with PhotoGrade—even with the aging Canon LBP-SX engine—is nothing short of remarkable.

PostScript Level 2

PostScript Level 2 is the first major enhancement to Adobe's page description language since its release in 1985. The new release does not render PostScript Level 1 obsolete, however. Any document that will print on a PostScript Level 2 printer will also print on a PostScript Level 1 device.

Most benefits of PostScript Level 2 will be available only after software applications and printer drivers have been updated to take advantage of the new features.

For the first time, Adobe is developing its own printer drivers for use with PostScript Level 2. The driver for Windows is currently available; the Macintosh driver is expected before the end of 1991; and a UNIX driver is scheduled for release sometime in 1992.

The Macintosh drivers, when released, will be made available free of charge to the installed user base. Apple will include the Adobe drivers with the LaserWriter IIf and LaserWriter IIg.



It's important to note that most of PostScript's Level 2 improvements will be unavailable until the new drivers are used. In addition, even PostScript Level 1 printers should benefit from the

new Adobe drivers. Finally, most mainstream PostScript applications will have to be updated to take advantage of the new features in PostScript Level 2.

What's New in Level 2

There are seven general areas in which PostScript Level 2 offers significant advantages over PostScript Level 1:

- Faster printing
- Improved color support
- Dynamic memory allocation
- Improved support for device-specific features
- Improved Display PostScript
- Composite font technology
- Forms and forms caching

Each of these improvements are covered in the following sections.

Faster Printing

PostScript Level 2 offers significant speed enhancements over PostScript Level 1. Documents print noticeably faster with the PostScript Level 2 driver. PostScript Level 2 printers can use the older printer drivers, but their performance is comparable to that of PostScript Level 1 printers.

The older version of PostScript used ASCII encoding that allowed transportability at the expense of compactness and speed. Display PostScript and PostScript Level 2 use a binary encoding sys-

tem that trades limited transportability for increased speed.

Adobe's PostScript Level 2 printer drivers use binary encoding when printing to a PostScript Level 2 printer, but use ASCII encoding when printing a PostScript file to disk.

This seems to offer the best of both worlds, ensuring both speed and transportability across disparate computer hardware platforms.

Improved Color Support

The Cyan, Magenta, Yellow, and Black (CMYK) color model that was available only in color PostScript printers in Level 1 is now included in PostScript Level 2.

In addition, color support for the Red, Green, and Blue (RGB) color model has been added.

Like the PostScript page description language itself, all supported color models are device independent. Device independent color provides a standardized way of specifying colors completely independent of the variations and discrepancies between different scanners, monitors, printers, or other output devices.

CIE 1931 (XYZ) Color Space

The color model used in PostScript Level 2 is based on the CIE 1931 (XYZ) *color space*, originally developed by the Commission Internationale de l'Eclairage, an international standards organization. A color space is a way of representing colors by describing their positions in a three-dimensional space.

The CIE color space provides a way to specify color that is related to human perception rather than the mechanics of how a particular device reproduces color.

Since almost all other CIE color spaces are based on the CIE 1931 (XYZ) color space, it was an appropriate choice.

A potential drawback to the CIE 1931 (XYZ) color space, however, is that there are problems using the color model on screen displays. The color values must be converted from the XYZ color space into RGB color values, and the conversion process requires relatively complex mathematical computations.

Accurate Screen Algorithms

The halftone algorithms for color separations have been dramatically improved in PostScript Level 2.

The new algorithms, called Accurate Screen algorithms, reduce undesirable moiré patterns in color separations by providing a much more accurate simulation of traditional screen angles and frequencies.

Dynamic Memory Allocation

PostScript Level 2's improved memory allocation results in smaller PostScript files.

In PostScript Level 1, fixed amounts of memory were allocated to various tasks—page imaging, font caching, and executing PostScript code, for example. PostScript Level 2 offers dynamic memory allocation, where the total available memory

is treated as a common resource that is available for any use. Memory that is used for one task can be reclaimed when that task is finished and the memory is no longer needed.

The result is that printing documents with very complex graphics and a large number of fonts should not pose the problems that were sometimes encountered with PostScript Level 1. Specifically, the dreaded "VM_error" message should become much less common.

Improved Support for Device-Specific Features

Printer-specific features such as automated duplex printing and multiple paper bins are now directly supported.

Improved Display PostScript

All of the PostScript Level 1 Display PostScript extensions are now part of PostScript Level 2 and the text and graphics operators have been optimized for greater speed.

Macintosh users will not see any benefit of the Display PostScript improvements.

Composite Font Technology

Under PostScript Level 1, composite font technology—instructions that allow very large character sets—was available only on Japanese-language printers. Composite font technology is now part of PostScript Level 2.

Forms and Forms Caching

PostScript Level 1 offered only a font cache; Level 2 offers additional caches for forms, paths, and patterns.

The forms cache was designed primarily for traditional forms, but any graphic or text elements can be defined as a form and cached. The cached material is retained in the printer's memory or hard disk, and only the information that changes from page to page has to be interpreted by the printer.

Patterned fills, such as the ones created in software applications like Adobe Illustrator and Aldus FreeHand, can also be cached.

The end result is that ranges of pages that use cached information will print much faster than they did under PostScript Level 1.

TrueType vs. Type 1 Fonts

Typography is one of the most widely misunderstood topics in the Macintosh community. Apple Computer has been of very little help in this matter, having consistently underestimated the importance of effective typography within the desktop computing environment. In the short history of the Macintosh and desktop publishing, Apple has almost single-handedly managed to cloud the issues beyond the point of chaos.

Adobe Type Manager

Adobe Type Manager (ATM) allows PostScript fonts to be rendered automatically for screen display and non-PostScript output.

Installing any single size of any Type 1 PostScript font and ATM allows any type size to be rendered automatically. Screen display is markedly improved, as is output from non-PostScript printers like the Personal LaserWriter LS.

In September 1991 Apple and Adobe announced that ATM would be folded into future versions of the Macintosh operating system.

In October 1991 Adobe quietly announced that it was making a special version of its ATM available to Apple customers for the price of shipping and handling. The package is comprised of Adobe Type Manager v2.0.3 and four Adobe Garamond typefaces.



Coupons are included with the sale of new Macintoshes as well as the LaserWriter IIf and LaserWriter IIg. Current Macintosh owners can order the ATM package by calling 800/521-1976, extension 4400 and charging the \$7.50 shipping and handling fee to a credit card.

TrueType

In 1987, Apple began work on a new font format that would be an extension to QuickDraw. This project evolved into what we now recognize as TrueType. At the same time Microsoft was working on a new imaging model for Windows, known as TrueImage.

In 1989, Apple and Microsoft swapped technologies resulting in Apple's release of TrueType fonts. Microsoft threw in the towel on the TrueImage page description language in the late spring of 1991.

The TrueType hinting techniques include all the information in the font outlines required to optimize the font at any resolution. PostScript hinting, in comparison, is minimal because most of the optimizing is done in the printer's Raster Image Processor (RIP).

TrueType allows the weight of any font to be adjusted, making it legible at smaller sizes. Conversely, as a larger size is specified, TrueType thins the weight, making it more elegant. This is

known as optical scaling, and many believe Adobe will add the feature to future versions of the PostScript font specification.

Adobe Multiple Master

Adobe's answer to the optical scaling feature of TrueType is the Multiple Master series of typefaces. Due in the first quarter of 1992, Multiple Master typefaces will allow you to create virtually instantaneous variations of a single typeface. The Multiple Master typefaces contain definitions for weight, width, style, and size.

A Multiple Master font can be scaled along a specified axis, allowing faces in the same font family to be combined to create completely new typefaces. For example, a bold condensed face could be combined with a bold expanded face to create any weight in between.

What You Need to Know

If you already own a PostScript printer, or if your service bureau offers PostScript output on an imagesetter, the best solution is to stay as far away from TrueType as possible. If you're shopping for a printer, get PostScript. Even though most applications fully support TrueType, your best bet is to avoid it if you can use PostScript.

A PostScript device will try desperately not to have to deal with TrueType and the TrueType rasterizer is designed to be re-downloaded to the PostScript output device each time a new page is imaged. This results in dreadfully slow output on PostScript devices and as of early 1992, most service bureaus were refusing to run TrueType jobs.

TrueType may be free, but it's more trouble than it's worth.

If you're running System 7.0, remove the TrueType versions of any PostScript fonts in your System file (usually Courier, Helvetica, Times, and Palatino) and replace them with the PostScript equivalents. Adobe Type Manager gives you all the advantages of first-generation TrueType with none of the headaches.

Keep the TrueType versions of Chicago, Geneva, and Monaco in your System 7.0 System file; they improve the screen legibility of these System fonts considerably.



If you use a lot of fonts, one of the best purchases you can make is Fifth Generation's Suitcase II at a street price of about \$50. Suitcase II allows you to control your font collection and place your screen fonts and printer fonts virtually anywhere on your hard disk drive. (Fifth Generation Systems Inc., 10049 North Reiger Road, Baton Rouge, LA 70809. Phone 800/225-2775 or 504/291-7221; fax 504/295-3268.)

TrueType is quickly developing into little more than a nuisance in the Macintosh world.

Apple chief executive John Sculley didn't even bother to mention the built-in TrueType rasterizer in the company's new printers when they were introduced in early October 1991.

Managing Fonts

TrueType fonts are easily installed and managed. Just drag their icons to your closed System Folder icon and they will automatically be installed in your System file.

PostScript Type 1 fonts pose more of a challenge. Commercial PostScript fonts are generally distributed as three files:



- A *font suitcase* containing the screen fonts. The screen fonts contain the font's character width table, kerning pairs, and other font-specific information as well as bitmap versions of the font. This bitmap is used for display on the screen if Adobe Type Manager is not installed.



- A series of *printer fonts* containing the actual PostScript instructions for imaging the font on the output device. The printer fonts are the files that are actually used by a PostScript printer.



- A series of *Adobe Font Metrics (AFM)* text files. The AFM files contain a text version of the same font-specific information contained in the font suitcase. For most applications except type creation, the AFM files serve no purpose and can be deleted.

Suitcase II allows you to access your font suitcase files without installing them in your System file. This allows you to load only those fonts for which you have an immediate need, resulting in significantly better performance in some situations. It also makes your font menu much easier to navigate.

You can use these instructions to install and manage your Type 1 font library.

1. Install Adobe Type Manager and Suitcase II using the manuals that came with them.
2. Open your System file and remove all of the TrueType versions of any PostScript fonts in your System file (usually Courier, Helvetica, Times, and Palatino).
3. Place all of your printer fonts in a folder.

- This folder can be named anything, and can reside anywhere. For now, leave it on the top level of your hard disk drive.
4. Launch Font/DA Mover v4.1 or later.
 - System 7 users can obtain Font/DA Mover v 4.1 or later free of charge from online services or user groups.
 5. Remove all but the 10- and 12-point screen fonts from your various font suitcase files.
 6. Combine font families into a single font suitcase file.
 - All the Helvetica screen fonts, for example, can be combined into a single font suitcase file.
 - Alternatively, you can group several families in a single file by frequency of use or numbering system.
 7. [*Optional, see below*] Merge the font families that comprise your screen font library using the Font Harmony utility and instructions that came with Suitcase II.
 - This is an optional step and may not be appropriate for everyone.
 - Merged fonts appear in font menus as a single entry such as "Bookman," and you obtain the other weights by applying the "italic" or "bold" font styles within an application.
 - Unmerged fonts display each weight as a separate entry, so Bookman would show up as four entries: Bookman, I Bookman Italic, B Bookman Bold, and BI Bookman Bold Italic.
 - The problem with using merged fonts is that the Macintosh operating system

only thinks about fonts in terms of a basic four-weight font family (plain, italic, bold, and bold italic). Merged fonts don't work well with font families that contain more than the four basic weights.



- Note that the font family merging process is irreversible. You should only merge duplicates of the original font suitcase, keeping a backup copy in case you want to go back to using the unmerged screen fonts.
8. Using Font/DA Mover v4.1 or later, remove the italic, bold, and bold italic screen fonts.
 - With Adobe Type Manager you need only the plain (roman) version of any typeface in order to display and print the entire font properly.
 9. Place your font suitcase files in the folder containing your printer fonts.
 10. Open the font suitcase files you want to use with Suitcase II.

Font Conflicts

Even though font conflicts are no longer the problem they once were, you can still experience conflicts where the fonts displayed on the screen are not the ones you specified.

The easiest way to resolve font conflicts is to close any Suitcase files you do not need. A more permanent solution is to use the Font Harmony utility that is included with Suitcase II to harmonize your font set.

Most modern software programs refer to fonts by name rather than font ID number. This elimi-

nates most of the problems with font conflicts, although problems can still occur when sending files to a service bureau who may or may not have the same font from the same vendor. Adobe's Futura family, for example, is significantly different from those marketed by Bitstream.

Kerning

If you're serious about typography, you'll probably want to adjust the default kerning pairs that are provided with the fonts you purchase. Kerning is the act of adjusting the amount of white space between two adjacent letters.



Several commercial kerning utilities are available. The one that seems to have the broadest appeal is Pairs Software's KernEdit. (Pairs Software, 160 Vanderhoof Avenue, Suite 201, Toronto, Ontario, Canada M4G 4B8. Phone 416/467-8784.)

Paper Selection

Color, texture, weight, opacity, ink holdout, and brightness all impact the effectiveness of any printed communication.

These factors—especially a paper's texture and weight—are even more important with laser printers due to the nature of the laser imaging process.

Paper Categories

Paper appropriate for use in a LaserWriter falls in one of three basic categories, each of which are covered in the following sections.

Bond

Bond paper is also referred to as “writing” paper. If the paper has cotton fibers mixed in with the wood pulp, it is called “rag” paper. Bond paper is most often used for stationery, forms, and other workaday documents that are usually printed on only one side.

Most grades of bond paper have matching envelopes, cover stock, and several card stocks for business cards.

Text

Text paper is often referred to as “book” or “offset” paper. This is the kind of paper that is most commonly used in most commercial printing jobs and comes in a wide variety of colors and surface textures.

Text paper is generally more opaque than bond and is available in both coated and uncoated varieties. Text paper is widely used in annual reports, brochures, product manuals, newsletters, magazines, and books.

Cover

Cover paper is stiffer than either bond or text paper and is most commonly used for covers of brochures and reports.



Cover paper should not be run through any of the LaserWriter models. Apple Computer specifically recommends 16- to 20-lb. paper in normal mode, and up to 36-lb. paper stock in manual mode with the face-up tray open. Most cover paper is too bulky and stiff to run through the LaserWriter and can damage the printer's paper path or toner cartridge. If you're in doubt, don't risk it; LaserWriter repairs are expensive.

For most uses, bond and text papers are the most appropriate paper choices for use with any laser printer, including the members of the Apple LaserWriter family.

Paper Texture

The three broad paper categories—bond, text, and cover stocks—are also available in a wide assortment of textures. There are five common paper textures in wide use:

- *Smooth.* Smooth paper stocks are usually the least expensive.
- *Laid.* Laid paper stocks have a pattern and are popular for use as stationery. Laid papers are not often used for two-sided printing because one side of the paper usually has a more pronounced pattern than the other side.
- *Felt.* Felt paper stocks have a deep texture and are most often used for covers and other special purposes.
- *Offset.* Offset paper stocks are a type of smooth paper stocks that have been made even smoother by running the paper through pressure rollers. The process of running the paper through pressure rollers is called *calendering*.
- *Coated.* Coated paper stocks are usually calendered papers that have a thin coating layer to provide an even smoother surface. Coated papers are usually rated in terms of their shininess, ranging from a super-gloss to a suede or dull finish.



Heavily textured papers are not appropriate for use with the LaserWriter. The toner particles don't fuse to the pattern on the paper very well, and results in toner flaking off the page if it adheres at all. As a general rule of thumb, smoother papers work the best with LaserWriters. The smoother the texture of the paper, the better the laser printed output.

Paper Weight

Paper manufacturers all measure paper weights differently. Bond, for example, is based on the weight of a ream (500 sheets) of 17- by 22-inch sheets. 500 sheets of 20-lb. bond paper stock, for example, would weigh 20 pounds in 17- by 22-inch sheets. This is also referred to as the paper's basis weight.

Text stock has a basis weight dimension of 25- by 38-inches, and cover stock has a basis weight size of 20- by 26-inches.

Bond paper stock usually comes in 12, 16, 20, 24, and 28 lb. weights. Most stationery is 20 lb.

Uncoated text stock usually is available in 50, 60, 70, and 80 lb. weights. In most cases, 60 lb. text stock is the minimum weight that should be used.

Coated text stock usually is available in 60, 70, 80, and 100 lb. weights.

Cover stock is usually available in 65, 80, and 100 lb. weights.

Other Paper Qualities

A paper stock's *ink holdout* is a measurement of how well the surface of a sheet of paper resists the absorption of ink. Coated papers have the greatest ink holdout, absorbing less ink and taking longer to dry. Ink holdout has a minimal effect on how well toner adheres to paper.

A paper's *opacity* is a measurement of its translucency. Coated papers are generally less opaque than uncoated papers.

A paper's *brightness* is a measurement of its ability to reflect light.

A paper's *grain direction* is usually only of concern to the pressman. You may, however, want to pay attention to a paper's grain direction when putting pieces that will be folded. It's harder to fold a piece of paper against its grain.

LaserWriter Paper

Paper designed for laser printers is manufactured to withstand higher heat than normal copier paper. In addition, most laser papers are smoother than other papers and are also brighter, providing a higher level of contrast.

Hammermill Laser Plus

One side of this paper, designed specifically for laser printers, is extremely smooth and bright. The other side is treated with a wax-resistant barrier to prevent wax from bleeding through to the image side. Laser Plus is also a surprisingly "tough" paper, resistant to tearing.

This paper is especially useful if you will be pasting your pages on boards. If not, you won't need the wax holdout capabilities and would be better served by a different paper.

Hammermill Laser Print

Hammermill's Laser Print is an excellent choice if you don't need the wax holdout capabilities of

the Hammermill Laser Plus paper. It has all the characteristics of the Laser Plus paper except for the wax-resistant barrier on the back side of each sheet of the paper.

Recycled Paper

Many paper mills claim to produce recycled paper, and there is no standard definition or set of criteria to determine the accuracy of the claims.

The Environmental Protection Agency considers paper to be “recycled” if it contains 50 percent or more recycled content. You can judge recycled paper with two general criteria:

- The kind of waste materials that were used to produce the paper
- The amount of the paper that started as waste material

Paper that is produced with the scraps left over from the process of making other paper is referred to as being made from *pre-consumer waste*. Most vendors call it recycled paper, although it isn't really recycled at all, since it has never been sold or used.

Paper that is produced from *post-consumer waste* is paper that has actually been recycled; that is, the paper was sold, used, thrown away, and recycled for sale again.

Even though the Environmental Protection Agency considers paper to be “recycled” if it contains at least fifty percent recycled content, it doesn't set a criteria for post-consumer waste content. In other words, paper that is labeled as recycled may contain only ten percent post-consumer waste.

The most environmentally-conscious papers are those with the highest post-consumer waste content. Unfortunately, paper with a high post-consumer waste content is of noticeably lower quality than a virgin paper.



Recycled papers that contain higher percentages of post-consumer waste are on the horizon and will eventually offer quality as good as virgin paper. The best source is Conservatree Paper Company, 250 Lombard Street, San Francisco, CA 94111. Phone 800/522-9200.

Paper Recommendations

For workaday use, standard 18- to 24- pound bond is your best bet. You'll get good results at the lowest possible cost. Paper lighter than 18 lb. should be avoided. The lighter paper is prone to mis-feeds and is more sensitive to humidity changes. Conservatree markets a range of good-quality recycled papers.



The best everyday laser paper I've found is a 24-pound bond called "LaserPro" that offers a brightness measurement of 91. Unfortunately, I haven't been able to find this paper in the last few months, and it may be discontinued. If you can find it, it's inexpensive and attractive.

For stationery, I use Neenah Paper's Classic Crest Solar White and matching envelopes. It's a 24-lb. paper of medium quality that is widely available at about \$10 a ream.

For the best possible laser printer output, use a coated paper that is specifically manufactured for laser printers. Most paper vendors offer at least one type of this paper, and many offer several different varieties.

Conservatree offers a complete range of recycled papers for use with LaserWriters.

- The Conservatree Premium Rag Bond series is quite attractive for stationery use. It is available in 20- and 24-lb. weights (with an 80-lb. cover stock available) and contains 15 percent post-consumer waste.
- The Conservatree Premium Xerographic 3HP is a general purpose 20-lb. paper that contains 10 percent post-consumer waste.



Specialty papers are also available. Specialty papers include color gradations, artistic border designs, vellum, certificate borders, foils, self-mailers, and labels. The best source for specialty papers is Paper Direct, 205 Chubb Ave., Lyndhurst, NJ 07071. Phone 800/272-7377; Fax 201/507-0817.



Avoid heavily textured papers. The laser printing process requires pressure from hot rollers to fuse the toner to the paper and textured paper prevents the pressure from being applied evenly. Textured papers also leave more paper particles called *paper dust* inside the printer.

Using the LaserWriter

Before you can print to the LaserWriter, the printer driver must be installed in your System Folder. You install the printer driver by dragging its icon to your System Folder. Under System 7, the printer driver will automatically be placed in the Extensions folder.

If you're working within a networked workgroup environment, it's important that everyone use the same versions of the printer driver. It's a good idea to get in the habit of updating all the machines at the same time, avoiding the use of outdated software.

Next, the LaserWriter has to be connected to a local area network (or a Macintosh serial port in the case of the Personal LaserWriter LS).

The rest of this chapter assumes at least a single LaserWriter II attached to a local area network, although some examples also apply to the Personal LaserWriter LS.

If your network includes more than one LaserWriter, you will find it convenient to name each one of them. If you give each printer a unique name, they will be easier to distinguish by workgroup members.

You can rename any number of LaserWriters with either the Namer utility or the newer LaserWriter utility by following the instructions that came with your printer.

Using the Chooser

Before you can print to a LaserWriter for the first time you have to select the target printer within the Chooser. You can follow these steps to select a LaserWriter.

1. Select the Chooser from the Apple menu. The Chooser window, shown in Figure 54, will be displayed.

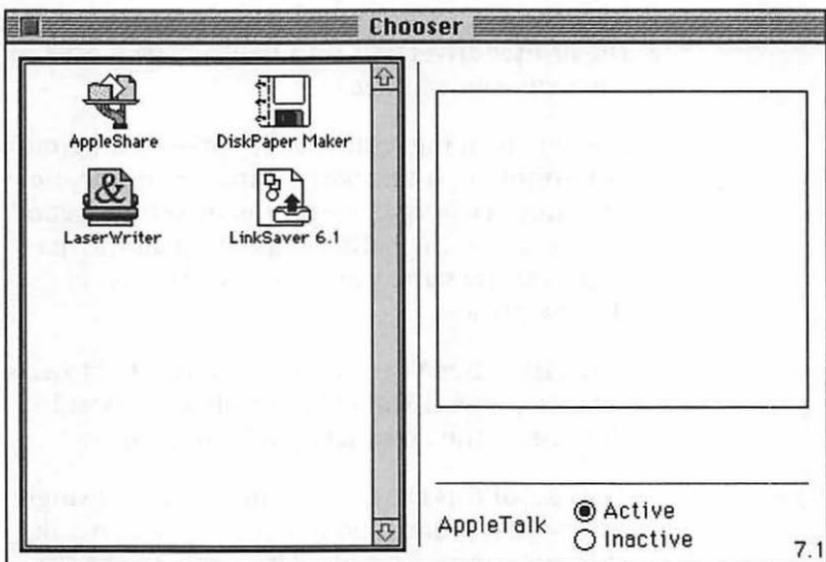


Figure 54 Chooser window.

2. Select the appropriate LaserWriter icon in the left panel of the Chooser window.
 - A list of available printers of the type selected will be displayed in the scrolling

list in the right panel of the Chooser window, as shown in Figure 55.

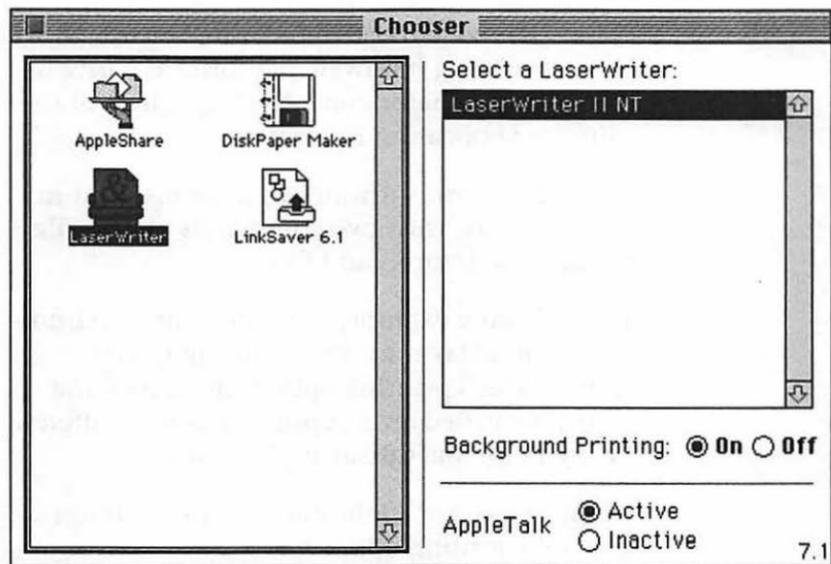


Figure 55 Chooser window with LaserWriter IINT selected.

- Note that a scrolling list of any available network zones will appear in the bottom portion of the left panel of the Chooser window. Be sure to select the appropriate zone before selecting a printer.
3. Select the printer you want to use from the scrolling list. Note that the **AppleTalk Active** radio button must be selected in order to select printers available on the network.
4. Click the **Background Printing On** radio button if you want to use the print spooler that is built into the System software.
5. Close the Chooser window.
 - The LaserWriter you selected will remain active until you select another printer in the Chooser window.

Page Setup and Print

One of the benefits offered by the Macintosh over competing hardware platforms is a user interface that remains consistent regardless of the software application being used.

Most Macintosh software applications print in the same way, with two commands on the File menu: Page Setup... and Print....

The following examples will use Frame Technology's FrameMaker for illustrative purposes. FrameMaker's printing options are representative of the varied level of printing control offered by high-end Macintosh applications.

Simpler software applications will have fewer available printing options.

Page Setup... Command

You can use the Page Setup... command to set the page size, orientation, reduction or enlargement, and standard printer effects for the documents you print.

The Page Setup options are specific to the printer you have selected in the Chooser.

The Page Setup options are retained within each document once it has been printed. It's a good practice, however, to check the document's Page Setup settings before beginning any print job.

You can use these steps to customize the Page Setup for your document.

1. Select the Page Setup... command from the File menu. The Page Setup dialog box, like

the FrameMaker example shown in Figure 56, will be displayed.

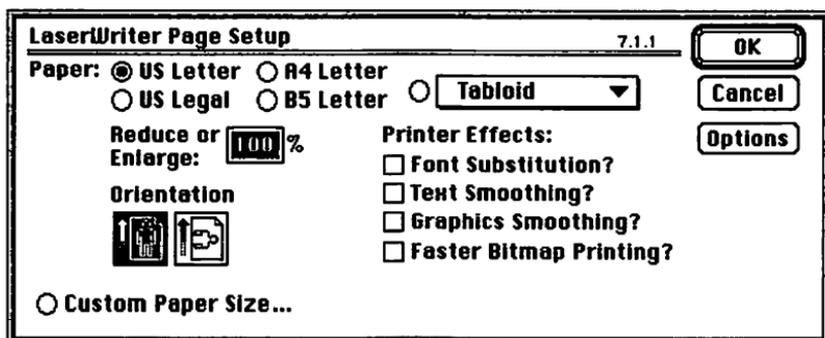


Figure 56 Page Setup dialog box.

2. Specify the appropriate paper size using one of the available radio buttons.
 - The right-most radio button has a pop-up menu associated with it. You can use this pop-up menu to select other standard paper sizes—such as envelopes and tabloids—that are more specialized.

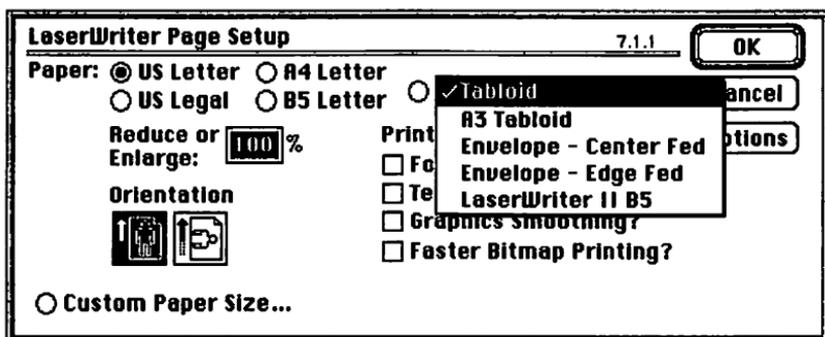


Figure 57 Page Setup dialog box with paper size pop-up menu.

3. Specify the percentage by which to reduce or enlarge the print job by entering a numeric value in the Reduce or Enlarge field.

4. Select the page orientation—portrait or landscape—by clicking on the appropriate **Orientation** button.
5. Specify the appropriate printer effects from the group of available checkboxes.
 - **Font Substitution**, when checked, substitutes the resident Macintosh font set—Geneva, New York, and Monaco—with the PostScript Helvetica, Times, and Courier. Note that the letter spacing, line endings, and pagination of your document may be altered if you use this option. If you want to print using the resident Macintosh font set, make sure **Font Substitution** is unchecked.
 - **Text Smoothing**, when checked, smooths the LaserWriter output of bit-mapped fonts.
 - **Graphics Smoothing**, when checked, minimizes the jagged edges of some types of graphic images.
 - **Faster Bitmap Printing**, if checked, improves the printing speed of bitmapped graphic images. Note that some documents will not print if this option is checked. If you have problems printing documents with bitmapped graphic images, try turning this option off.
6. Set any other application-specific printing options that may be available.
 - These custom features are explained in the documentation that accompanied your software application.
 - In the FrameMaker example used here, a **Custom Paper Size...** radio button is available, as shown in Figures 56 and 57. Clicking this button displays a special

Imagemaster paper configuration dialog box, shown in Figure 58.

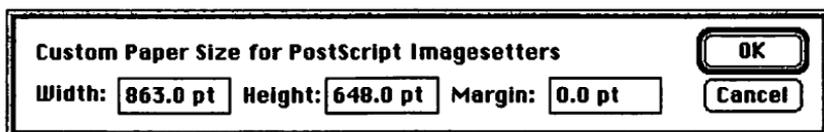


Figure 58 *FrameMaker Custom Paper Size for PostScript Imagesetters dialog box.*

- The Width, Height, and Margin settings are values for PostScript imagesetter page size parameters.
7. Click the **Options** button in the Page Setup dialog box. The LaserWriter Options dialog box, shown in Figure 59, will be displayed.

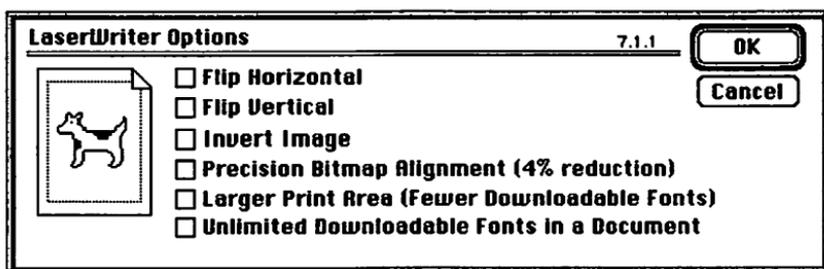


Figure 59 *LaserWriter Options dialog box.*

8. Specify the appropriate options from the group of available checkboxes.
 - **Flip Horizontal**, when checked, reverses the page from left to right, printing a mirror image of the document.
 - **Flip Vertical**, when checked, reverses the page from top to bottom, printing the document upside down.
 - **Invert Image**, when checked, prints a negative image of the document.

- **Precision Bitmap Alignment**, when checked, reduces the size of the printed page by 4 percent, resulting in more precise bitmapped graphics that are also less distorted.
 - **Larger Print Area**, when checked, extends the imaging area of the printer by reducing the minimum margins. Note that selecting this option may prevent you from using more than a few downloadable fonts for the document. Because the printer is using more of its memory to create the page instead of downloadable fonts, some documents may print more slowly, and documents with many downloadable fonts may not print at all.
 - **Unlimited Downloadable Fonts**, if checked, allows more fonts to be used in the document. Selecting this option can result in slower printing.
9. Click the **OK** button in the **LaserWriter Options** dialog box. The original **Page Setup** dialog box will still be displayed.
 10. Click the **OK** button in the **Page Setup** dialog box to complete the process.

The **Page Setup** settings have now been configured for your document. They will be saved with your document after you initiate the **Print** command covered in the next section.

Print... Command

Selecting the **Print...** command from the **File** menu allows you to print the current document to the printer you have selected in the **Chooser**, using the settings and options you specified with the **Page Setup...** command.

You can initiate the actual printing sequence with these steps.

1. Select the Print... command from the File menu. The Print dialog box, similar to the FrameMaker example shown in Figure 60, will be displayed.

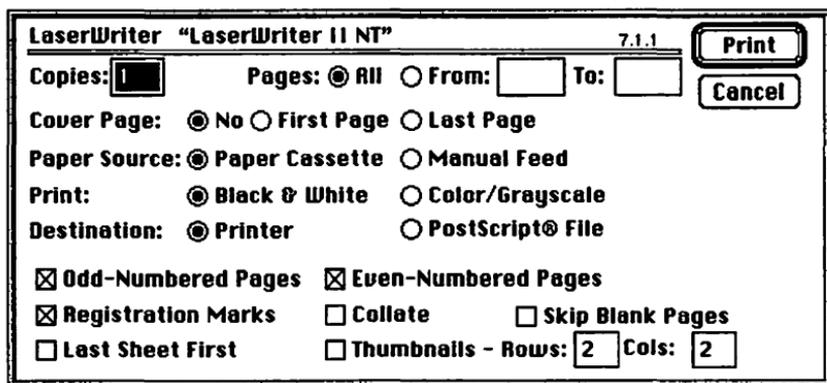


Figure 60 Print dialog box.

2. Enter the number of copies you wish to print in the Copies field.
3. Check the **All Pages** radio button, or specify a range of pages to print in the appropriate From: and To: fields.
4. Check the appropriate radio button to print or suppress a cover page.
 - The cover page identifies the document. It contains the user name, application name, document name, and the date and time of the print job.
5. Check the appropriate radio button for the correct paper source.
6. Check the appropriate radio button for either black and white or color/grayscale output printing. Be careful; color/grayscale printing is very slow.

- If you print a color document on a black and white printer like the LaserWriter, a *halftone* format will be used.
7. Check the appropriate radio button for the destination for the printed document.
 - The **Printer** option directs the output to the printer or output device you have selected in the Chooser.
 - The **PostScript® File** option directs the output to a PostScript file on disk rather than the selected printer.
 8. The remaining options are specific to the application from which you are printing. In the FrameMaker example used here:
 - **Odd- and Even-Numbered Pages**, prints (checked) or suppresses (unchecked) the printing of left- and right-hand pages. This is useful for printing on both sides of the page.
 - **Registration marks**, when checked, prints crop and color registration marks outside of the live text area. This is useful when preparing camera-ready mechanicals for offset printing.
 - **Collate**, when checked, prints one complete copy of the document before starting the next copy when more than one is specified in the Copies field. This results in completely collated output, but slower printing times.
 - **Skip Blank Pages**, when checked, prevents blank pages in the document from being printed.
 - **Last Sheet First**, when checked, reverses the order in which the pages are printed. This is useful when you are printing with the face-up tray open.

- **Thumbnails**, when checked and a set of dimensions specified in the associated fields, prints multiple reduced images of the document—called *thumbnails*—on a single page. This is useful for seeing the overall layout of several pages at a single glance in the early stages of designing a document or publication.

9. Click the **Print** button.

Managing Print Jobs

Various options are available that allow you to manage the actual printing process, including face-up or face-down page delivery, background printing, and print job monitoring.

Page Delivery Options

You can control how the pages are delivered from the LaserWriter with the face-up tray.

Most Macintosh software applications print the first page first, delivering the pages face-down so that the document is properly collated. Some applications print first page last, however, requiring face-up page delivery for proper collation.

To configure the LaserWriter for face-up page delivery, open the face-up tray.



Be careful to never open the face-up tray when printing is in process. Also, the face-up tray should always be open when printing envelopes, transparencies, or paper stock heavier than 24-lb. With the face-up tray open, the LaserWriter can use paper stock up to 36-lb.

Background Printing

Apple's PrintMonitor, included as part of the Macintosh System software, allows you to print on a LaserWriter in the background while continuing to work with one or more software applications. This process is known as *spooling*, or *background printing*. The pages are spooled to disk and then printed in the background.



The PrintMonitor file is automatically put in the Extensions folder inside your System Folder when you install System 7.

Under System 6, the PrintMonitor is automatically installed in the System Folder only if you have also installed MultiFinder.

If you didn't install the LaserWriter with Apple's Installer utility, the PrintMonitor file can be found on the Printing disk.



PrintMonitor and background printing works seamlessly with System 7. Background printing with System 6 is available only under MultiFinder, Apple's first-generation multi-tasking implementation. The rest of this section assumes you are using System 7.

You can turn on background printing by selecting a LaserWriter in the Chooser and selecting the **Background Printing On** radio button. Once you have turned on background printing, it stays in effect until you turn it off.

Turning background printing on prints your document to a file on disk and returns control of your Macintosh to you sooner.

When you select the Print... command and initiate the printing process, the Printing Status dialog box appears on the screen while the print

job is written to your hard disk drive, as shown in Figure 61.

Printing in progress....
Type command-period (⌘.) to cancel.

Figure 61 Printing Status dialog box.

As soon as the Printing Status dialog box disappears, control of your Macintosh is returned and you can continue other work.

PrintMonitor controls the actual printing job, and offers you several levels of control. When the print job begins, the PrintMonitor application is automatically launched and its icon can be located in the Application menu.

The version of PrintMonitor supplied with System 7 is notorious for being unable to handle large or complex print jobs without reporting an error condition.



It is common for the PrintMonitor application to report that it cannot complete the print job because of insufficient memory. When this happens, a dialog box is displayed, reporting the condition and suggesting that the size of the memory partition allocated to the PrintMonitor application be increased.

If you click the OK button, PrintMonitor will perform this action automatically, although the current print job will be flushed from the printer's memory and automatically restarted.

You can avoid this situation by manually adjusting the size of the memory partition allocated to the PrintMonitor application. Instructions for

increasing the allocated memory partition of an application is provided in the *Macintosh Reference* manual and in my *System 7 Rapid Reference*.

When you select the PrintMonitor item from the Application menu during a print job, its main window is displayed on your screen, as shown in Figure 62.

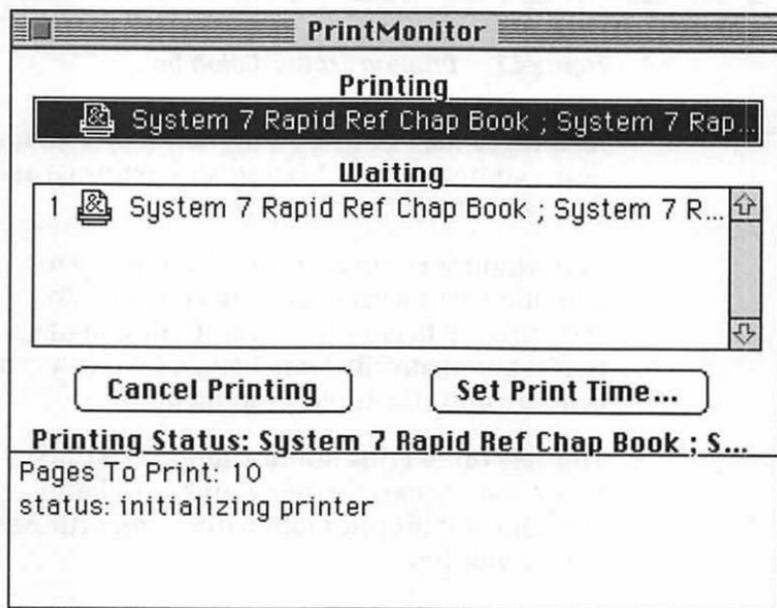


Figure 62 *PrintMonitor* main window.

PrintMonitor's main window provides the name of the document currently being printed and the printer in use as well as a scrolling list of documents waiting to be printed.

The lower portion of the window displays information concerning the status of the document currently being printed.

In the middle portion of the window, two buttons are provided that allow you to control the background printing process.

- You can cancel the printing of the current document by clicking **Cancel Printing**.
- You can remove a spooled document from the waiting list by selecting it from the list and clicking the **Remove From List** button (the **Cancel Printing** button changes into the **Remove From List** button when a document in the waiting list is selected).
- You can set the printing time of any waiting document by selecting it from the scrolling list and clicking the **Set Print Time...** button. Doing so causes the Set Print Time dialog box, shown in Figure 63, to be displayed.

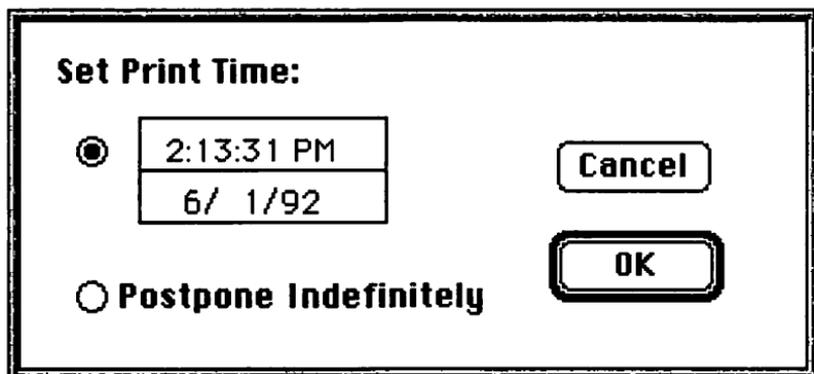


Figure 63 Set Print Time dialog box.

- You can assign any time and date you like using the **Set Print Time** radio button and its associated time and date fields. Alternatively, you can postpone the print job indefinitely without canceling it by clicking the **Postpone Indefinitely** radio button.

PrintMonitor has a menu that allows you to set the preferences of the background printing options offered by the Macintosh System software and LaserWriter printer drivers. You can also use

this menu to stop all printing activity. The Print-Monitor menu is shown in Figure 64.

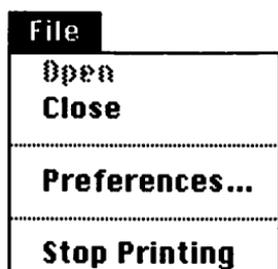


Figure 64 PrintMonitor menu.

The Open and Close commands are self explanatory and reproduce the action of selecting the PrintMonitor item from the System 7 Application menu and the PrintMonitor main window close box respectively.

Selecting the Preferences... command displays the PrintMonitor Preferences dialog box, shown in Figure 65.

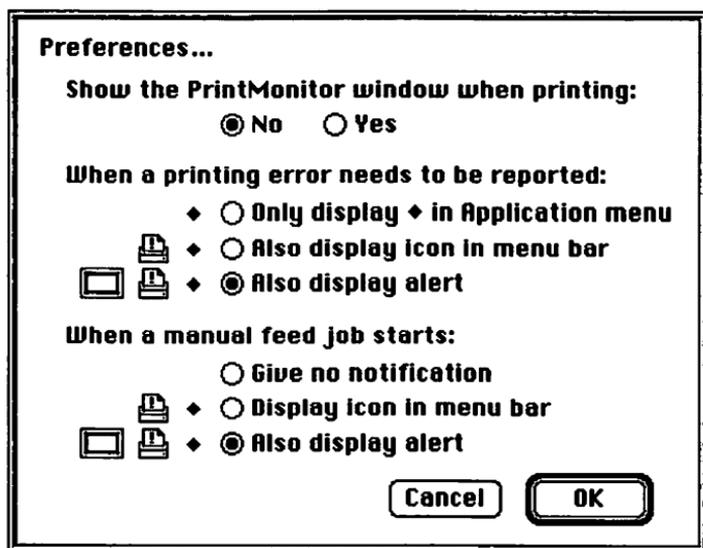


Figure 65 PrintMonitor Preferences dialog box.

The PrintMonitor dialog box allows you to control the following aspects of the background printing process.

- Whether or not the PrintMonitor window is displayed automatically during printing.
- The level of feedback and form of alert provided when an error condition occurs.
- The level of feedback provided when a manual feed print job begins.

You can use the Stop Printing command on the PrintMonitor menu to temporarily halt the background printing process. When you select this command, the command automatically changes to the Resume Printing command, allowing you to restart the printing process.

Downloading Fonts

Downloading fonts to a LaserWriter—or to a hard disk drive attached to the SCSI port of a LaserWriter IIf or LaserWriter IIg—results in significantly faster printing times.

To download fonts to the printer or its hard disk drive, use the LaserWriter Font Utility.



In addition to downloading fonts, the LaserWriter Font Utility also allows you to:

- Download a PostScript file
- List the fonts available on the LaserWriter
- Print a sample of available fonts
- Initialize the printer's hard disk drive

You can follow these steps to download fonts to a LaserWriter.

1. Turn on the LaserWriter.
2. Launch the LaserWriter Font Utility.
 - The program will automatically search for the characteristics of the LaserWriter selected in the Chooser.
3. Select the Download Fonts... command from the File menu. The Font Download dialog box will be displayed, as shown in Figure 66.

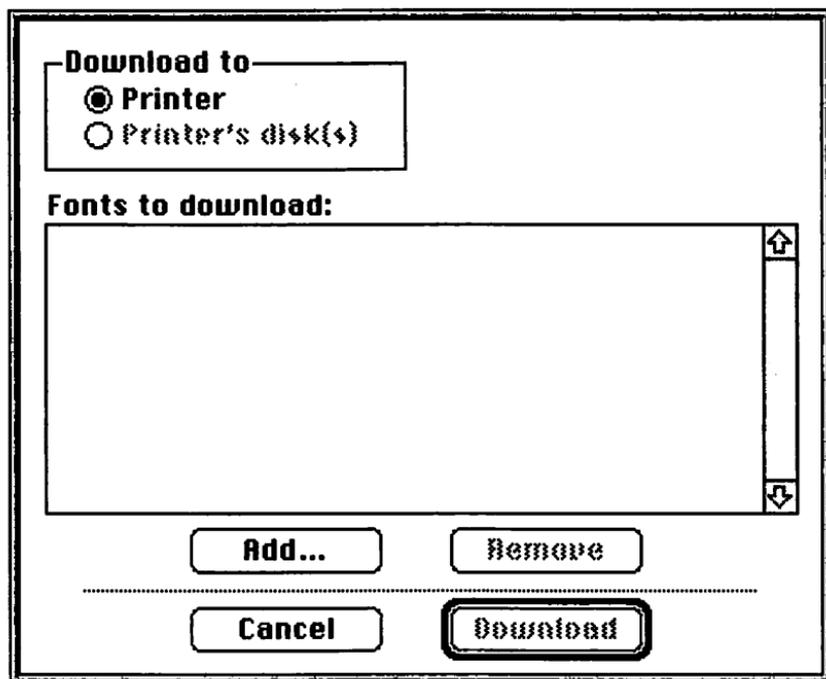


Figure 66 *LaserWriter Font Utility Font Download dialog box.*

4. Click the Add... button. A standard file dialog box will appear.
5. Select the fonts you want to download and click the Add button for each font.
6. When you have selected all the fonts you want to download, click the Done button.

The Font Download dialog box will appear like the example shown in Figure 67.

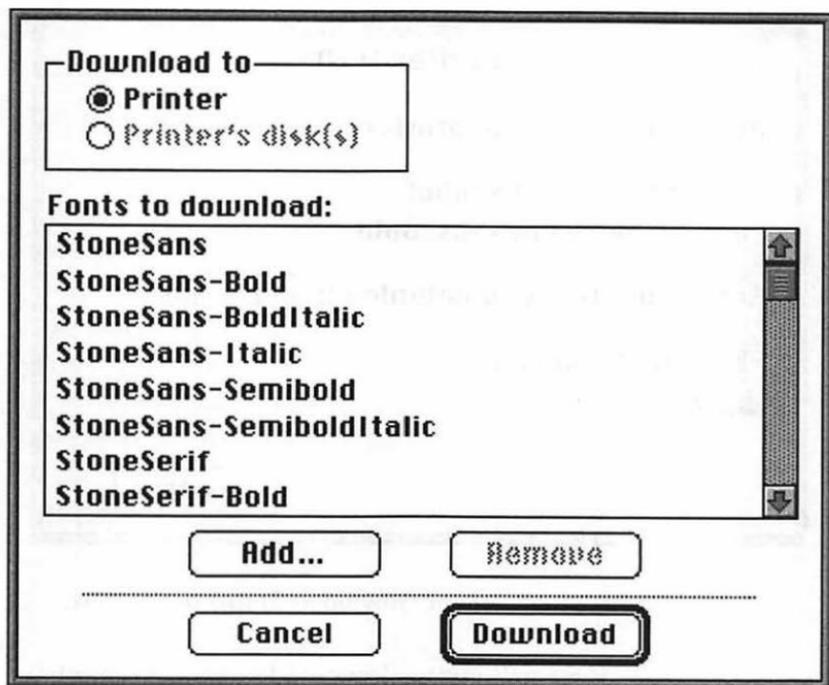


Figure 67 LaserWriter Font Utility Font Download dialog box with selected fonts ready to download.

7. Click the **Printer** radio button to download the selected fonts to the LaserWriter's memory or click the **Printer's disk(s)** radio button to download to the printer's hard disk drive.
8. Click the **Download** button. The fonts you added to the Fonts to download scrolling list will be downloaded to the printer's memory or hard disk drive.
 - The downloading process can take a while depending on the number of fonts you selected. During the download, a dialog box similar to the one shown in Fig-

ure 68 will be displayed, reporting the status of the download.

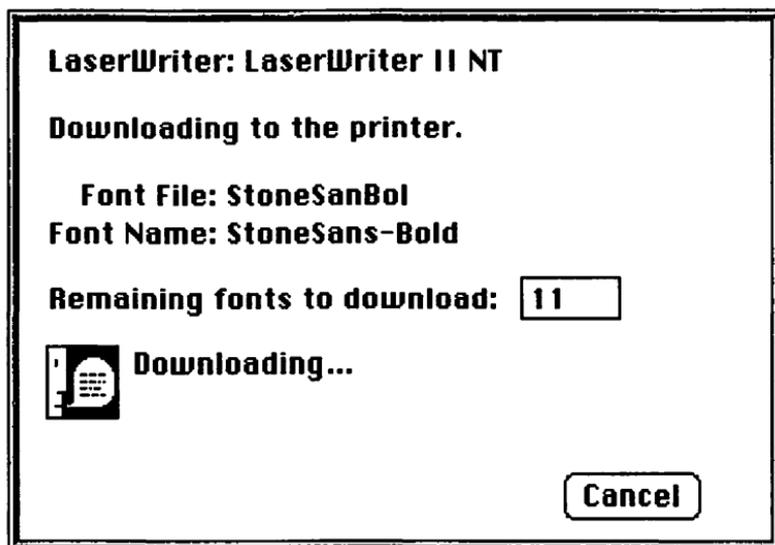


Figure 68 Font Download Status dialog box.

- When the download process is complete, the Download Completed dialog box, shown in Figure 69, will appear.

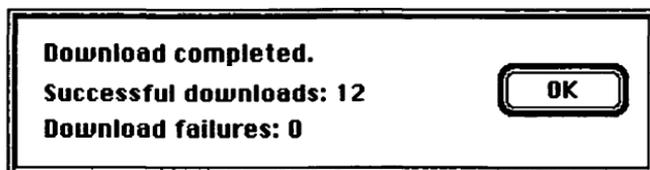


Figure 69 Download Completed dialog box.

9. Click the OK button.

The selected fonts are now resident in the printer. If you downloaded them to the printer, they will remain resident until you restart the printer or turn its power off. If you downloaded the fonts to the printer's hard disk, they will remain resident until you reformat the disk.

Listing Available Fonts

You can also use the LaserWriter Font Utility to list the fonts available on the LaserWriter.

1. Select the Display Available Fonts... command from the File menu.
 - The Available Fonts window, shown in Figure 70, will be displayed.

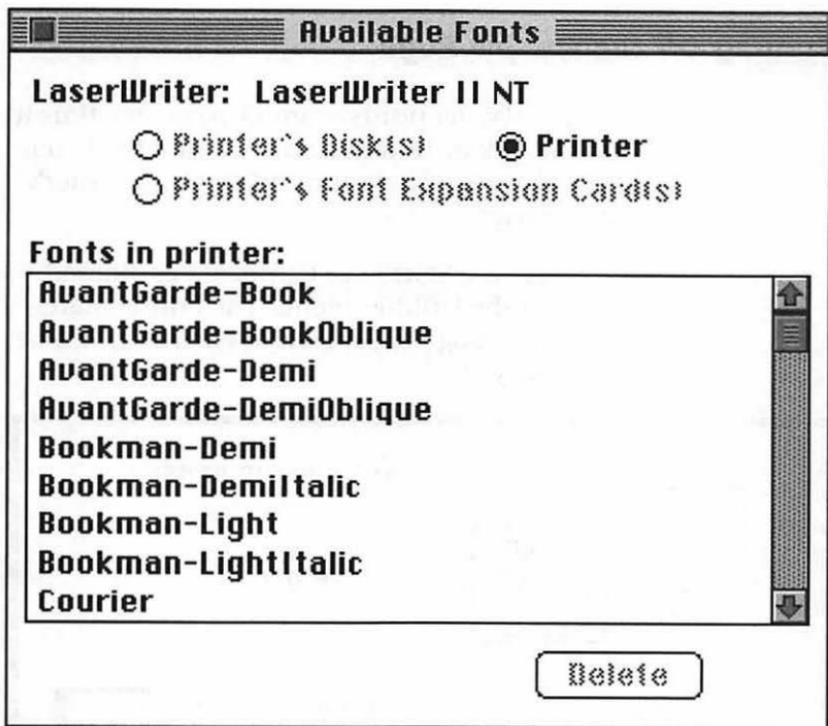


Figure 70 Available Fonts window.

2. Click the **Printer** radio button to display the available fonts in the LaserWriter's memory (both RAM and ROM).
3. Click the **Printer's Hard Disk(s)** radio button to display the fonts available on the hard

disk. (This option is available only if a hard disk is attached to the printer.)

4. Click the **Printer's Font Expansion Card(s)** radio button to display the available fonts contained on any expansion card that may be installed in the printer. (This option will be available only if there is a font expansion card installed.)

Turning Off the Sample Page

The LaserWriter prints a sample page each time it is turned on or restarted. You can use the LaserWriter Font Utility to turn off the LaserWriter's sample page.

1. Select the **Start Page Options...** command from the **Utilities** menu. The **Printer Start Page** dialog box, shown in Figure 71, will be displayed.

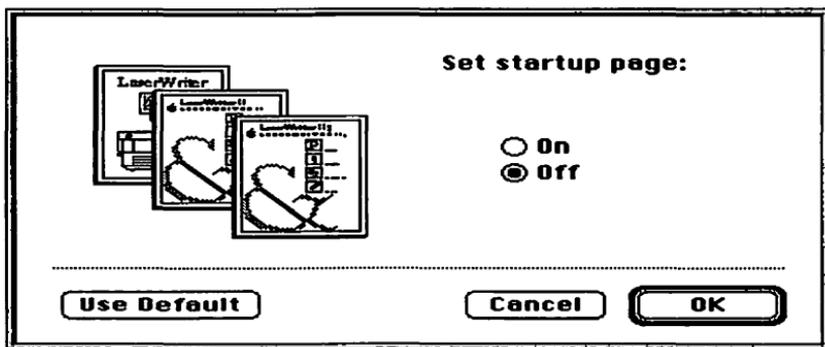


Figure 71 Printer Start Page dialog box.

2. Click the **Off** radio button to suppress the printing of the sample page.
3. Click the **On** radio button to restore the printing of the sample page.

Downloading a PostScript File

You can use the LaserWriter Font Utility to download a PostScript file directly to the LaserWriter selected in the Chooser.

1. Select the Download PostScript File... command from the Utilities menu. A standard file dialog box will be displayed.
2. Navigate to the folder containing your PostScript file and open it.
 - You will be prompted to name and save a PostScript Log file to disk. This log file contains any errors reported by the PostScript interpreter in the LaserWriter. The file can be named anything and stored anywhere on disk. If no errors are encountered or messages received from the PostScript interpreter, the log file will not be created.

Restarting the LaserWriter

From time to time the LaserWriter may encounter an error from which it cannot recover. This can result from a PostScript error, an especially severe paper jam, or a problem with the local area network connection.

If you encounter such a problem, you can either cycle the power on the LaserWriter or you can use the LaserWriter Font Utility to restart any LaserWriter with these steps.

1. Launch the LaserWriter Font Utility.
2. Choose the Restart Printer... command from the Utilities menu. An alert dialog box, warning that restarting the printer will erase all

downloaded fonts in the printer's memory, will be displayed.

3. Click the **Restart** button.



Note that using the LaserWriter Font Utility's **Restart Printer...** command will erase all downloaded fonts currently stored in the LaserWriter's memory. This action will have no effect on the fonts contained in the LaserWriter's ROM or hard disk drive.

Camera-Ready Copy

LaserWriter output can best be described as near-typeset-quality. While many printing applications will require high-resolution output from an imagesetter, the LaserWriter IIf and LaserWriter IIg can be used to produce camera-ready mechanicals for many applications. The proper paper and settings can help.

An appropriate paper specification is important when you are producing camera-ready copy from your LaserWriter.

- Use the smoothest texture paper you can find. The smoother the better.
- Paper brightness doesn't seem to have much of an impact when the material is reproduced by the printer. There is, however, a perceptual difference. Use the brightest paper possible when presenting material to clients.

Even more important than an appropriate paper, however, is the density setting you use in your LaserWriter.

- Keep the LaserWriter's density setting a step or two lighter than normal for the best results when producing camera-ready mechan-

icals. The contrast will be compensated for when the film is shot for the print job.

- A setting of about "7" on the green wheel inside of the LaserWriter II series seems to work the best. (A setting of "5" is normal on the same printer series.)

Be aware that toner cartridges can vary. I've had cartridges that insist on printing a wide black band down the side of every sheet of paper, for example. You may want to keep a cartridge that you find to be especially good for use only when printing camera-ready material.

High humidity and static electricity can weaken the toner's adherence to the paper. Try to maintain as consistent an environment as possible for crucial printing tasks.

LaserWriter Maintenance

The LaserWriter family is designed to require a minimum of maintenance. The only user maintenance required is to replace the toner cartridge every 4,000 pages or so. Apple recommends that an authorized dealer service the LaserWriter every 100,000 pages. Every time you replace the LaserWriter's toner cartridge, it's a good idea to also clean the internal areas of the printer where paper dust and toner particles are likely to collect.

Careful! It's Hot!



The fixing rollers in the LaserWriter get very hot when the printer is in operation. One of the reasons the LaserWriter uses so much electricity is that the fixing rollers must be kept at a temperature of about 400 degrees. The best strategy is to let the fixing rollers cool before performing any maintenance on the printer.

There are other internal parts of the LaserWriter that are quite sensitive and should be considered off-limits for general maintenance activities. All of the exposed gears and electrical contacts inside of the LaserWriter, for example, should not

be touched, as indicated by the dark shaded areas in Figure 72.

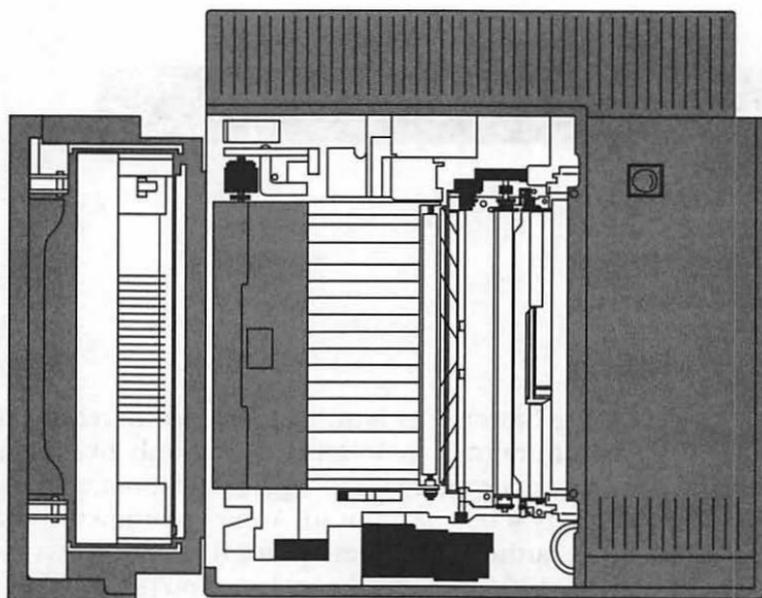


Figure 72 *LaserWriter internal view (top).*

An internal view of the LaserWriter is provided in Figure 73.

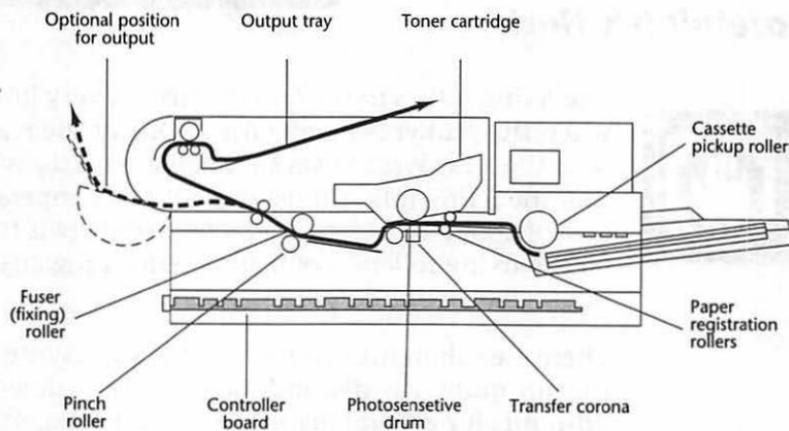


Figure 73 *LaserWriter internal view (side).*

Toner Cartridge Replacement

The LaserWriter toner cartridge is designed to yield about 4,000 pages. The actual number of pages you can expect from a toner cartridge will vary depending on the kind of pages you print. If your pages start to look too light, or if you can see thin white lines in dark graphic images, it's time to replace the toner cartridge and perform routine maintenance.

If the Low Toner Level light—shown in Figure 74—comes on, the cartridge may not need replacement. Instead, try removing the toner cartridge and redistributing the toner powder.

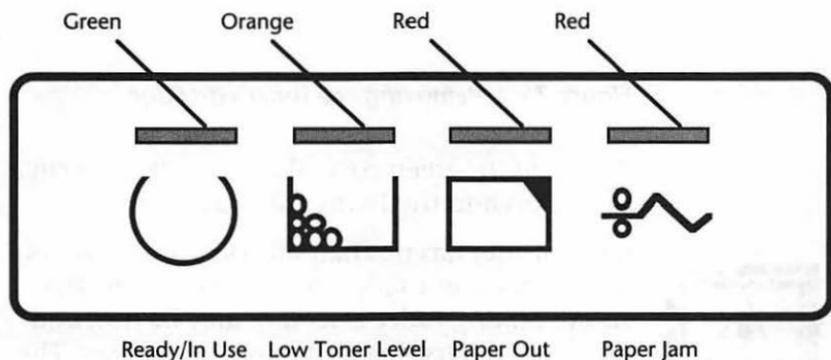


Figure 74 LaserWriter indicator lights.

You can redistribute the toner powder by removing the toner cartridge and rocking it gently back and forth while holding it level horizontally. If the Low Toner Level light comes in the middle of a print job, there is no need to cancel the printing unless the output is unsatisfactory. You can't harm the LaserWriter by continuing to print when the Low Toner Level light is on.

You can use the following steps to replace the toner cartridge.

1. Remove the old toner cartridge by opening the LaserWriter cover and pulling out the cartridge as shown in Figure 75.

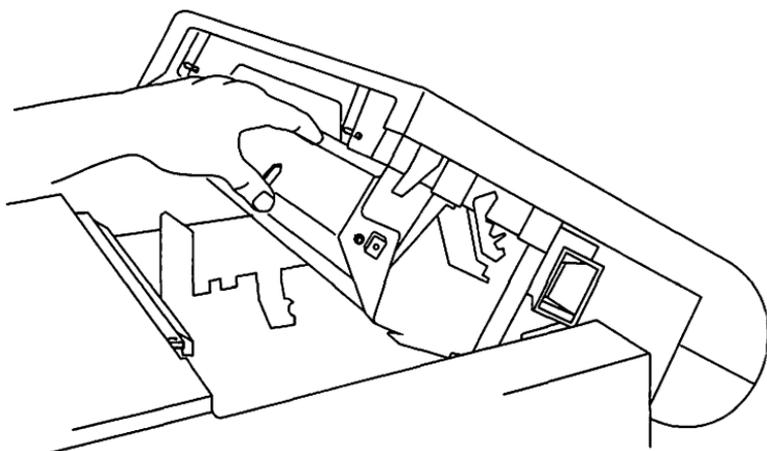


Figure 75 Removing the toner cartridge.

2. Open the green cover that protects the fixing rollers and the fixing roller assembly.



If the printer has not had sufficient time to cool, the green cover that protects the fixing rollers and the fixing roller assembly may be hot, and the fixing rollers themselves will be *very hot*. The operating temperature of the LaserWriter fixing rollers is about 400 degrees.

3. Remove the used cleaning pad from the fixing roller assembly.
4. Throw the used cleaning pad away, it is of no further use.
5. Unwrap the new cleaning pad that came packaged with the new toner cartridge.
6. Use the white felt tip attached to the new cleaning pad to clean the fixing rollers.
7. Remove the white felt tip from the new cleaning pad, and throw it away.

8. Insert the new cleaning pad into the fixing roller assembly.
9. Close the green cover that protects the printer's fixing rollers.
 - The cover is not designed to close tightly over the cleaning pad. Pressure from the LaserWriter's lid will hold it in place.
10. Clean the discharge pins, as shown in Figure 76, with the green plastic cleaning brush stored inside of the LaserWriter.

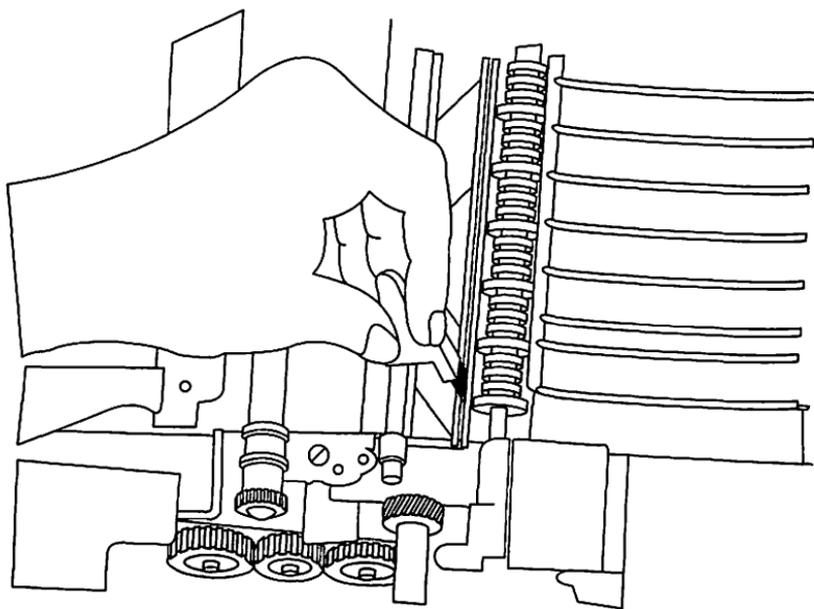


Figure 76 *Cleaning the discharge pins.*



Take extreme care during all internal cleaning operations not to break any of the fine wires inside of the LaserWriter. These wires are extremely fragile and not designed to withstand rough handling. These fine wires—the transfer corona wire and the transfer guide wires—are illustrated in Figure 77 and Figure 78.

11. Replace the green plastic cleaning brush in its storage clip when you're finished.
12. Carefully clean the transfer corona wire with the cotton swab packaged with the new toner cartridge, as shown in Figure 77.

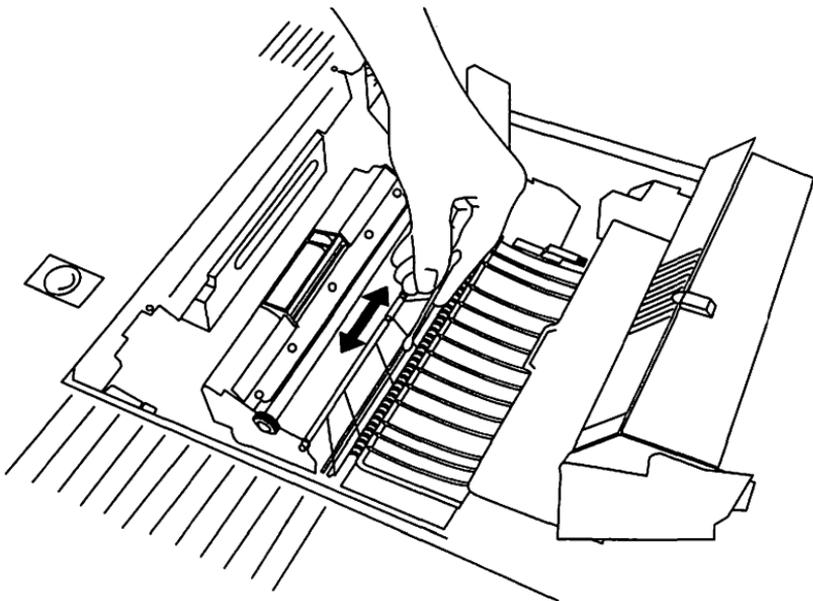


Figure 77 *Cleaning the transfer corona wire.*

- The transfer corona wire is the fine wire that runs across the middle of the LaserWriter. Clean it and the diagonal wires that run above it very gently with the cotton swab that is packaged with the new toner cartridge. Take your time; it's a tedious job, but must be done carefully.



Take extreme care during all internal cleaning operations not to break any of the fine wires inside of the LaserWriter. They are very fragile and not designed to withstand rough handling. These fine wires are illustrated in Figure 77 and Figure 78.

13. Clean the transfer guide with a damp cloth, as shown in Figure 78.

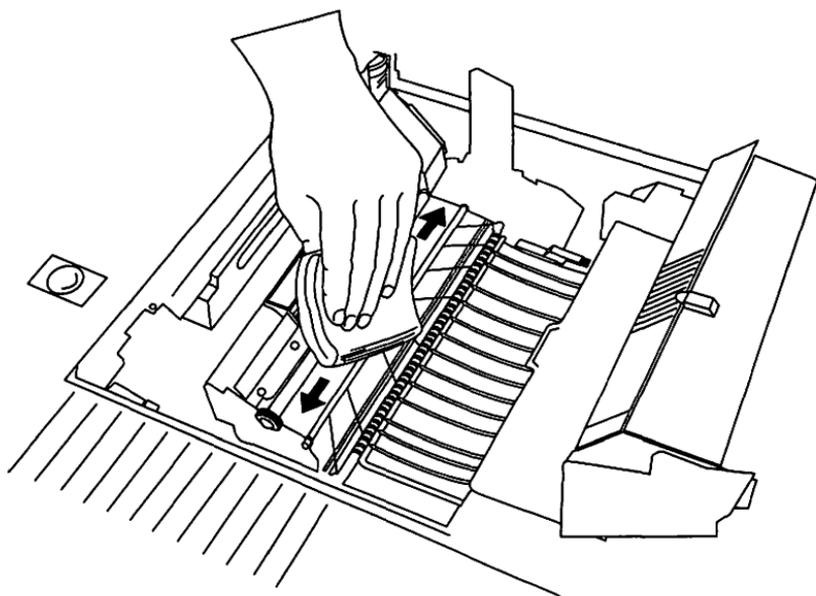


Figure 78 *Cleaning the transfer guide.*

14. Unwrap the new toner cartridge from its packaging, keeping the cartridge level.
15. Place the used toner cartridge in the carton used to ship the new toner cartridge.
 - Some toner cartridge manufacturers—such as Hewlett-Packard—offer a recycling program for their used cartridges. They will provide you with a special shipping-paid mailer to return your expended toner cartridges to them for recycling. Contact your dealer or toner cartridge vendor for more information.
16. Holding the cartridge horizontally level, gently rock it back and forth several times to redistribute the toner powder that may have

settled during shipping and storage. The process is illustrated in Figure 79.

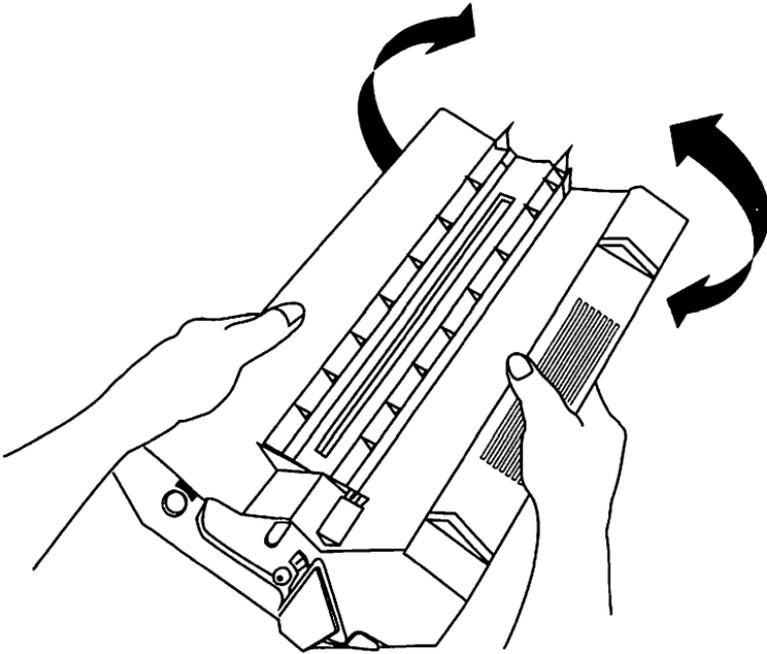


Figure 79 Rocking toner cartridge.

Toner Cartridge Recharging

Some toner rechargers are now offering special long-life drum components that they claim are good for six or seven refills, or about 30,000 copies. As a comparison, most rechargers agree that standard LaserWriter II toner cartridges can be refilled only two or three times.

I don't recommend using recharged toner cartridges. Toner cartridges are relatively inexpensive compared to the repair cost associated with cleaning up after a defective cartridge.

What's New in Word 5.0?

If you're responsible for a large number of Macs—most or all of which are running previous versions of Microsoft Word—the first thing you'll notice about Word 5.0 is the upgrade price. Microsoft charges \$129 per copy for the upgrade. The early consensus in the community, though, is that it's money well spent.

If the \$129 upgrade fee seems a little stiff, consider that Word 5.0 is the first major upgrade to the most popular Macintosh word processing program in almost three years. That's only \$43 a year for the three years that you've been without it, if you're keeping score and using twisted logic.

The second thing you'll notice about Word 5.0 is that it's a resource pig, especially under System 7. The program requires at least 4 MBytes of RAM if you want to use the new grammar checker. Forget about using it on a standard PowerBook.

Surprisingly, these are the only two complaints echoing throughout the community concerning the latest release of the word processor Mac users love to hate from the company many Mac users love to hate. To Microsoft's credit, the initial release of Word 5.0 is remarkably stable and offers a wide range of useful new features.

Microsoft expended considerable effort and resources to make sure Word 5.0 simplifies the process of everyday word processing tasks.

Interviews and focus groups with existing users were conducted throughout the development cycle, and the new Ribbon tool (discussed in the next section) is a good example of the results of that commitment.

Ribbon Tool

Word 5.0's Ribbon tool, shown in Figure 80, when used in conjunction with the Ruler shown in Figure 81, provides ready access to the most frequently used word processing tasks.

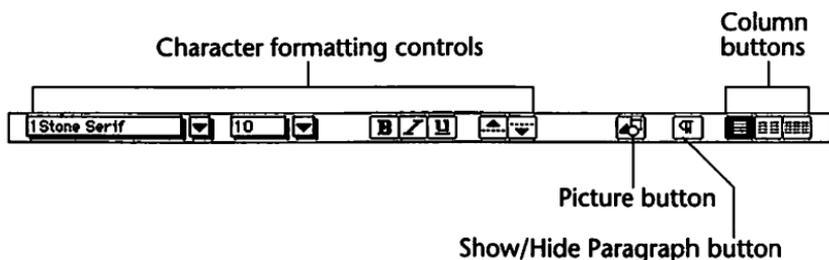


Figure 80 Ribbon tool.

You can use the Ribbon tool to format text, insert graphics, and specify the number of text columns in the word processing document.

Using the Ribbon tool, you can change the typeface and styling attributes of any range of selected text by clicking any of the character formatting control buttons.

You can change the number of text columns on the page by clicking one of the three available column control buttons.

You can insert a picture, and display the Picture dialog box wherein you can create a graphic image, by clicking the Picture control button.

Finally, you can click the Paragraph control button to toggle the display of paragraph characters and other non-printing characters.

Using the Ruler, shown in Figure 81, you can change the formatting characteristics of paragraphs within your document, your document's margins, and the widths of table columns.

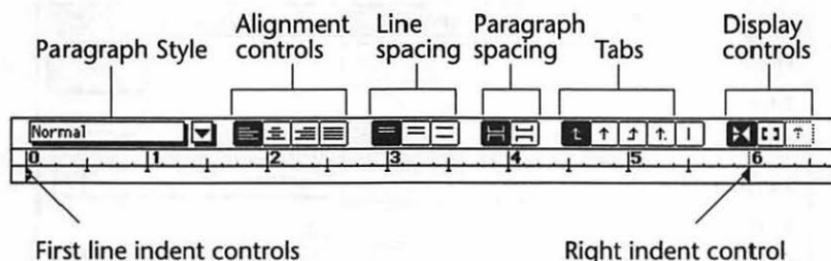


Figure 81 Ruler.

Microsoft Word's Ribbon and Ruler are best thought of as a sort of combination tool. Both tools control overlapping aspects of the word processing document within the Word environment. Paragraph- and document-level controls are both found within each tool, for example.

Ideally, one tool would control document-level aspects, another tool would control paragraph-level aspects, and yet another tool would control character-level aspects.



The Ribbon and Ruler are displayed by default in every new word processing document. If you prefer them to be hidden, you can change the specification in the View options of the Preferences dialog box. More information about Microsoft Word 5.0's new Preferences controls is provided beginning on page 186.

Find File

Word 5.0's Find File... command allows you to search for the name and even the contents of any Word or supported file. You can combine any number of search criteria including author, date, title, version, keywords, or actual text contained within the document. Selecting the Find File... command from the File menu displays Word's Search dialog box, as shown in Figure 82.

| Search | |
|---|-------------------------------------|
| File Name: | <input type="text"/> |
| Title: | <input type="text"/> |
| Any Text: | <input type="text"/> |
| Subject: | <input type="text"/> |
| Author: | <input type="text"/> |
| Version: | <input type="text"/> |
| Keywords: | <input type="text"/> |
| Finder Comments: | <input type="text"/> |
| OK | Cancel |
| Drives: | Further |
| File Types: | Readable Files |
| Search Options: | Create New List |
| Created | |
| <input checked="" type="radio"/> On Any Day | <input type="radio"/> From: 6/ 1/92 |
| | To: 6/ 1/92 |
| | By: <input type="text"/> |
| Last Saved | |
| <input checked="" type="radio"/> On Any Day | <input type="radio"/> From: 6/ 1/92 |
| | To: 6/ 1/92 |
| | By: <input type="text"/> |

Figure 82 Search dialog box.

The contents of a wide variety of file types can be searched, including Edition files, Excel, Word, Text, Apple File Exchange binary files, MacWrite, MacWrite II, Graphics, EPS, PICT, TIFF, and Microsoft Works. Any available disk drive can be searched, and similarly, any drive can be exempted from the search.

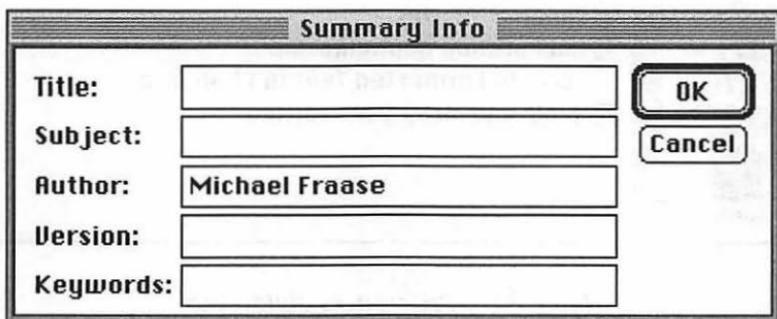
As indicated in Figure 82, any combination of search criteria can be compiled, and once files have been located, they can be added to the Search Options list.

For many users, Word's Find File... function alone will be well worth the upgrade price. As I use the feature more and more, I miss its absence in my other software tools.

A variety of third-party search filters should soon be available that will allow you to search the contents of virtually any type of file.

Summary Info

Word automatically displays the Summary Info dialog box whenever you save a file for the first time. The entries you make within the Summary Info dialog box, shown in Figure 83, are closely related to some of the search criteria used by the Find File... command.



| Summary Info | |
|--------------|---|
| Title: | <input type="text"/> |
| Subject: | <input type="text"/> |
| Author: | <input type="text" value="Michael Fraase"/> |
| Version: | <input type="text"/> |
| Keywords: | <input type="text"/> |

OK
Cancel

Figure 83 Summary Info dialog box.

Even though the entries in the Summary Info dialog box are optional, supplying appropriate information will help you (or other workgroup members) find the file easily in the future. If you don't want the Summary Info dialog box to appear when you save your new documents, uncheck the **Prompt For Summary Info** check box in the Open and Save options within the Preferences dialog box.

Preferences

Setting preferences allows you to customize your word processing environment. The method for setting preferences has been completely revamped in Word 5.0. Selecting the Preferences command from the Tools menu displays the Preferences dialog box, as shown in Figure 84.

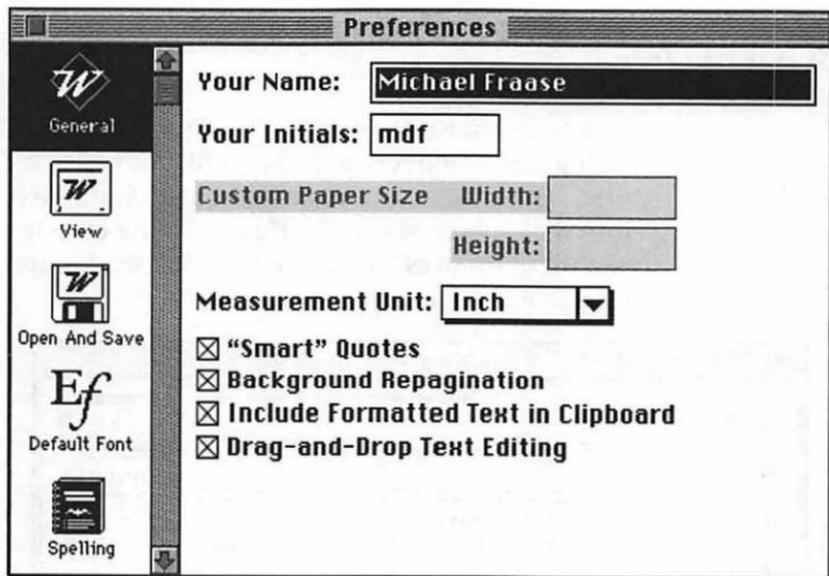


Figure 84 Preferences dialog box.

Word's new Preferences dialog box is reminiscent of the Control Panels desk accessory under System 6 of the Macintosh operating system.

The left panel of the dialog box contains a scrolling list of icons representing eight major categories of preference options.

You select a category of options by clicking on its representative icon in the scrolling list. Selecting one of the categories updates the main portion of the Preferences dialog box. Inside each category

ry are a collection of optional settings applicable to the general category currently selected.

The table in Figure 85 provides an overview of the eight general preference categories accessible from Word's Preferences dialog box.

| Category | Preference Control |
|----------------------|---|
| General | User name and initials, custom paper size, preferred measurement unit, background repagination, typographic quotes, formatted text copied to Clipboard, drag-and-drop text editing. |
| View | Menu defaults, hidden text display, table grid display, document view, ribbon/ruler view, text boundaries, picture borders. |
| Open And Save | RTF translation, automatic backup, fast save, document save reminder. |
| Default Font | Default typeface and size. |
| Spelling | Dictionaries to be used. |
| Grammar | Grammar rules to be used. |
| Thesaurus | Localized language to be used. |
| Hyphenation | Hyphenation dictionary to be used. |

Figure 85 Preferences table.

Any changes you make to any of the preference options are saved in your Word Settings (5) file. If you're using System 7, the Word Settings (5) file is stored in the Preferences folder inside your System folder.



You can create any number of custom Word Settings files—for any number of specialized uses—by selecting the Commands... command from the Tools menu. Click the Save As... button and save your new Word Settings under a different name. The new file will become the default.

Publish and Subscribe

Publish and Subscribe is a logical extension to the information transfer capabilities inherent in the Clipboard, automating the exchange of information between documents. It's easiest to think of System 7's Create Publisher... and Subscribe To... commands as a *live* Copy and Paste.

To initiate Publish and Subscribe you *publish* a document (or a section of a document), resulting in the creation of an *edition* file. You (or other workgroup members with access to the edition file) *subscribe* to the edition, inserting its information into other documents.

When the linking has been completed, changes to the original document are propagated to the subscribing documents automatically.

Documents do not have to be open in order to receive edition updates. Edition updates are forwarded automatically when the document is opened. System 7's Publish and Subscribe capabilities also work in a seamless manner across a network. Edition updates are stored on non-shared disks and are automatically forwarded to the appropriate subscribers the next time you share the volume or folder.

Both the publisher and subscriber have some control over when the updating takes place, but the subscriber generally cannot modify the source published information. It's easiest to remember that edition information always flows from the publisher to the subscriber.

Publish and Subscribe is most useful for sharing information within a collaborative workgroup, across a local area network. This feature is Apple's standard implementation of exchanging information between varied software programs.



Publish and Subscribe (and Word's Linking and Embedding functions, discussed in the following sections) is available only with System 7. If you are running any version of System 6, the Create Publisher... and Subscribe To... commands will be unavailable.

Linking

You can create a link in Word by copying a selection, called the *source*, and pasting it at a new location, called the *destination*. Whenever the source information changes, the destination is updated. You are free to specify how frequently the links within a document are updated.

Word's linking feature is most useful for creating cross-references within a document, and is especially useful in long documents.

Embedding

Word 5.0 offers a third way to exchange information between certain other applications and word processing documents with its embedding feature. You can use the Copy Object and Paste Object commands on the Edit menu to include information created by other supported applications in your word processing documents.

Word's embedding feature is most useful when your documents require portability since all information is contained within a single file.

Of the three methods of exchanging information within the Word environment, Publish and Subscribe is the only one currently supported at the Macintosh operating system level.

Print Merge

Microsoft Word's print merge capability has always been among the program's strongest features. Word 5.0 offers a print merge function that simplifies the creation of form letters, mailing labels, and documents containing boilerplate text.

Print merge allows you to automatically combine variable information with static text within the same document to create customized documents for a variety of purposes.

Word uses two separate documents to create a merged document:

- The *main document* contains the static text and formatting that is common to each merged document.
- The *data document* contains the list of variable information that makes each merged document unique.

To perform the actual print merge in Word, you place a series of commands in the main document where you want the variable information to appear. When the document is printed, Word automatically retrieves the variable information from the data document and places it in the main document to create a custom version. More information is provided in Working With Print Merge beginning on page 265.

Extensibility

Word 5.0 offers an unprecedented level of extensibility relative to other Macintosh word processing programs. Customized tools can be added to the Word environment through extensions to

the program. The advantage of this extensibility is a more customized workspace. You can add only the tools that you need, while at the same time eliminating those for which you have little use. Ideally, this results in a more efficient workspace. In practice, however, the resource requirements of Microsoft Word are quite inefficient.

Microsoft Word 5.0 ships with a useful set of basic tools. These tools are discussed in the remainder of this chapter. If you're a PowerBook user—or a desktop Macintosh user with limited computing resources—you will find that you will probably have to balance the usefulness of the tools with the amount of memory and hard disk drive space they require.

Grammar Checker

The latest version of Word sports a customizable grammar checker. You can specify the rules you want the grammar checker to apply to your documents through the Preferences... command on the Tools menu.

Word's grammar checker is based on Houghton Mifflin Company's CorrecText Grammar Correction System, and is quite complete. Options are provided to flag both stylistic and grammatical errors. Some of the major rule groups included are cliches, weak modifiers, redundant expressions, vague quantifiers, multiple negatives, misused words, jargon, split infinitives, passive verb usage, and archaic expressions.

Selecting the Grammar... command from the Tools menu causes Word to automatically check the spelling of your document. This streamlines the proofing process in some situations. You can override this setting with the following steps.

1. Select the Preferences... command from the Tools menu. The Preferences dialog box will be displayed.
2. Select the Grammar icon from the scrolling list in the left portion of the Preferences dialog box. The Grammar preferences will be displayed, as shown in Figure 86.

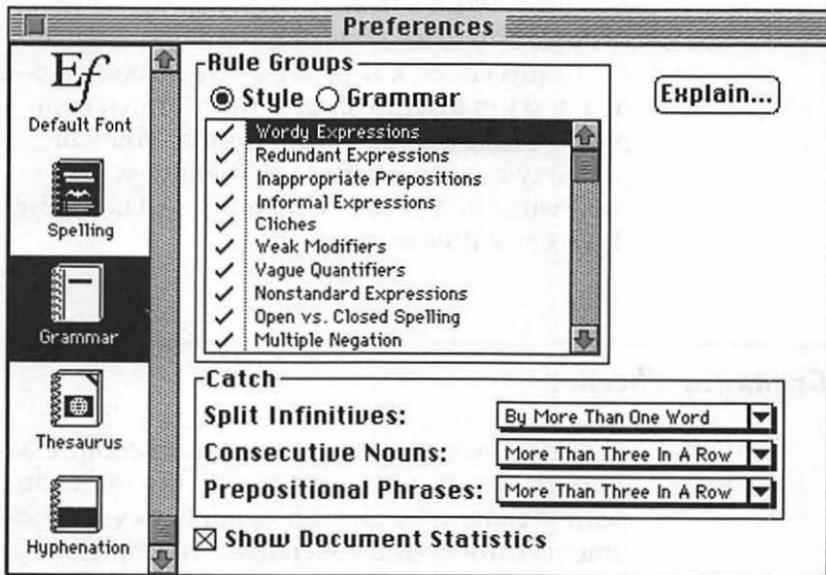


Figure 86 Grammar Preferences dialog box.

3. Click the **Grammar Rule Groups** radio button. The dialog box will be updated to display the grammar rule groups.
4. Scroll to the bottom of the grammar rule groups list and uncheck the **Spelling Errors** option. It's the last item on the list.

Microsoft Word 5.0 is capable of evaluating the readability level of a document, reporting the reading level required to understand the document. To enable this function, check the **Show Document Statistics** checkbox in the Grammar preferences dialog box, as indicated in Figure 86.

Thesaurus

Word offers an optional Thesaurus command that can be included during the installation process (see *Installing Word* on page 197). You can use Word's integrated thesaurus to look up a synonym for a selected word within any Word document. Antonyms are also supplied.

You can use the following steps to look up a word in the integrated thesaurus.

1. Select the word you want to look up in the body of your document.
2. Select the Thesaurus... command from the Tools menu. The Thesaurus dialog box—with your selected word in the Replace field—will appear with a list of Meanings and Synonyms, as shown in Figure 87.

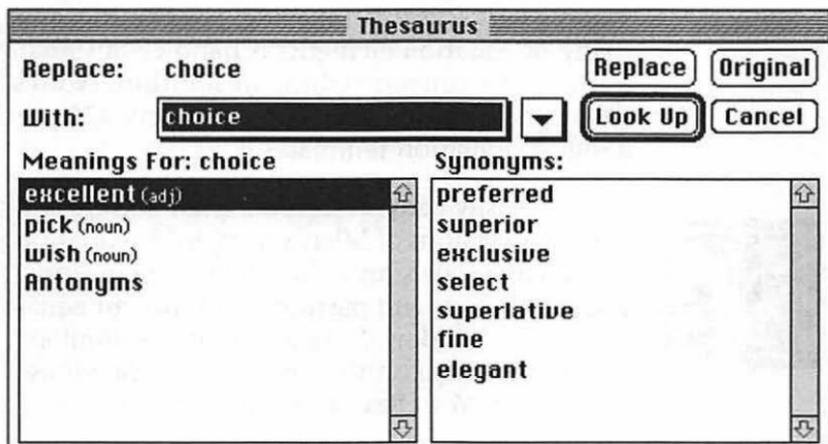


Figure 87 Thesaurus dialog box.

3. Select the appropriate usage (or the Antonyms item) from the Meanings list.
4. Select the appropriate synonym from the Synonyms list.

5. Alternately, click the **Lookup** button to display the usages and synonyms for the word currently highlighted in the With field.
6. Click the **Replace** button to replace the selected word in your document with the word or phrase contained in the With field.

Equation Editor

Word's equation editor is based on a special version of Design Science Inc.'s MathType and is included in the Microsoft Word package. The equation editor is implemented as an optional command that can be included during the installation process (see *Installing Word* on page 197).

You can use the equation editor to create complex mathematical equations with a simple graphical interface. All spacing, positioning, and sizing of equation elements is handled automatically by the equation editor. In addition, Word's equation editor includes approximately 120 pre-designed equation templates.



You can easily convert formulas that you created in earlier versions of Microsoft Word to equation editor equations simply by copying them from your document and pasting them into an equation editor window. Note also that the familiar formula editing commands offered in previous versions of Word have been retained.

File Conversion

Microsoft Word recognizes and automatically converts a wide variety of foreign file formats. This file conversion process is implemented as a

series of external commands that are added during the installation process (see *Installing Word* on page 197). Presumably, third-parties will offer other file conversion commands for use with Word. You can export your Word files in a variety of file formats for use with other software.

Word recognizes and automatically converts the following file formats:

- Word for Macintosh versions 1.0, 3.0, and 4.0 (there never was a version 2.0)
- Word for DOS versions 1.0, 2.0, 3.0, 3.1, 4.0, 5.0, and 5.5
- Word for Windows versions 1.0 and 2.0
- Microsoft Works version 2.0
- Rich Text Format (RTF; Microsoft's interchange format)
- MacWrite versions 4.5 and 5.0
- MacWrite II
- WordPerfect for DOS versions 5.0 and 5.1
- ASCII Text
- MacPaint
- Encapsulated PostScript (EPS)
- Tagged Image File Format (TIFF)
- PICT
- PICT2

The conversion process is automatic and takes place transparently. You can use the following steps to open a file created in another program supported by a Word file conversion command.

1. Launch Microsoft Word.
2. Select the Open... command from the File menu. Word's standard Open File dialog box,

similar to the example shown in Figure 88, will be displayed. Notice that a pop-up menu containing a list of all supported file types is available at the bottom of the dialog box. The expanded file type pop-up menu is also shown in Figure 88.

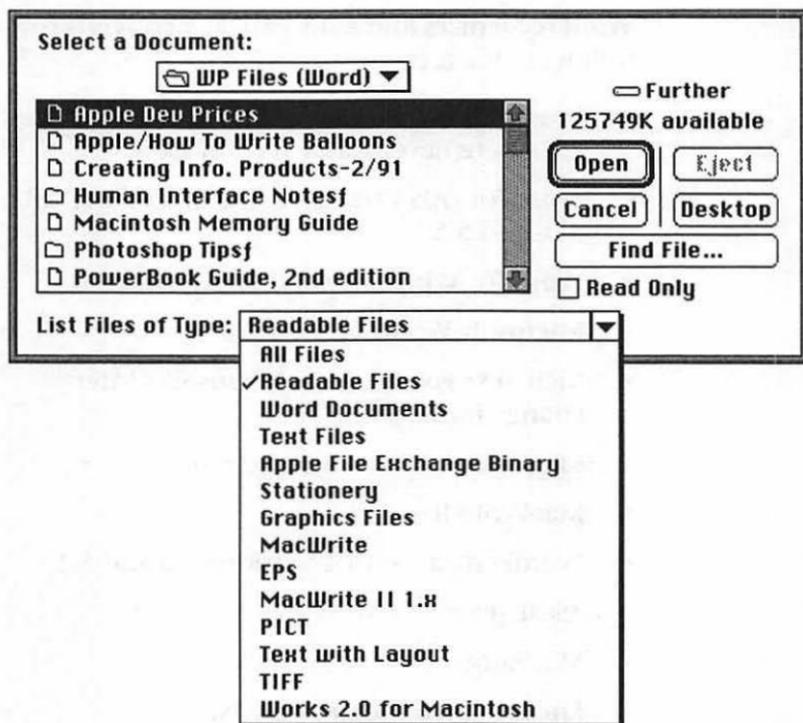


Figure 88 Open File dialog box.

3. Select the file type you want to open from the pop-up menu. The default is for all readable file types to be displayed.
4. Select the file you want to open from the scrolling list.
5. Click the **Open** button. The selected file will be opened in a new window.
 - Alternatively, you can open the file by double-clicking its name in the list.

Installing Word

Microsoft Word 5.0 ships on five 800 KByte floppy disks and must be installed using the accompanying installer application. The Word program files are compressed on the floppy disks, so you can't simply copy the files to your hard disk. This chapter explains how to install Word and its associated files on your hard disk drive.

Resource Requirements

Word requires a Macintosh Plus or later with a hard disk drive, an 800 KByte floppy disk drive, and at least 1 MByte of RAM.

Using MultiFinder or System 7 requires a minimum of 2 MBytes of RAM. Adding the grammar checker under System 7 requires a minimum of 4 MBytes of RAM.

Count on reserving at least 5 MBytes of hard disk space for even the most modest installation.

At the time of this writing (Winter 1992) the three PowerBooks were shipped in standard configurations with between 2 MBytes and 4 MBytes

of RAM. Microsoft Word taxes the available resources of even the most resource-rich PowerBook. This is unfortunate since word processing is one of the most widely used portable computing applications.

The Installation Process

When you launch the Installer application and select the target location and installation options, the appropriate software is copied to your hard disk drive. After the software has been copied, the Installer decompresses the files.

You have two basic installation options:

- The *Easy Install* option installs Word and all of its associated files including sample documents, online help, and all of the optional external commands.
- The *Customized Install* option installs only the software options you specify.

In most cases, the Easy Install option is the most appropriate choice.

Easy Install Option

You can install Microsoft Word and all of its associated files by following these steps.

1. Make backup copies of all of your master Word floppy disks.
2. Restart your computer with all virus protection utilities turned off. The installation may not be successful if any virus detection or protection software is running.

3. Insert your *backup* copy of the Microsoft Word for the Macintosh *Install* Disk into your floppy disk drive.
4. Launch the Installer application.
 - An introductory screen will be displayed.
5. Click the **OK** button.
 - If this is the first time that you have run the Installer, you will be prompted to enter your name and the name of your organization (if any).



Note that your name and organization information will be written to the floppy disk. *Always work with a backup disk* and make sure that the information you enter is correct. If you are not using a backup of your master disk, go back to step 1 and restart the installation process.

6. Enter your name and organization.
7. Click the **OK** button.
 - A message will appear prompting you to turn off any virus protection software that may be running.
8. Click the **Continue** button.
 - A dialog box will appear indicating that the software will perform an *Easy Install*, installing the Word application and all of its supporting software. The dialog box will also indicate on which hard disk drive the software will be installed.
9. Check the target hard disk drive. You can specify a different target disk by clicking the **Switch Disk** button.
10. Click the **Install** button.
 - A dialog box, like the one shown in Figure 89, will be displayed. You can choose

to install the software in an existing folder, or you can create a new folder for the Word application and its associated files.

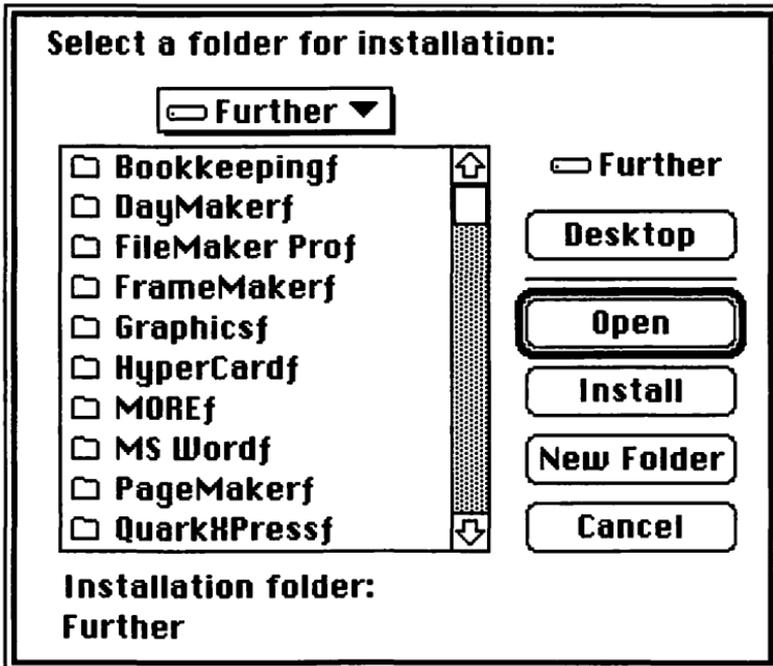


Figure 89 Installer target folder selection.

11. Open the target folder by selecting it and clicking the **Open** button, or by double-clicking on its name in the list. Alternatively, create a new target folder by clicking the **New Folder** button.
 - If you click the **New Folder** button you will be prompted for a name for the newly created folder.
12. Click the **Install** button.
 - The installation process will begin. You will be prompted to insert the additional installation disks when appropriate. When the installation is complete, the

Installer will decompress the files it copied to your hard disk drive. This process will take several minutes. When the decompression is finished, the Installer will display a dialog box prompting you to specify a default font and point size.

13. Specify a default font and point size to be used by every new document you create.



You can change the default font or point size at any time within Word by using the Default Font preferences panel. A shortcut for changing the default font or point size is to select the Default Font... command on the Font menu. This causes the Default Font preferences panel to be displayed immediately.

14. Click the **Restart** button when the installation process is complete.

Network Installation

Your network administrator may have placed the Microsoft Word installation files on a central server rather than distribute the installation disks. If this is the case, you can follow these instructions to perform a network installation.

1. Select the Chooser item from the Apple menu. The Chooser dialog box will appear.
2. Click on the AppleShare icon in the left panel of the dialog box.
3. Select the appropriate file server in the right panel of the dialog box.
4. Click the OK button.
5. Login to the file server you have selected by following the instructions provided by your network administrator.

6. Navigate to the folder containing the Word Installer application and its associated files.
7. Follow steps 4 through 14 of the instructions provided in the Easy Install Option section, beginning on page 198.

Customize Install Option

You can override the Easy Install option and install only the files you specify with the Customize Install Option. This is appropriate if you want to add only selected options if you have already installed Word or if you want to conserve hard disk space. You can perform a customized installation with the following steps.

1. Follow steps 1 through 8 of the instructions provided in the Easy Install Option section, beginning on page 198.
2. Click the **Customize** button.
 - A dialog box will appear prompting you to select the options you want to install.
3. Select the options you want to install by clicking on the first selection and Shift-clicking on each additional option. As you add options, the dialog box will be updated to report the options you have selected.
4. Follow steps 9 through 14 of the instructions provided in the Easy Install Option section, beginning on page 198.

Working With Styles

Mastering the concept of paragraph styles is the key to working effectively with Microsoft Word. This chapter provides basic information and a strategy for using Word's styles.

Microsoft Word doesn't support character-level styles, but considers a paragraph style to be a collection of character and paragraph formats to which you assign a name.

Using Word's styles provides you with the advantage of being able to apply a group of formatting information to a paragraph with a single step. This results in consistency across your document. Additionally, if you change a style's formatting, every paragraph in your document that uses that style will be automatically updated to reflect the changes you made to the style.

Defining a Style

You create a style within the Word environment by formatting a paragraph—typeface, margins, tabs, line spacing, shading, etc.—as you want it to appear in the style and naming it. You can cre-

ate up to 221 paragraph styles per document, and any styles that you create are saved with your document.



Style names in Word can be up to 254 characters long and can include any combination of characters and spaces except the comma. Style names are case-sensitive, and you can give a style more than a single name. A good strategy is to give often used styles two names: a long one to easily identify the style, and a short one to make applying that style easier from the keyboard. For example, *Heading 1* and *h1* to signify a level one heading in your document.

You can use the following steps to define a style.

1. Using the various menus or keyboard commands, format a paragraph as you want the style to be defined. Figure 90 shows an example of the formatting appropriate for a level one heading.

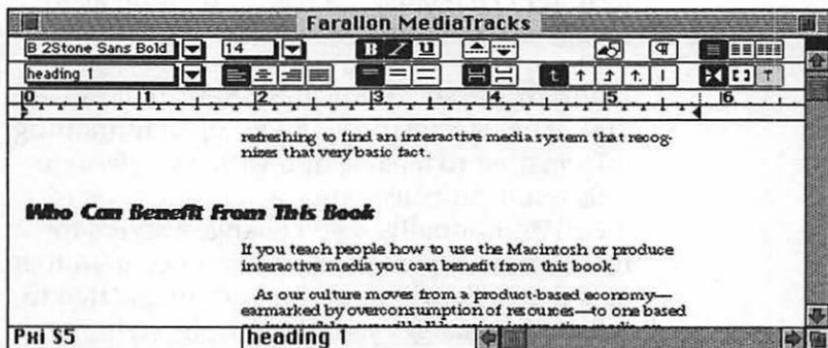


Figure 90 Level one heading formatting.

2. Select the entire paragraph you've formatted by triple-clicking anywhere within the paragraph or by double-clicking beside the paragraph in the selection bar.
 - The *selection bar* is an unmarked area that runs along the left edge of the window.

When the cursor is within the selection bar, it turns into an arrow. Clicking once in the selection bar selects a line; clicking twice selects the paragraph; triple-clicking selects the entire document.

3. Click in the Style box on the ruler. (If the ruler is not displayed, select the Ruler command on the View menu.) The Style box will be highlighted, as shown in Figure 91.

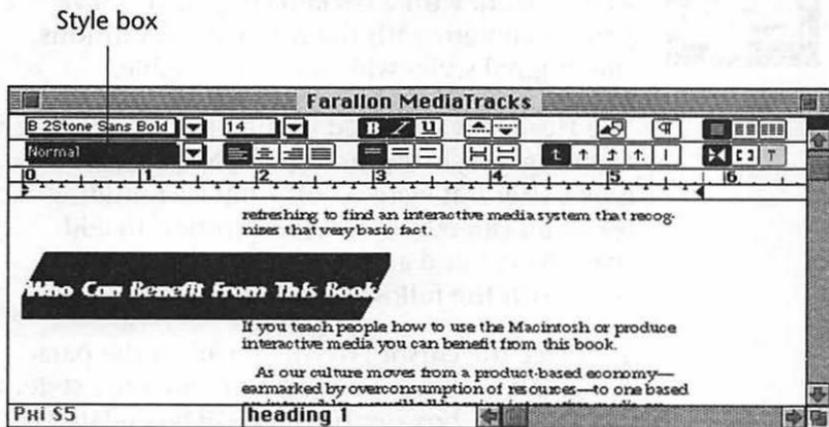


Figure 91 Style box.

4. Enter the name you want to use for the style in the Style box and press Return.
5. A dialog box will appear, prompting you to confirm that you want to define the new style based on the paragraph selection. Click the **Define** button.

The new style will appear in the Style pop-up menu on the ruler.



Before you start creating a lot of styles for your document, you may want to take a look at the technique provided in *A Style Strategy* beginning on page 211. One of Microsoft Word's most powerful features is its ability to base paragraph styles on an existing style.

Refining a Style

Word's styles can be thought of as being fluid. You can change or edit the formatting information contained within any style at any time.



Be aware that editing a style in an existing document will change the formatting of all the paragraphs that have been tagged with that style. Always work with a backup copy. If you save your document with the new style definitions, the original styles will be unrecoverable.

The Head1 style created in the previous section, *Defining a Style* beginning on page 203, would look better if it were set off from surrounding text. You can edit the style definition to add space before and after the paragraph specifications with the following set of steps.

1. Place the cursor anywhere within the paragraph of which you want to refine the style. The Style box on the ruler will be updated to reflect the name of the style.
2. Select the Paragraph... command from the Format menu. The Paragraph Format dialog box, shown in Figure 92, will be displayed.

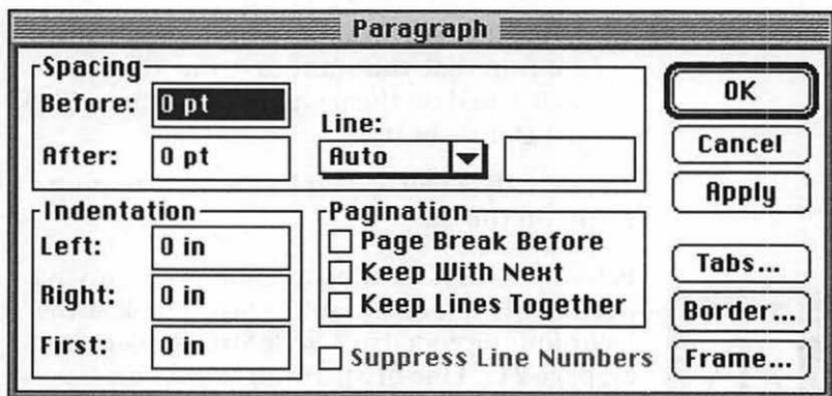


Figure 92 Paragraph Format dialog box.

3. Enter 18 pt in the Spacing Before field. This adds 18 points of white space before the paragraph, setting off the section head from the preceding paragraph.
4. Enter 12 pt in the Spacing After field. This adds 12 points of white space after the paragraph, setting off the section head from the following paragraph.
5. Check the **Keep With Next Pagination** checkbox. This assures that the section head will be kept on the same page as the first paragraph that follows it.
6. Click in the Style box on the ruler. The Style box will be highlighted.
7. Enter the name you want to use for the style in the Style box and press Return.
8. If you name the altered style the same as your original style—or any existing style—the Reapply Style dialog box, shown in Figure 93, will be displayed.

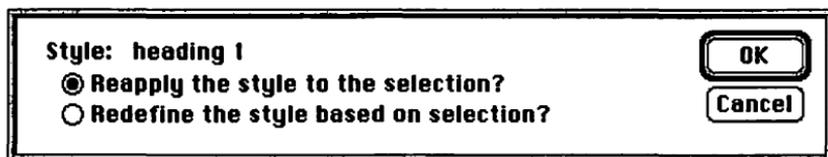


Figure 93 Reapply Style dialog box.

9. Click the **Redefine the style based on selection** radio button. The altered style will replace the original style. The formatting of all paragraphs in your document that are tagged with the style name will be updated to reflect the new style definition.
 - Clicking the **Reapply the style to the selection** radio button reapplies the original style to the paragraph. All existing paragraphs are unaffected.

Applying a Style

When you have defined a style, you can apply it to any number of paragraphs within your document. When you apply a style to a paragraph, the formatting characteristics you defined for that style are assigned to the paragraph.

With the Ruler

You can use these steps to apply a style to any paragraph in your document.

1. Place the cursor anywhere within the paragraph to which you want to apply the style. You can also select multiple paragraphs.
2. Select the style you want to apply from the Style box pop-up menu on the ruler, as shown in the example in Figure 94.

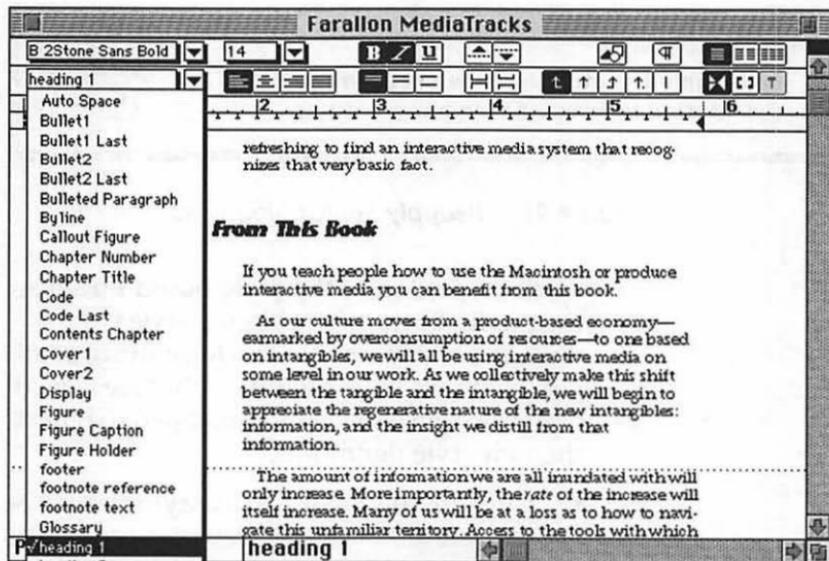


Figure 94 Style box pop-up menu.

With the Keyboard

If you prefer to assign paragraph styling from the keyboard, you can do so with these steps.

1. Place the cursor—using the arrow keys on the keyboard—anywhere within the paragraph to which you want to apply the style.
2. Press Command-Shift-S. The word *Style* will appear in the status bar at the bottom of the document window.
3. Enter the name of the style and press Return.
 - Note that you need to type only enough of the style name to uniquely identify the style. If you have multiple section head styles, for example, named *Heading 1*, *Heading 2*, *Heading 3*, and so on you would have to type the entire style name. This is why it makes good sense to rename your most commonly used styles with abbreviated names such as *H1*, *H2*, *H3*, and so on.



You can apply the same style to multiple paragraphs with this shortcut: Select the next paragraph to which you want to apply the style and press Command-Y. Alternatively, you can select the next paragraph and Select the Repeat command from the Edit menu.

With the Work Menu

A third way of applying a style within the Word environment is to add it to the Work menu and select the style from there. This option is especially useful if you are working on a small screen and elect to hide the ruler and ribbon.

You can add your most commonly used styles to Word's Work menu with these steps.

1. Select the Style... command from the Format menu. The Style dialog box, shown in Figure 95, will be displayed.

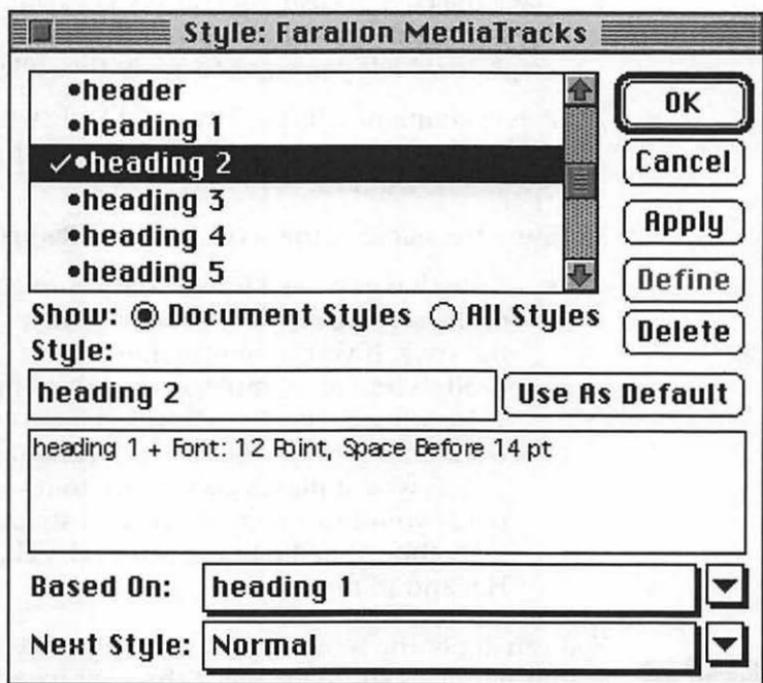


Figure 95 Style dialog box.

2. Press Command-Option-+ on the keyboard. (That's Command-Option-Shift-=). The cursor will change to a bold plus sign.
3. Click the style name in the Style dialog box you wish to add to the Work menu.
 - If a Work menu does not already exist, Word will create one automatically and add the style you have selected to it.

You can subsequently assign a paragraph style by placing the cursor anywhere within the para-

graph to which you want to apply a style and selecting the style from the Work menu.

You can remove any item from your Work menu by pressing Command-Option-(minus) on the keyboard and selecting the menu item.

A Style Strategy

One of Microsoft Word's most impressive features is its ability to build a *style sheet* by basing new styles on existing ones. All of the available styles for a document are referred to as that document's style sheet. A document's style sheet is saved as an integral part of the document.

Most documents can use styles that are based on two basic styles: one for body text and one for display elements such as chapter titles, heads, and figure captions. If you are creating each style from scratch, you're working too hard.

Begin by using these steps to define a body style. Note that Word uses the Normal style as a default for the most commonly used style.

1. Place the cursor anywhere within the paragraph to which you want to apply the style. You can also select multiple paragraphs.
2. Select the Style... command from the Format menu. The Style dialog box, shown in Figure 95 on page 210, will appear.
 - The upper portion of the dialog box contains a scrolling list of all available styles in the document. This list contains Word's default style sheet (default styles are preceded with a • bullet character). The lower portion of the dialog box contains the actual style description and op-

tions for assigning a Based On style and a Next Style.

3. Select the Normal style (•Normal) from the scrolling style list. The lower portion of the dialog box will be updated to reflect the information for the Normal style.
 - If you are working with a new document, the Normal style will be the only available style in the document. The font and size will be the defaults you specified when you first installed Word.
4. With the Style dialog box still open, select the appropriate typeface for your document's body text from the Font menu.
5. Select the appropriate typeface size from the Font menu, again with the Style dialog box still open.
6. Select appropriate typeface styling attributes from the Format menu. In most cases, the body text will be the Plain Text or Roman version of the typeface.
7. Click the **Define** button to add the altered Normal style to the document's style sheet.
 - Alternatively, you can click the **Use as Default** button. This adds the altered Normal style to Word's default style sheet that is used by all new documents. This is especially useful for maintaining consistency across various documents.

Next, you can use these steps to add a base style for the display elements of your document.

1. Select the New Style entry from the scrolling style list in the Style dialog box.
 - If the Style dialog box is not displayed, select the Style... command from the Format menu.

2. Enter the name for the style on which you will base other display type styles. In this example, the name Display will be used.
3. Select the characters in the Based On field and press the Delete key to delete them.
4. Select the appropriate typeface for your document's display text from the Font menu.
5. Select the appropriate typeface size from the Font menu.
6. Select appropriate typeface styling attributes from the Format menu.
7. Click the **Define** button. Assuming that you started with a new document, the Style dialog box should now look similar to the example shown in Figure 96.

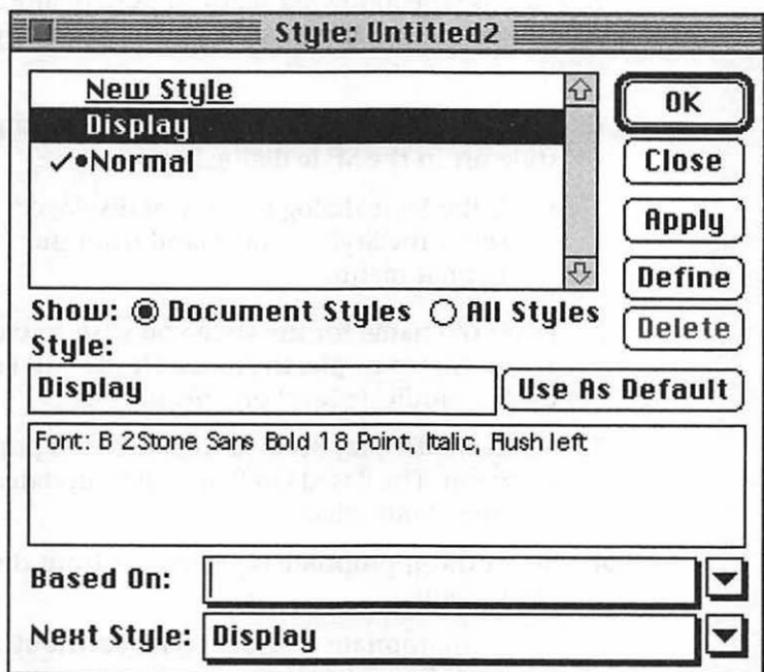


Figure 96 Style dialog box with Display style definition.

8. Select the Normal style from the Next Style pop-up menu. In most cases body text will follow a paragraph containing display text.
9. Click the **Define** button to add the altered Normal style to the document's style sheet.
 - Alternatively, you can click the **Use as Default** button. This adds the Display style to Word's default style sheet that is used by all new documents. This is especially useful for maintaining consistency across various types of documents.

You now have defined the base styles for your document. The overwhelming majority of other styles you create will be based on one of these base styles.

You can use the following set of steps to define a style based on the Display style you have already set up.

1. Select the New Style entry from the scrolling style list in the Style dialog box.
 - If the Style dialog box is not displayed, select the **Style...** command from the Format menu.
2. Enter the name for the style you wish to create. In this example, the name **Head1** will be used, to indicate level one headings.
3. Select the Display style in the Based On pop-up menu. The Based On field will be updated to reflect your selection.
4. Select the appropriate typeface size from the Font menu.
5. Select appropriate typeface styling attributes from the Format menu.
6. Select the Paragraph... command from the Format menu. The Paragraph Format dialog

box will be displayed. This dialog box allows you to specify additional attributes for the new style.

7. Enter 18 pt in the Spacing Before field. This adds 18 points of white space before the paragraph, setting off the section head from the preceding paragraph.
8. Enter 12 pt in the Spacing After field. This adds 12 points of white space after the paragraph, setting off the section head from the following paragraph.
9. Check the **Keep With Next Pagination** checkbox. This assures that the section head will be kept on the same page as the first paragraph that follows it.
10. Click the **OK** button. The additional attributes will be added to the Head1 style definition within the Style dialog box.
11. Click the **Define** button. The Head1 style definition will be added to the document's style sheet.
 - Alternatively, you can click the **Use as Default** button. This adds the Head1 style to Word's default style sheet that is used by all new documents. This is especially useful for maintaining consistency across various types of documents.

You can base all of your additional heading level styles on this Head1 style, which itself is based on the Display base style. In addition, you can create any number of additional ranges of dependent styles for use in your documents.



The two advantages to using this approach to managing your style sheets is efficiency and consistency. To change the typefaces used in your document, for example, would require the alteration of no more than the two base styles.

Any change you make to a style that other styles are based on will automatically ripple throughout your document. Developing a strategy for defining styles within the Word environment is crucial to using the word processor effectively.

Style Tips

Here's a list of a few tips to keep in mind when you are working with Word's style sheets.

- Never put multiple line spaces between paragraphs. Use the Space Before and Space After settings in the Paragraph Format dialog box instead. (Select the Paragraph... command from the Format menu.)
- You can override the Next Style option and continue with the current style in the next paragraph by pressing Command-Return to start the next paragraph.
- Text copied from one document to another changes to match the style defined in the second document. If the second document does not contain the style used by the text being copied, however, the style will be added to the second document's style sheet.
- You can merge the styles from a document by opening the Style dialog box, selecting the Open... command from the File menu, and opening the document that contains the style sheet you want to merge with the style sheet of the active document.
- You can remove any character formatting not defined in a selected paragraph's style by selecting the Revert To Style command from the Format menu.

Working With Tables

Word offers a table editor that is almost seamlessly integrated into the word processing environment. Tables are useful whenever you need to align columns of text or numerical information.

There are other uses for tables, however, that are not generally thought of, including the generation of parallel vertical columns and letterhead. Microsoft Word's tables can also contain graphics that you paste in from the Clipboard.

A table in word is comprised of a group of cells arranged in columns and rows. You create a table with the number of columns and rows you need to present your information and then fill in the cells. You can edit the contents of any cell at any time without affecting any of the other cells. Similarly, you can change the column widths by manipulating markers on the ruler.

You can use this set of instructions to add a basic table to your document.

1. Open a new document or the document to which you want to add a table.
2. If the ribbon is not displayed, select the Ribbon command from the View menu.

3. If the ruler is not displayed, select the Ruler command from the View menu.
4. If you don't see paragraph markers in your document, click the **Show/Hide ¶** button in the ribbon, as indicated in Figure 97.

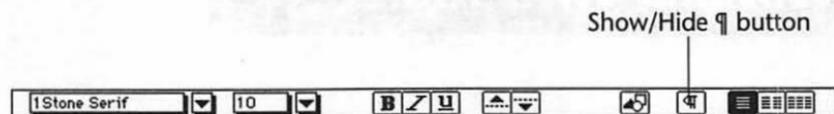


Figure 97 Show/Hide ¶ button in the ribbon.

- Microsoft Word's table editor is easier to work with if the paragraph markers are displayed. The **Show/Hide ¶** button also toggles the display of end-of-cell markers, end-of-row markers, and gridlines within tables.
5. Select the Table... command from the Insert menu. The Insert Table dialog box, shown in Figure 98, will be displayed.

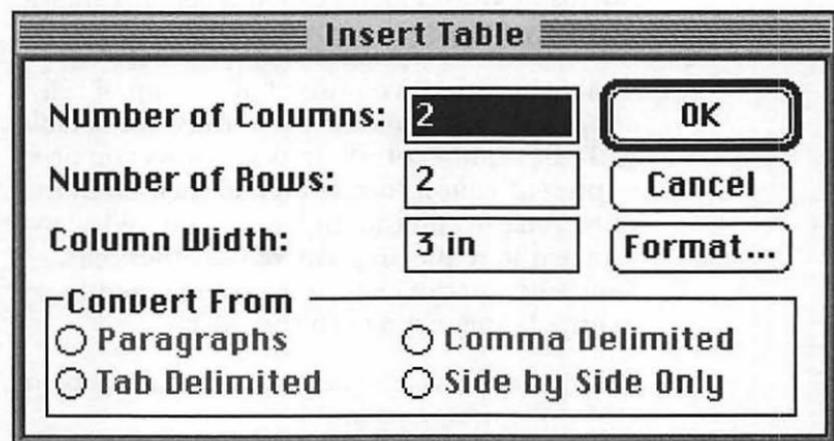


Figure 98 Insert Table dialog box.

- Word supplies a default table setting of two columns and two rows, dividing the

available document width between the columns. You can override these settings if you like; the example provided here will use a table that has three columns of equal width with five rows.

6. Enter 3 in the Number of Columns field.
 - Note that the Column Width field is automatically updated to reflect the change you made in the Number of Columns field. In this case, the Column Width field is adjusted to 2 in.
7. Enter 5 in the Number of Rows field.
8. Click the OK button. Assuming you started with a new document, your table should look like the example shown in Figure 99.

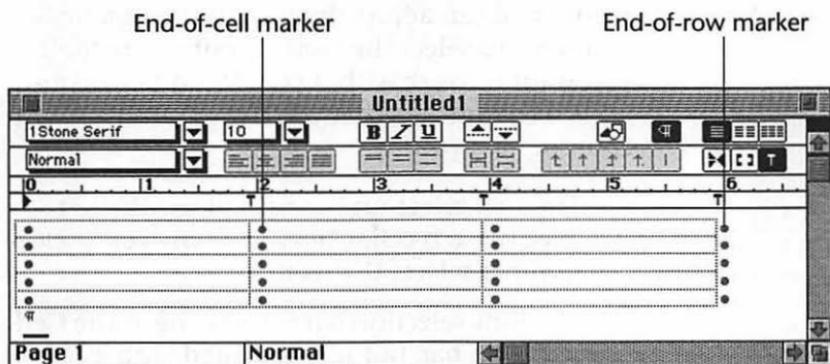


Figure 99 Simple table document.



If you don't see the table's gridlines, select the Table Gridlines option in the View panel of the Preferences dialog box. The dotted gridline of the table does not print; it's displayed only to show you the boundaries of the columns and rows of the table. Similarly, the end-of-cell markers and end-of-row markers do not print and are merely wayfinding aids.

9. Enter your information in the first cell.

10. Press Tab to advance to the next cell.
11. Enter your information in the next cell.
12. Repeat steps 10 and 11 until the information in your table is complete.



You can add more rows to your table automatically by pressing Tab at the end of the last cell. A new row of empty cells will be automatically added to the bottom of your table. Information you type within a cell will automatically wrap within the cells boundaries and the cell will automatically expand to contain your information.

Selecting Components

Before you can adjust the formatting of a table you have to select the component of the table you want to work with. Every Word table contains selection bars that you use to select a cell, a column, or a row.

- The Cell selection bar runs along the left edge of each cell. Clicking in any cell's selection bar selects that cell.
- The Row selection bar is the same as the Cell selection bar, but it is activated with a double-click.
- The Column selection bar runs along the right side of each cell, to the outside of the end-of-cell marker. It provides visual feedback: move the cursor within the Column selection bar and the cursor changes into a down arrow. You can select a column by clicking in the Column selection bar while the cursor is a down arrow.
- You can select the entire table by holding down the Option key while double-clicking anywhere within the table.

Deleting Components

You can use this simple two-step procedure to delete the *contents* of any cell or range of cells.

1. Select the cells from which you want to delete the contents.
2. Select the Cut command from the Edit menu. You must use the Cut command; pressing the Delete key deletes only the contents of the first cell of the selection.

Note that when you delete the *contents* of a cell or range of cells, only the information contained within the cells is removed; the cells themselves remain intact.

You can use the following three sequences to delete the actual cell *components* from a table. Deleting the components from a table deletes both the cell and the information it contains.

Deleting Rows of Cells

1. Select the row or range of rows to delete.
2. Press Command-Control-X.

Deleting Columns of Cells

1. Select the column or range of columns you want to delete.
2. Select the Table Layout... command from the Format menu. The Table Layout dialog box will be displayed.
3. Click the **Column** radio button.
4. Click the **Delete** button.

Deleting Selected Cells

1. Select the range of cells you want to delete.
2. Select the **Table Layout...** command from the **Format** menu. The **Table Layout** dialog box will be displayed.
3. Click the **Shift Cells Horizontally** radio button to shift the remaining cells to the *left*, filling the available space.
 - Alternatively, click the **Shift Cells Vertically** radio button to shift the remaining cells *up*, filling the available space.
4. Click the **Delete** button.

Adding Components

If you're adding more than a single component (cell, row, or column), you must first select an area with an identical number and arrangement of cells that you want to add.

Adding a Row to the End of a Table

1. Place the cursor in the table's last cell.
2. Press **Tab**.

Adding Interior Rows

1. Select a range of rows directly below the point at which you want the new rows added. The selection range must be identical in number to the ones you want to add.
2. Press **Command-Control-V**.

Adding a New Column to the Right

1. Place the cursor at the end of the table's first row, but before the end-of-row marker.
2. Select the **Table Layout...** command from the **Format** menu. The **Table Layout** dialog box will be displayed.
3. Click the **Column** radio button.
4. Click the **Insert** button.

You can insert additional columns by choosing the **Repeat** command from the **Edit** menu.

Adding Interior Columns

1. Place the cursor in the column to the right of where you want to add the new column.
 - If you want to add several interior columns, select exactly as many columns as you want to add to the right of where the new columns are to be inserted.
2. Select the **Table Layout...** command from the **Format** menu. The **Table Layout** dialog box will be displayed.
3. Click the **Column** radio button.
4. Click the **Insert** button.

Merging Cells

There are times when you will want to merge a range of cells within a row to create a single cell. This technique is useful, for example, to create a heading that spans a range of cells. You can merge a range of cells to create a single cell with the following three-step procedure.

1. Select the range of cells you want to merge.
2. Select the Table Layout... command from the Format menu. The Table Layout dialog box will be displayed.
3. Click the **Merge Cells** button.



You can split a merged cell into its original component cells by following steps 1 through 2 of the above procedure and clicking the **Split Cell** button in the Table Layout dialog box. Note that you cannot split a cell that has not been merged. If the **Split Cell** button is unavailable, the cell you have selected is not a merged cell.

Table Formatting

When you insert a new table into your document, the text formatting is the same as the paragraph that contains the insertion point. You can change any of the text contained within a table with any of the standard text formatting commands and methods.

A variety of table formatting controls are accessible by selecting the Table Cells... command on the Format menu. Using these controls you can do any of the following:

- Specify the alignment of the table.
- Specify a border for the table.
- Specify a shade for the table.
- Specify a fixed height for each row.
- Specify the spacing between columns.
- Specify the width of columns.

Some of these controls are also accessible from the ruler.

Regardless of the method you use to apply these formatting controls, the formatting affects only those cells you have selected.

Selecting the Table Cells... command from the Format menu causes the Table Cells dialog box, shown in Figure 100, to be displayed.

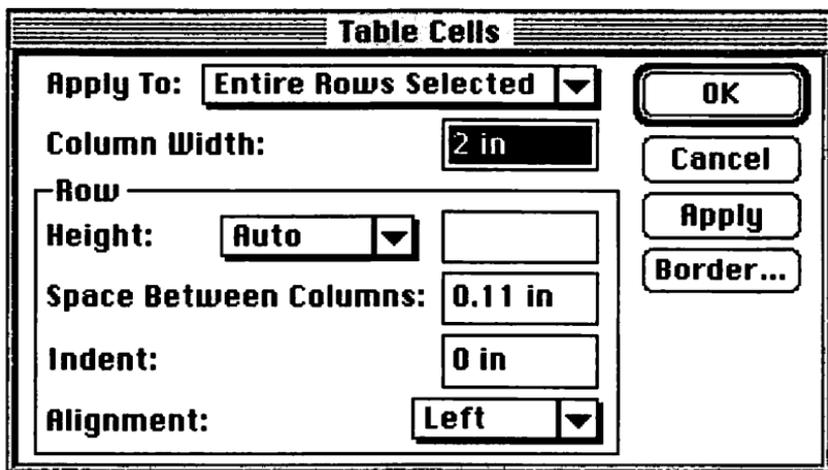


Figure 100 Table Cells dialog box.

Changing Column Width

When you insert a new table in your document, Word automatically calculates the column width based on the size of the text area available between the margins. Minimal spacing between the columns is also automatically added.

You can change the column width of your table with the **Table Scale** button on the ruler.

In those instances that require a higher degree of precision, however, a better option is to use the Table Cells command, as explained in the following set of steps.

1. Select the column or range of columns you want to adjust.
2. Select the Table Cells... command on the Format menu. The Table Cells dialog box, shown in Figure 100 on page 225, appears.
3. Enter the new width for the column or range of columns in the Column Width field.
4. Click the OK button.



You can change the spacing between columns by performing steps 1 through 2 in the above sequence and entering the appropriate measurement in the Space Between Columns field. If you want varying amounts of space between different columns, you can select each column and use the indent control on the ruler.

Adding Borders and Shading

You can add borders and shading to your table to increase your document's readability. This technique is effective for setting off table headings and the like.

It's very effective in long tables to lightly shade every fifth row or so as a visual reference and wayfinding aid.

Note that you can add borders and shading to virtually any element in your document, not just tables. You can use borders to set off columns in a multiple column document, for example, and use shading to call attention to a single paragraph. The techniques described in this section are not limited to tables, and are applicable to various elements throughout your document.

You can use the following set of steps to add borders and shading to your table.

1. Select the table components to which you want to add borders or shading.
2. Select the Table Cells... command from the Format menu. The Table Cells dialog box, shown in Figure 100 on page 225, appears.
3. Click the **Border...** button. The Border dialog box, shown in Figure 101, will be displayed.

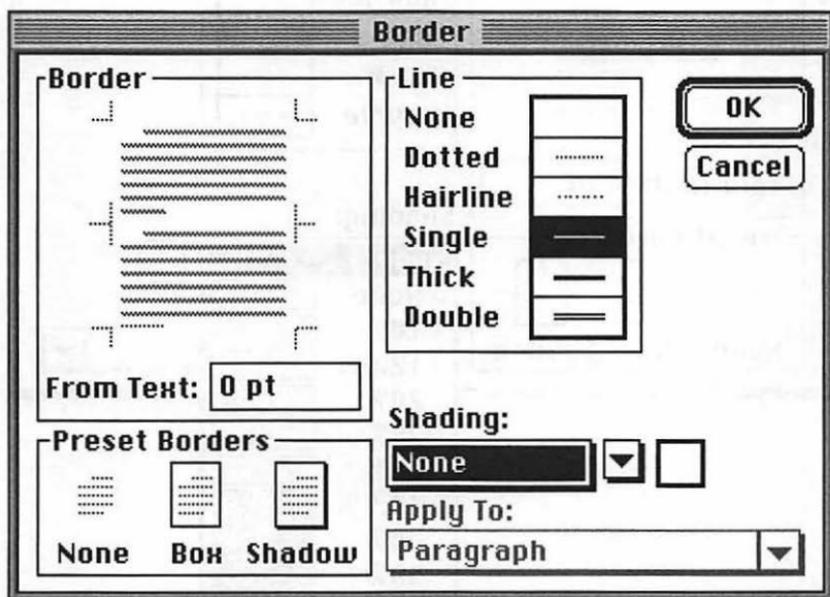


Figure 101 Border dialog box.

4. Select the appropriate Preset Border from the options available in the lower left portion of the dialog box.
 - Alternatively, select the boundaries for the border by clicking the appropriate axes from the Border items in the upper left portion of the dialog box.
5. Select the appropriate Line format from the available options in the upper right portion of the dialog box.

6. Select a shading option from the Shading pop-up menu shown in Figure 102.

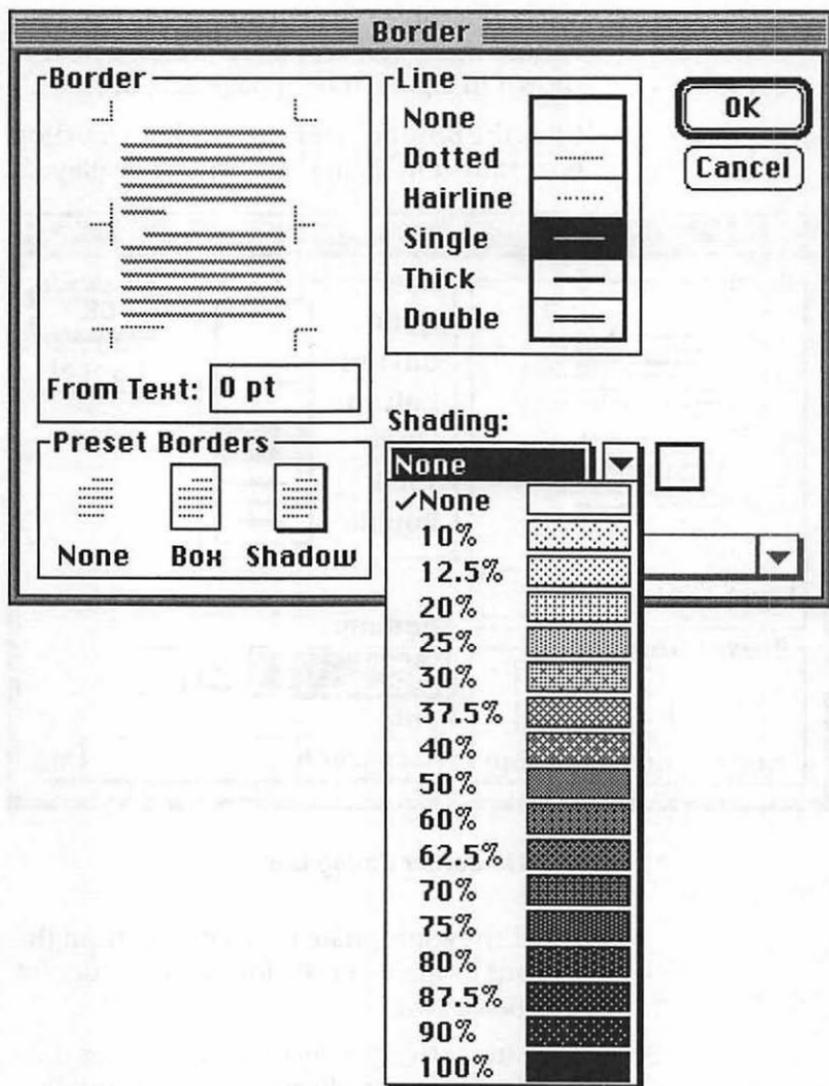


Figure 102 Border dialog box with Shading menu.

7. Select the appropriate shading percentage from the pop-up menu.
8. Click the OK button.

Table Tips

Here's a list of a few tips to keep in mind when you are working with Word's table editor.

- Formatting basic tables is tedious work; add them to your Work menu.
- Adding borders and shading are even more tedious. Any borders and shading effects you add to your table (or other paragraphs) are part of the paragraph's formatting. Add the borders and shading effects when you set up your document's style sheets.
- You can control the spacing between rows of your table more easily (and more precisely) by using styles to format the table's cells. Also, if you use styles, the row spacing will be consistent throughout the document.
- If you repeatedly use a certain kind of table, store the table as a glossary item, and add it to your Work menu.
- You can use your tables as simple spreadsheets. You can total a column of numbers (or a row of numbers, for that matter) by selecting the appropriate cells and choosing the Calculate command from the Tools menu. The sum is calculated and stored on the Clipboard. You can then paste the result into your document.
- You can sort the contents of your tables by selecting the appropriate cells and choosing the Sort command from the Tools menu.
- To alphabetize a list of names, use separate cells for first and last names and sort the contents of the last names column.
- If you find yourself working with tables more than you thought you would (and you prob-

ably will), you can add various options from the Table Layout dialog box to the appropriate menus with the Commands command on the Tools menu. You can also add keyboard shortcuts to the new commands.

- You can use Word's table editor to easily create multiple-column documents such as simple newsletters, resumes, and the like. This strategy works best with documents that are symmetrical rather than asymmetrical.
- You'll save yourself a lot of headaches if you use the **Show/Hide ¶** button in the ribbon to display all paragraph and table markers.
- You seldom need to specify the number of rows, since a Tab will add a row for you. You don't have to use the standard margins of the rest of the document; you can set your own for the table itself.
- Use Page Preview early and often to see how you are doing.
- To help size columns, type in the longest piece of text that will appear in a single cell. Using this sample, resize the cell.
- A table is an easy way to do a letterhead with graphics and text. Use the First Page Header option and insert a table. Next, establish columns for the elements of the letterhead. Then, resize the columns as needed. Finally, paste your graphics where desired and type letterhead text in the appropriate table column. The resulting elements will appear only on the first page.

Working With Outlines

Microsoft Word sports an integrated outline view that can be applied to any Word document. This outline view simplifies the creation and management of long documents. It's taken me quite a few years to realize that our grammar school teachers were right: long documents are much easier to create if you work from an outline.

There are Macintosh outliners available that offer a more complete and customizable feature set, but none that are as seamlessly integrated within a complete word processing environment. The main benefit to this approach is that you don't have to create an outline separately from your working document. In Word, your outline is part of your working document.

Apply the outline view to your document by selecting the Outline command from the View menu. In the outline view, you can *expand* and *collapse* the headings and subheadings in your outline. Expanding the outline results in more detail being displayed, while collapsing the outline causes only the underlying structure of the document to be displayed.

In addition to providing a structural overview of your document, Word's outline view also serves

as an easy way to move large pieces of a document from one place to another.

Figure 103 offers a comparative view of a portion of a very large Word document and its outline.

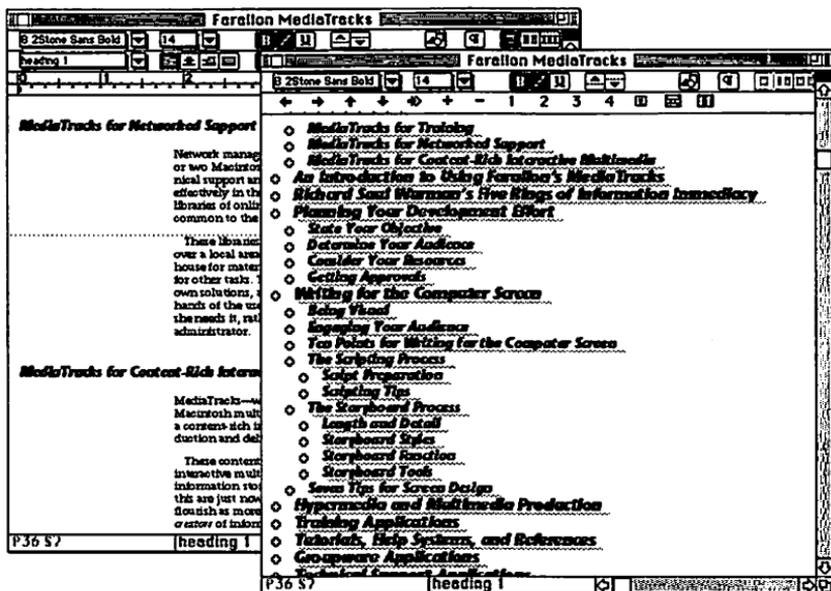


Figure 103 Document (rear) and outline (front) views of the same document.

Creating a New Outline

You can create a new outline with the following set of steps.

1. Open a new document.
2. Select the Outline command from the View menu. The ruler will be updated to reflect the outline view.
3. Enter a level one heading by typing the information at the insertion point.

4. Press Return to mark the end of the level one heading. A new level one heading will automatically be inserted.
5. Continue adding level one headings by repeating steps 3 and 4 as needed.
6. You can add a level two heading—a subtopic in your outline—by clicking the demote heading level icon (Right Arrow) on the ruler. The current outline item will be indented a half-inch denoting that it is a subtopic.
7. You can add subsequent levels of subtopics—level three headings, etc.—by using the demote heading level icon (Right Arrow) on the ruler to set the appropriate level. The subtopic (heading) level is also reported in the status bar at the bottom of the window. Figure 104 shows a sample outline that was created using these techniques.

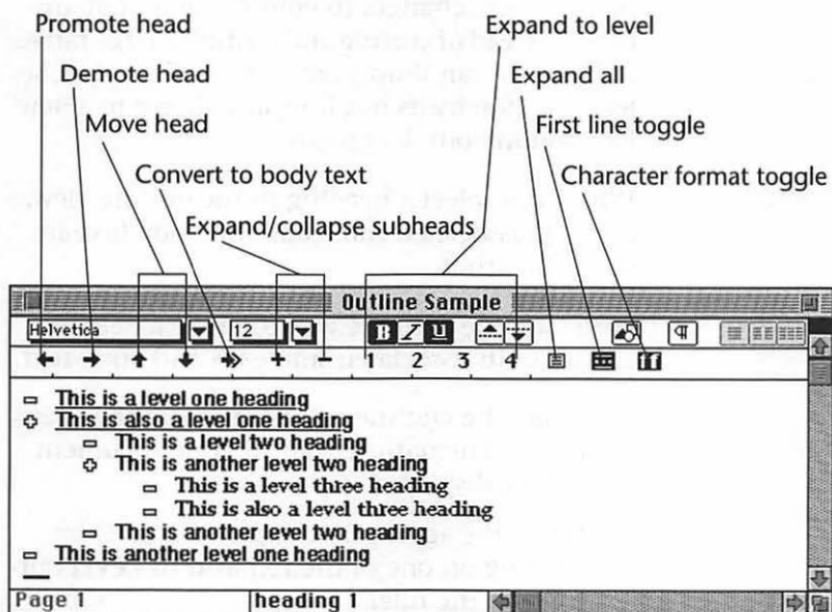


Figure 104 Sample outline with various subtopic (heading) levels.

You can use the various controls on the ruler to manipulate the elements of your outline. You can add body text at any time with the following four-step procedure.

1. Position the cursor at the end of the heading immediately before where you want to insert body text.
2. Press Return.
3. Click the **Convert to Body Text** button on the ruler.
4. Type your body text.

Organizing by Outline

You can use the outline view to make wholesale organization changes to your document at any time. Instead of cutting and pasting a large range of text, you can simply enter the outline view, select a section by its heading, and drag it to a new location in your document.

When you select a heading in the outline view, all of its associated subheads and body text are selected with it.

Here's a more accurate way to move a heading and all of its associated subheads and body text.

1. Select the Outline command from the View menu. The outline view of your document will be displayed.
2. Select the appropriate expansion level by clicking on one of the **Expand to Level** buttons on the ruler.
3. Select the heading you want to reposition. Note that you're changing the *location* of the selection, not its *level*.

4. Click the appropriate **Move Head** button on the ruler. Repeat this step as necessary to reposition the selected heading.

Heading Styles

Word has default definitions for nine heading styles, Heading 1 through Heading 9. You can change these style definitions in the same manner you would use for any paragraph style.

Information related to changing and working with Microsoft Word's paragraph formatting styles is provided in the Working With Styles chapter beginning on page 203.

Note that you cannot apply or edit styles while you are in the outline view. You must either return to the normal view or you must split the document window and apply the styles in the normal or page layout views. You can use this set of steps to split the document window into two independent views.

1. Drag the split bar, shown in Figure 105, to split the window.

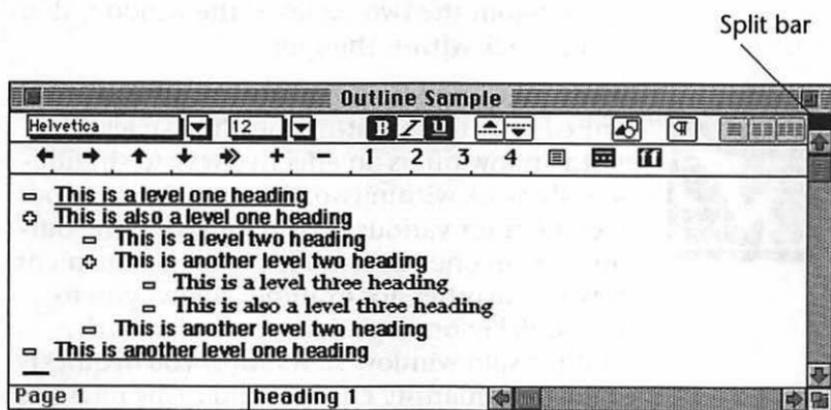


Figure 105 Split bar.

- Alternatively, you can double-click in the split bar to split the window into two panes of equal size.
2. Click within the lower pane of the window.
 3. Select the Normal command from the View menu. The upper pane of the window will remain in the outline view; the lower pane of the window will appear in the normal view, as shown in Figure 106.

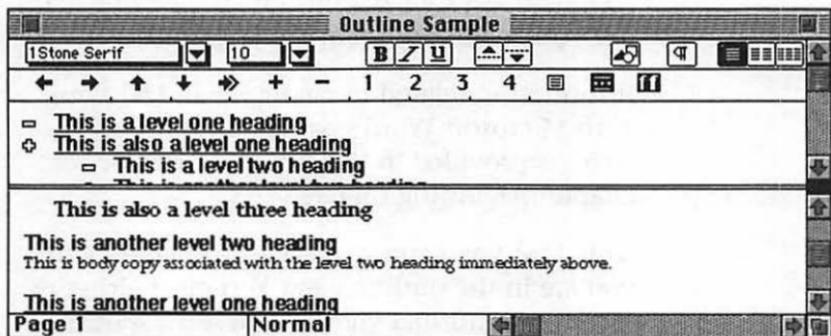


Figure 106 Split document window.

4. Edit the heading styles using the techniques described in the Defining a Style section beginning on page 203.
5. To rejoin the two panes of the window, double-click within the split bar.



Note that using Microsoft Word's split bar is not limited only to formatting heading styles. The split window offers an effective way to simultaneously work within two different views of your document for various tasks. Displaying the outline view in one pane and the normal document view in the other, for example, allows you to work quickly on large documents. Similarly, multiple split window views allow you to quickly evaluate formatting changes and easily navigate within a long document.

Numbering Outline Entries

You can automatically number your outline headings with virtually any numbering scheme. You can use alpha-numerics, bullets, or any other symbol. The following set of steps explains how to number your outline entries using the Harvard outlining style.

1. Select the Outline command from the View menu. The outline view of your document will be displayed.
2. Select the range of headings and subheadings that you want to number.
3. Select the Renumber command from the Tools menu. The Renumber dialog box, shown in Figure 107, will appear.

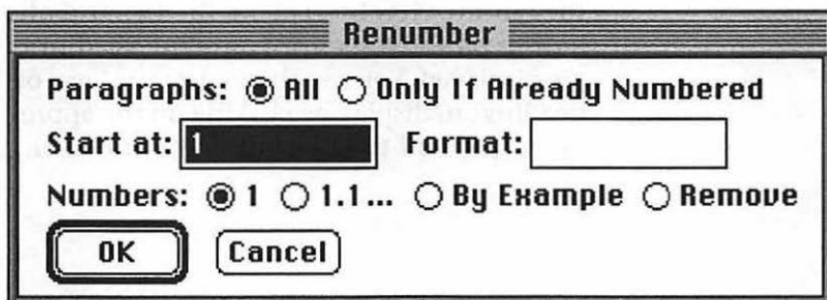


Figure 107 Renumber dialog box.

4. Enter 1 in the Start at field.
5. Enter I.A.1.a.i in the Format field.
6. Click the OK button.



Note that if you rearrange your headings in the outline after you have numbered them, the headings carry their associated number with them. *The outline is not automatically renumbered.* A good strategy is to number your outline as one of the last steps in preparing your document.

Outline Tips

- You can use the headings in your outline to automatically generate a table of contents. This is the most effective way of creating a table of contents, especially in documents that will change on a regular basis. For more information about this feature and a suggested strategy for its use, refer to the Long Document Features chapter beginning on page 245.
- You can display only the first line of body text paragraphs in the outline view by clicking the **First line toggle** button on the ruler. Clicking the button again returns the display to all body text lines.
- You can hide all the body text paragraphs in the outline view by clicking the **Expand all** button on the ruler until only the headings are displayed. You can then select the level of headings to display by clicking on the appropriate **Expand to level** button on the ruler.

Working With Graphics

Microsoft Word 5.0 offers a very basic set of integrated drawing tools. Mostly, you will want to create your graphics in another program and import them into Word, but the integrated drawing tools are useful for adding very simple graphics to your documents.

Previous versions of Word were incapable of directly importing complex graphic formats. Word 5.0 offers direct support for PICT, Encapsulated PostScript (EPS), and tagged image format (TIFF) graphics. This addition makes Word much more useful than ever before.

The Picture Command

For the most part you will find yourself using Word's Picture command on a fairly infrequent basis. It's useful only for creating very simple line art and adding text to existing graphic images.

The Picture command is accessed from the Insert menu or the **Picture** button on the ribbon. It contains its own tool palette that is available only when a Picture window is open.

You can use these steps to open a Picture window in your document and create a simple graphic.

1. Select the Picture... command from the Insert menu. The Insert Picture dialog box, shown in Figure 108, will be displayed.

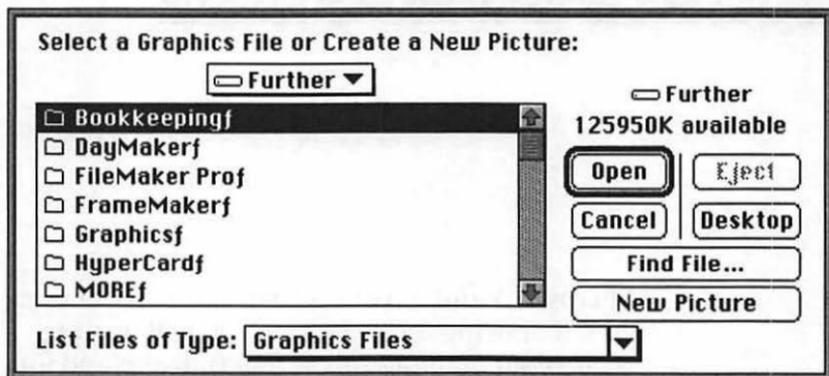


Figure 108 Insert Picture dialog box.

2. Click the New Picture button. The Picture window, shown in Figure 109, will appear.

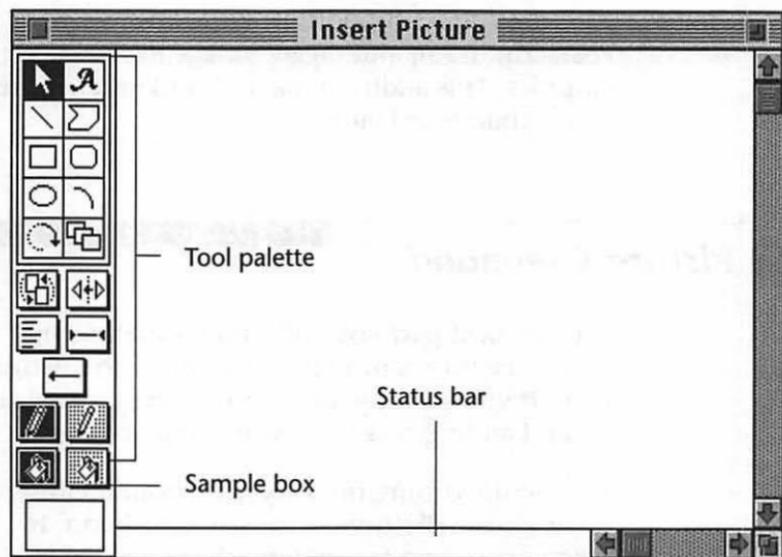


Figure 109 Picture window.

- You can also open the Picture window by double-clicking on an existing graphic or by clicking the **Picture** button on the ribbon. If you create a new Picture window the window's name is **Insert Picture**. If you open an existing graphic, the window's name is **Edit Picture**.
3. Use the various tools available on the Picture window's Tool palette, identified in Figure 110, to create your graphic.

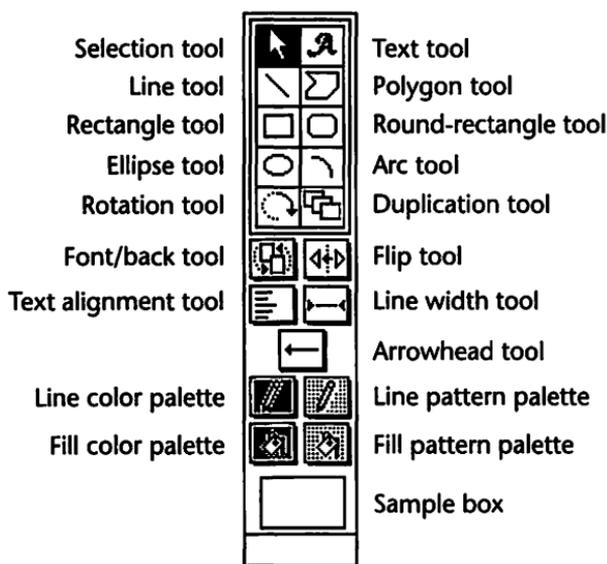


Figure 110 *Picture window Tool palette.*

- The Status bar will be continually updated to reflect changes to the size of the graphic element and the degree of rotation when you use the Rotation tool.
4. Close the Picture window by clicking its Close box. The graphic contained in the Picture window will be automatically placed in your document at the insertion point. Word treats the component elements of any graphic you create as a single character.

Importing Graphics

The best way to import a graphic is to use the Picture command and select the graphic you want to import in the Insert Picture dialog box.

1. Place the cursor where you want the graphic image to be placed.
2. Select the Picture... command from the Insert menu. The Import Picture dialog box will be displayed.
3. Select the file to import. Note that you can use the List Files of Type pop-up menu, as shown in Figure 111, to restrict the types of files listed in the Import Picture dialog box.

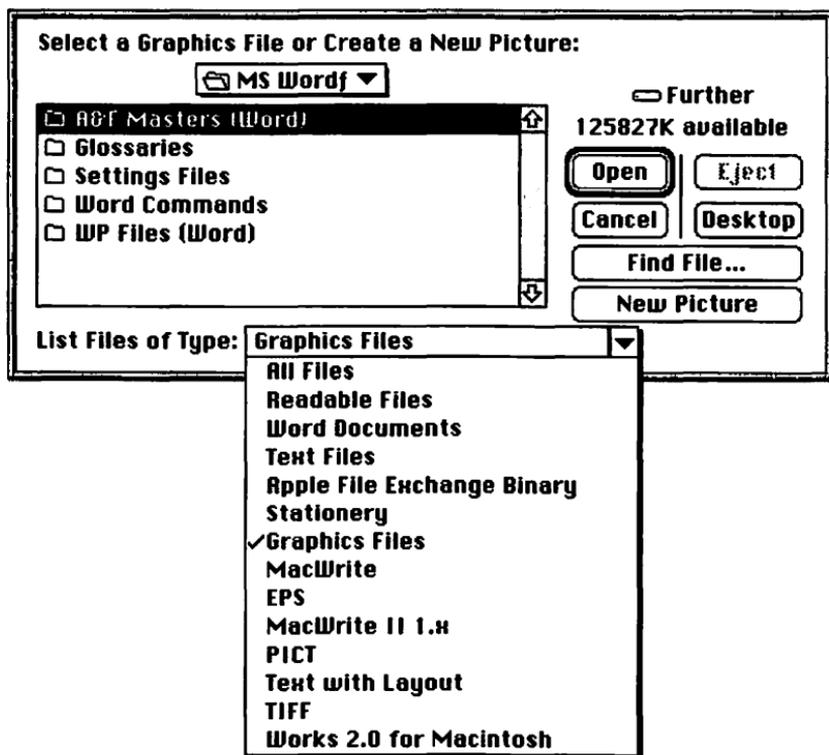


Figure 111 List Files of Type pop-up menu.

4. Double-click the file's name or select the file and click the **Import** button. The graphic will be placed within your document at the current insertion point.



If you are working with graphic images that are 24-bits deep, perform all your editing—including adding any borders or callouts—in the originating graphics program instead of using Word's Picture window. *If you edit a 24-bit color image in the Picture window, all color information will be reduced to the 8 colors supported by Word.* If you open the Picture window by mistake, select the Undo command from the Edit menu immediately after closing the Picture window.



If you copy a graphic image from a PostScript illustration program, such as Aldus FreeHand or Adobe Illustrator, Word will recognize only the PICT information on the Clipboard. To include the PostScript instructions used to describe the graphic image, hold down the Option key while selecting the originating program's Copy command from the Edit menu.

You can use this set of steps to place only the PostScript instructions of an Encapsulated PostScript (EPS) file within your Word document.

1. Check the **Show Hidden Text** checkbox in the View panel of the Preferences dialog box. This step is not required but will make it possible to view the PostScript instructions contained within the EPS file.
2. Select the Open... command from the File menu. The standard Open File dialog box will be displayed.
3. Select the Readable Files option from the List Files of Type pop-up menu.
4. Select the file that contains the PostScript instructions you want to include.

5. Click the **OK** button. Word opens the file in Text Only format.
6. Select all of the PostScript instructions.
7. Select the **Style...** command from the **Format** menu. The **Style** dialog box will appear.
8. Click the **All Styles** radio button.
9. Select the PostScript style from the scrolling list of available styles.
10. Click the **OK** button. The PostScript style will be applied to the selected text.
11. Select the **Copy** command from the **Edit** menu. Alternatively, press **Command-C**.
12. Open the Word document in which you want the PostScript code to be inserted.
13. Place the insertion cursor where you want the PostScript image to appear.
14. Select the **Paste** command from the **Edit** menu. Alternatively, press **Command-V**.
 - The image described by the PostScript commands will not appear in the document, but will appear when you print the document to a PostScript printer.
15. Select the **Print...** command from the **File** menu. The **Print** dialog box will appear.
16. Check the **Print Hidden Text** checkbox.
17. Click the **Print** button.

Your document will be printed, including the image described by the PostScript commands you copied into your document.

If you are not printing to a PostScript printer, the graphic image will not be printed.

Long Document Features

Word 5.0 offers some excellent features for creating long documents—table of contents and indexing—but others—cross-referencing and precise typographic control—are missing.

I've created documents as long as a 250-page book completely within an earlier version of Microsoft Word, though, so it can be done. Within the framework of this book, a long document can be considered any document longer than about 20 or 30 pages.

Word is especially effective when used in conjunction with page layout applications such as PageMaker or QuarkXPress that do not offer extensive word processing features.

The key to working effectively with long documents is pre-planning. Microsoft Word provides a feature set that allows you to consistently control the formatting of your document while at the same time working more efficiently than many other word processing environments.

This chapter provides information that is crucial to working with long documents, but much of it is also useful for working with Word more efficiently, regardless of document size.

Creating a Template

Your first inclination when faced with the task of creating a long document may be to simply start typing at the keyboard. Don't. You won't be happy with the results. If you have a burning insight that you're convinced will escape if you don't capture it, go ahead and whack away at the keyboard for a page or two. But don't overdo it.

The most efficient place to begin is to create a style sheet for your document and save it as a *stationery* document. Then use the stationery document as a template for each chapter or other chapter-length section. The final tip is to use the outline view whenever necessary.

Working with a series of small documents is much more efficient than working with one big one. I know, you've heard it before and it doesn't make sense to litter your hard disk drive with 10 or 12 files when one would do. Trust me. Break your document up into separate files for each chapter. They open faster, save faster, and they're easier to navigate. Besides, think of how you would feel if you crash and lose the entire file. And it will happen. It happened to me on page 238 of a 250-page book.

If you're thinking that you'd still like to use a single document because of the trouble with connecting all the parts at print time, don't worry about it. Word has a way of automatically linking a collection of documents when you initiate the print command. It even automatically adjusts the page numbers. For more information on linking documents at print time, see *Linking Documents* beginning on page 263.

Begin creating the template for your document by specifying the margins and other document-wide formatting attributes with these steps.

1. Open a new document in Word.
2. Select the Page Setup... command from the File menu. The Page Setup dialog box for the currently selected printer will appear. The Page Setup dialog box for the LaserWriter is shown in Figure 112.
 - Note that the currently selected printer in the Chooser will affect how your document is formatted. Make sure you have the appropriate printer selected.

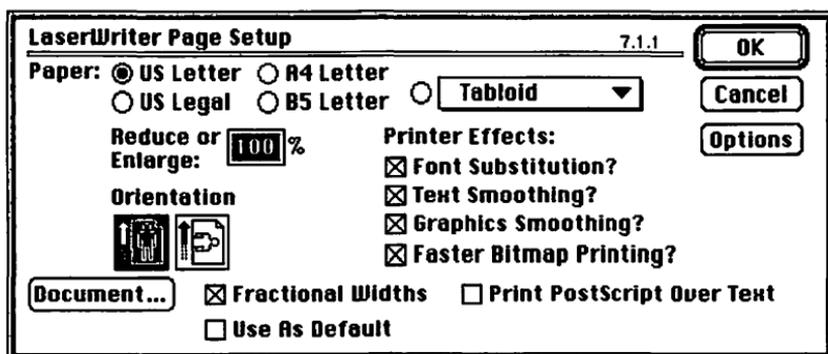


Figure 112 LaserWriter Page Setup dialog box.

3. Select the appropriate standard settings within the Page Setup dialog box.
4. Check the **Fractional Widths** checkbox to improve the character spacing within your document. Note that the state of this checkbox affects both printed output and display.
5. Check the **Print PostScript Over Text** checkbox if you intend to use PostScript effects within your document.
 - You may have to experiment with this setting. If this option is checked, the PostScript effect is laid on top of the text on the page. If this option is unchecked, the text is laid down on the page first.

- Click the **Document...** button. The Format Document dialog box, shown in Figure 113, will be displayed.
 - You can also access this dialog box by selecting the Document... command from the Format menu.

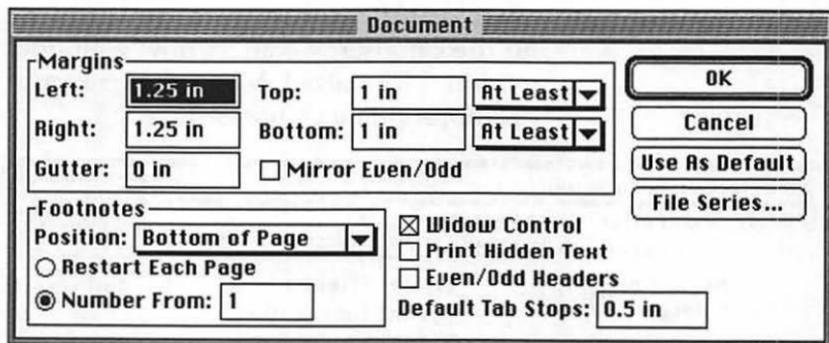


Figure 113 Format Document dialog box.

- Set the margins as appropriate for your document in the provided fields.
 - Click the **Mirror Even/Odd** checkbox if your document is two-sided and you wish to mirror the pages. Note that if this option is selected, the Margin labels change to read Outside and Inside instead of Left and Right.
 - The Gutter field is provided for a gutter margin. A *gutter margin* is extra space added to the inside margin needed for bound documents that are printed on both sides of the page.
 - Note that the Top and Bottom margin specifications have accompanying pop-up menus with At Least and Exactly options. They are self-explanatory.
- Specify the location for the footnotes by selecting either the Bottom of Page, Beneath

Text, End of Section, or End of Document option from the Position pop-up menu.

9. Specify the numbering for the footnotes by clicking either the **Restart Each Page** radio button or the **Number From** radio button.
 - If you clicked the **Number From** radio button, enter the number for the first footnote in the provided field.
10. Check the **Widow Control** checkbox to prevent the first or last line of a multi-line paragraph from being left at the top or the bottom of any page.
11. Check the **Print Hidden Text** checkbox to print any hidden text contained within your document. Note that if this option is activated, PostScript instructions will be printed out in list form rather than the commands actually being executed.
12. Specify a default tab stop setting in the provided field. Word's default is to place a tab stop at half-inch increments.

Creating the Style Sheet

You can begin to create and refine your document's style sheet by following the instructions provided in the Working With Styles chapter, beginning on page 203.



Note that Word provides you with a standard set of default heading styles: Heading 1 through Heading 9. These heading style names are used by Word internally to keep track of table of contents entries and outline headings. It's a good idea to keep the naming conventions intact. *Word is incapable of tracking other style names for use in tables of contents and the outline view.*



Before you jump headlong into altering Word's default heading styles for use within your document, take a minute to review the information provided in A Style Strategy beginning on page 211. One of Microsoft Word's most powerful features is its ability to base paragraph styles on an existing style.

Saving as Stationery

A *stationery pad* is a template of a document that you can use an unlimited number of times as a master template or format pattern.

You can open a stationery pad like any other document. When you open a Word stationery document—either by double-clicking on it or by using the Open... command on the File menu, a new, untitled document will be opened. This is a copy of your original stationery document, not the document itself.

To save your style sheet, page setup, and other document formatting information as a stationery pad or document, follow these steps.

1. Select the Save As... command from the File menu. Word's Save document dialog box will be displayed.
2. Enter a name for your stationery template.
3. Select the Stationery option from the Save File As Type pop-up menu.
4. Click the Save button. The Summary Info dialog box will be displayed.
5. Enter the appropriate summary information for your document in the Summary Info dialog box.

Your stationery document will be saved to disk.

Using the Glossary

Microsoft Word's glossaries can be used as repositories for frequently used text and graphics. You can create as many glossaries as you like, and it might be a good idea in certain situations to create a series of specialized glossaries for different types of documents.

You may prefer to add your glossary entries to Word's standard glossary, making them available within all of your documents.

The glossary makes working in Word much more efficient. Once you have defined a glossary entry, you can simply select it instead of manually entering a lengthy paragraph of text or a commonly used graphic element.

Word ships with a standard glossary that contains several useful entries.

Defining an Entry

One of the most powerful aspects of Word's glossary feature is that all formatting is retained in the glossary entry. This makes things like defining entries for letterheads, proposals, memos, and the like very simple and powerful.

The following sequence shows you how you can define a glossary entry to automate the creation of a new article format, containing a title, subtitle, byline, copyright notice, first paragraph format, and subsequent paragraph format.

These instructions will use the stationery document created in the first section of this chapter, although the instructions are generic in nature and can be used within any document.

1. Open the stationery document that was created in the first section of this chapter. If you don't have it, open a new document.
2. Enter the appropriate title, subtitle, byline, copyright, first paragraph, and second paragraph information in the document.
3. Apply the appropriate paragraph styles to the information you entered.
4. Select the full range of elements that you have added in the document.
5. Select the Glossary... command from the Edit menu. The Glossary dialog box, shown in Figure 114, will be displayed.

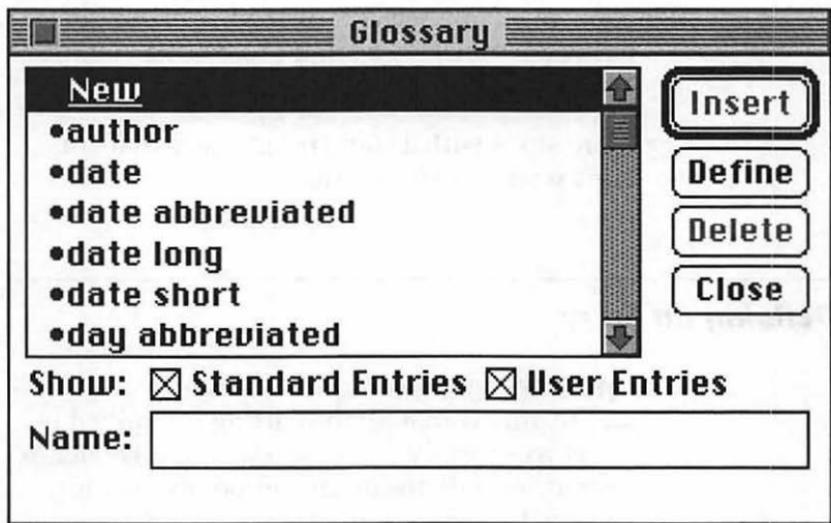


Figure 114 Glossary dialog box.

6. Enter a descriptive name for your new glossary entry in the Name field.
7. Click the **Define** button. Your entry will be added as a User Entry to Microsoft Word's standard glossary. Your glossary entry will now be available for use within any Word document you create.

Inserting an Entry

You can insert any available glossary entry—Word’s standard entries or any user entries that you have created—with these steps.

1. Place the insertion cursor at the point at which you want to inset the glossary entry.
2. Select the **Glossary...** command from the **Edit** menu. The **Glossary** dialog box, shown in Figure 114, will appear.
3. Select the glossary entry you want to insert from the scrolling list.
 - Checking only the **Standard Entries** checkbox limits the scrolling list to Word’s built-in glossary entries.
 - Checking only the **User Entries** checkbox limits the scrolling list to the user entries you have created.
4. Click the **Insert** button. The selected glossary entry will be inserted in your document.

Inserting an Entry from the Keyboard

Here’s an even more efficient way to insert a glossary entry from the keyboard.

1. Place the insertion cursor at the point at which you want to insert the glossary entry.
2. Press **Command-Delete**. A portion of the active window’s status bar will be highlighted.
3. Enter the name of the glossary entry you want to insert.
4. Press **Return**. The specified glossary entry will be inserted in your document.

Glossary Entries in the Work Menu

You can add a glossary entry to your Work menu with this set of steps.

1. Press Command-Option-+ on the keyboard. (That's Command-Option-Shift-=). The cursor will change to a bold plus sign.
2. Select the Glossary... command from the Edit menu. The Glossary dialog box appears.
3. Select the glossary entry you want to place in your Work menu from the scrolling list.
4. Close the Glossary dialog box.

Saving the Glossary

Any glossary entries that you have defined are not automatically saved. You must specifically save the glossary document. If you haven't saved the glossary document during your work session you will be prompted to save it when you quit the Word application.



If you don't pay close attention to the screen display when you quit the Word application you can lose your unsaved glossary work quite easily. To prevent the loss of your work, save your altered glossary documents early and often using the following sequence.

You can use the following steps to save your glossary entries to disk.

1. With the Glossary dialog box active, select the Save or Save As... command from the File menu.
 - Use the Save command to save the glossary under the current name.

- Use the Save As... command to save the glossary under a new name.
2. If you've selected the Save command your glossary will be saved to disk.
 3. If you've selected the Save As... command, the Save Glossary As dialog box will appear.
 4. Enter a name for your new glossary.
 5. Click the **Save** button. Your new glossary will be saved to disk.

Merging Glossaries

You can merge a glossary stored on disk with your current glossary with these steps.

1. Select the Glossary... command from the Edit menu. The Glossary dialog box will appear with your current glossary entries listed.
2. Select the Open... command from the File menu. Word's Open Glossary dialog box will be displayed.
3. Select the glossary you want to merge into your current glossary. The entries from the newly opened glossary will be merged with your current glossary.
 - When you merge a glossary from disk with your current glossary, and both have an entry with the same name, the entry from the newly opened glossary replaces the one in your current glossary.



Do not move the Standard Glossary file from the Word folder. If you move this file, Word will be unable to locate it. You can force Word to open any glossary by renaming it "Standard Glossary" and placing it in the Word folder.

Working With Sections

Word allows you to divide your word processing document into any number of *sections*. A section in Word can be as short as a single paragraph or as long as the entire document. You can make a banner headline span two or more columns, for instance, by formatting the headline paragraph as a separate section.

You create a new section whenever you want to change the number of columns per page (unless you use the table editor to create pseudo-columns), footnote locations, page numbering, or headers and footers.

You can create a new section anywhere in your document with this simple two-step procedure.

1. Place the insertion cursor where you want the new section to begin.
2. Select the Section Break command from the Insert menu.
 - In the normal view, a double dotted line appears at the insertion point to signify the end of the previous section. The double dotted line does not print and is used only as a wayfinding element.

The keyboard shortcut for creating a new section is even simpler:

Press Command-Enter where you want the new section to begin.



Word stores all of its section formatting information in the *section mark*. If you delete the section mark, all of the section formatting for the *preceding* section is deleted. The adjacent sections are merged automatically, using the existing section mark formatting information.

Formatting Sections

You can apply formatting characteristics to a section with the following steps.

1. Place the insertion cursor anywhere within the section you want to format.
2. Select the Section... command from the Format menu. The Format Section dialog box, shown in Figure 115, will be displayed.

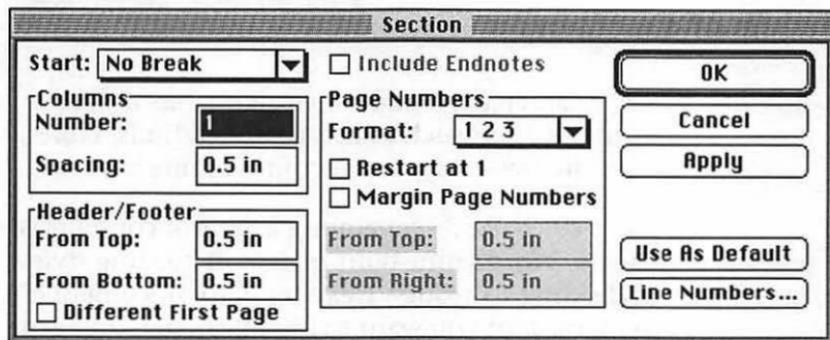


Figure 115 Format Section dialog box.

3. Select the starting point characteristic from the available options in the Start pop-up menu: No Break, New Column, New Page, Even Page, or Odd Page.
4. Specify the number of columns for the section in the Number field.
5. Specify the column spacing for the section in the Spacing field.
6. Specify the header and footer characteristics in the appropriate Header/Footer fields.
 - Checking the **Different First Page** checkbox allows you to use the First Header and First Footer commands on the View menu.

7. Specify the page numbering characteristics using the Format pop-up menu and the associated checkboxes and fields.
8. Click the **Apply** button to test the changes you have made.
9. Click the **OK** button to apply the formatting selections you have made in the Format Section dialog box.

Table of Contents

You can create a table of contents—as well as other listings such as lists of illustrations, tables, and figures—for your document quite easily.

The key to *easily* generating a table of contents is to use Word's nine built-in default heading styles (Heading 1 through Heading 9) for document elements that you want to include in your table of contents. This approach allows you to generate a table of contents automatically.

You can also use hidden “.C.” paragraph codes (“dot codes”) placed within the paragraphs you want to include in your table of contents. This approach is useful if you want to include a lot of different tables of lists in your document, but is not as quick, intuitive, or as automatic as using the heading styles method.

Generating a Table of Contents

Assuming that you have used Word's built-in default heading styles (Heading 1 through Heading 9) to format the headings and subheadings of your document, you can generate a table of contents with these steps.

1. Select the **Table of Contents...** command from the **Insert** menu. The **Table of Contents** dialog box, shown in Figure 116, will appear.

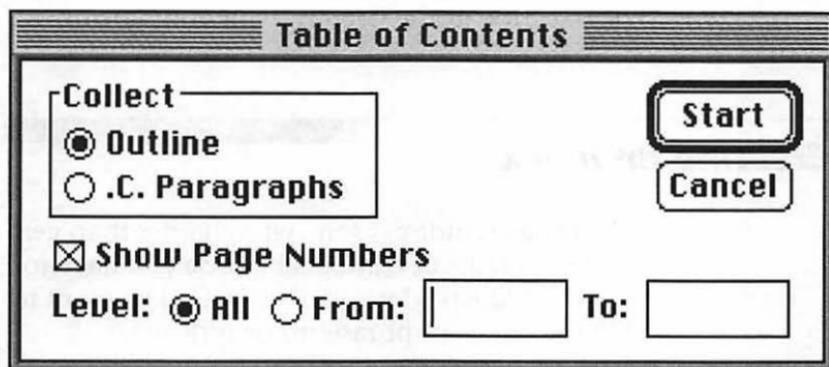


Figure 116 Table of Contents dialog box.

2. Click the **Outline** radio button. This instructs word to consider table of contents entries based on the default heading styles.
3. Check the **Show Page Numbers** checkbox. This includes the page numbers of the table of contents entries in the generated list.
4. Click the **All** radio button to specify that all heading levels be included in the generated list. Alternatively, click the **From** radio button and enter the ranges of the heading styles to include in the generated list.
 - The latter option allows you to specify a limited range of heading styles to include—Heading 1 through Heading 3, for example—in the generated list. This approach is useful for including other table listings in a document that uses only a few of the nine available heading formats. For example, you can use Heading 9 as a style for figure captions and specify only that heading level in the **From** and **To** fields to generate a list of figures.

5. Click the **Start** button.

Word automatically repaginates your document, compiles the table of contents, and inserts it in a new section at the beginning of your document.

Creating an Index

Creating an index is somewhat harder than generating a table of contents because you have to use the hidden “dot codes” in your document to tag the words or phrases to be indexed.

As inconvenient as the index dot codes may be, it is certainly easier than the alternative of indexing your document by hand. Once the dot codes have been placed within your document they “float” from page to page as necessary and the index can be updated at any time to reflect accurate page numbers.

You can use the following set of steps to index your document. Note that indexing is easier if you have Word configured to display hidden text (Check the **Show Hidden Text** checkbox in the View panel of the Preferences dialog box).

1. Select the text you want to include (up to 252 characters) as an entry in the index.
2. Select the Index Entry command from the Insert menu. Word automatically inserts the index code (.i.) and the end-of-entry code (;) and formats them as hidden text.
3. If you want to include text you type from the keyboard in your index (names of people in “Last Name, First Name” format, for example), place the insertion cursor where you want the index entry to appear. Select the Index Entry command from the Insert menu. Word automatically inserts the index code

and the end-of-entry code with the insertion cursor between them. Enter the text as you want the entry to appear in the index.

4. Indicate index subentries by separating the entries with colons between the index code and the end-of-entry code. The table in Figure 117 shows several examples.

| Index Entry | Index Code |
|--|---|
| hypertext 50–60 | [pp. 50] .i.(hypertext; [pp. 60] .i).hypertext; |
| Nelson, Ted 50 thinkertoys 50 | .i.Nelson, Ted; .i.Nelson, Ted:thinkertoys; |
| Nelson, Ted 50 thinkertoys 50 concept 50 | .i.Nelson, Ted; .i.Nelson, Ted:thinkertoys; .i.Nelson, Ted:thinkertoys:concept; |
| Nelson, Ted: father of hypertext | .i.'Nelson, Ted: father of hypertext'; |
| multimedia (see hypermedia) | .i.multimedia#(see hypermedia); |

Figure 117 Index subentries example.

5. Indicate page ranges and literals using the open and close parentheses and single quotes respectively, as shown in the example in the table in Figure 117.
6. Repeat Step 1 through Step 5 throughout your document until you have tagged all of your index entries.

The tagging for your index is now complete.



Be sure to turn off the display of hidden text before generating the index. You can do this by Unchecking the **Show Hidden Text** checkbox in the View panel of the Preferences dialog box. *The page numbers will not be accurate if you generate the index with hidden text displayed.*

Generating an Index

Once you have tagged all of your index entries as described in the previous section, you are ready to have Word generate the index. You can initiate the process with these steps.

1. Select the Index... command from the Insert menu. The Index dialog box, shown in Figure 118, will be displayed.

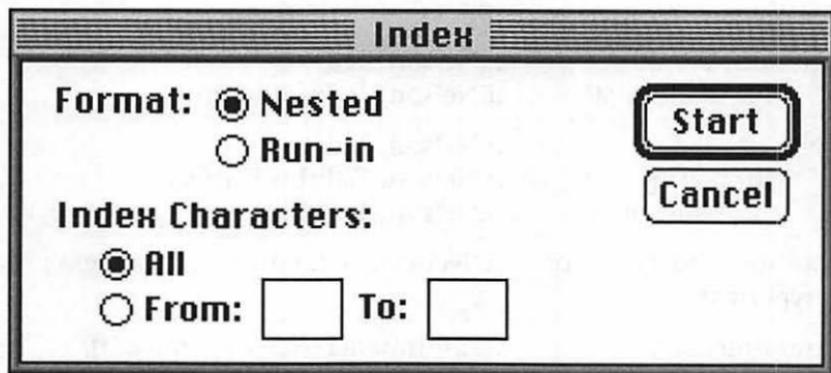


Figure 118 Index dialog box.

2. Click the **Nested** radio button if you want index subentries to appear below the main entry. Alternatively, click the **Run-in** radio button if you want the index subentries to appear on the same line as the main entry.
3. Click the **All** radio button to include all of the index entries in your document. Alternatively, click the **From** radio button to include only a specific alphabetic range if you're working with an especially long index.
4. Click the **Start** button.

Word automatically repaginates your document, compiles the index, and inserts it in a new section at the end of your document.

Linking Documents

Easily linking documents in a sequential manner at print time is the pay-off for working with smaller individual Word documents.

You can link multiple small component documents to create a single large document in either of two ways:

- Split the document into several small component documents and link them and print time, or
- Create a control document that contains a series of *Include* statements for each component document.

You can use these steps to link a set of component documents, creating a long document at print time.

1. Open the first document.
2. Select the Document... command from the Format menu. The Format Document dialog box will be displayed.
3. Click the File Series... button. The File Series dialog box, shown in Figure 119, will appear.

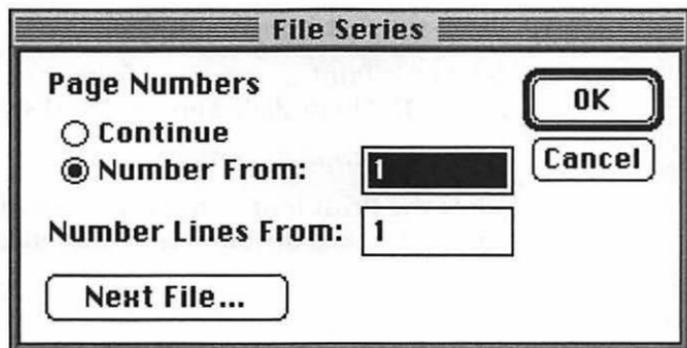


Figure 119 File Series dialog box.

4. Click the **Continue** button. This instructs Word to number pages consecutively, across the component documents, starting with the current document.
5. Click the **Next File...** button. Word's standard Open File dialog box will be displayed.
6. Select the next component document.
7. Click the **Open** button.
8. Click the **OK** button in the Format Document dialog box.
9. Save the document.
10. Open the next document in the series.
11. Repeat Step 2 through Step 10 for each component document in the series.
12. For the last component document in the series, repeat Step 2 through Step 4.
13. Save the last component document.

Printing the Linked Documents

To print the linked documents, use this simple four-step procedure.

1. Open the first component document.
2. Select the **Print...** command from the File menu. The Print dialog box will be displayed.
3. Set the appropriate options.
4. Click the **Print** button to print the entire string of linked documents in sequence.

Working With Print Merge

Word's print merge feature is useful for a wide variety of different tasks ranging from relatively complex invoices to more commonplace form letters and mailing labels.

Word uses two separate documents to create a merged document:

- The *main document* contains the static text and formatting that is common to each merged document.
- The *data document* contains the list of variable information that makes each merged document unique. This information is stored in a collection of *fields* within *records*.

With the addition of the Print Merge Helper command on the View menu, the merge feature has been semi-automated. You can use the Print Merge Helper and the following steps to partially automate the process of creating the data document that will be used by the main document.

1. Open a new document in Word.
2. Select the Print Merge Helper... command from the View menu. Word's Open Data Document dialog box will be displayed.

3. Click the **New** button. The Data Document Builder dialog box will be displayed, as shown in Figure 120.

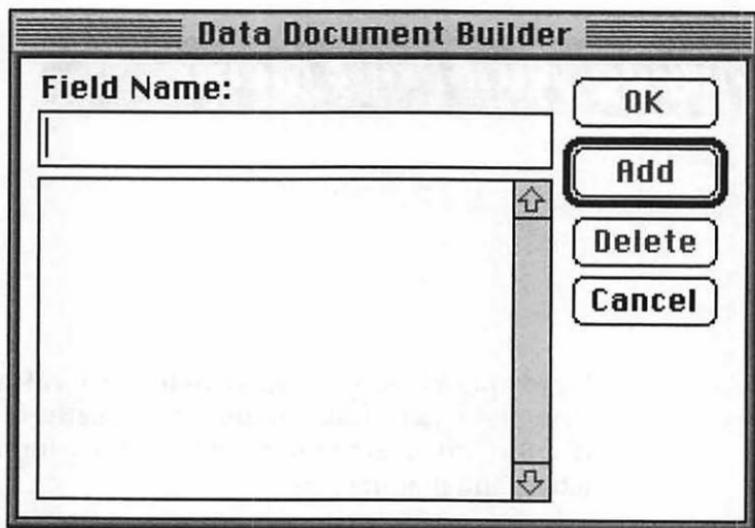


Figure 120 Data Document Builder dialog box.

4. Enter the name for the first data field you want to include in your data document in the Field Name field.
5. Click the **Add** button.
6. Repeat Step 4 and Step 5 for each data field you want to include in your data document.
7. Click the **OK** button. The Save Data Document dialog box will be displayed.
8. Enter a name for your data document.
9. Click the **Save** button. Your data document will be saved to disk and Word automatically places a *Data* instruction at the current insertion point of your main document. This Data instruction tells the main document where to locate the data document. Your print merge data document and main document

should look something like the examples shown in Figure 121.

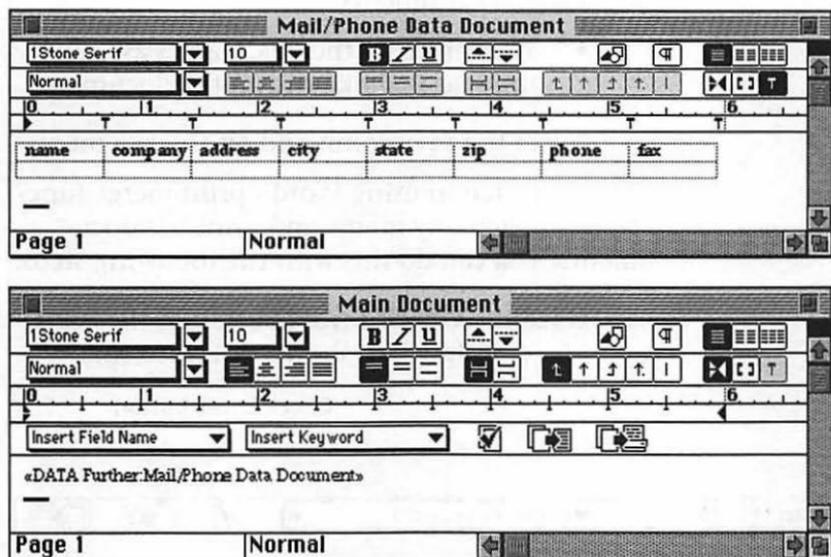


Figure 121 Print merge data document (top) and Print merge main document (bottom).

Next, fill in the fields within each record of your data document. Press Tab to move between each field. Press Tab at the end of the last record to add a new record to the data document.

You can prepare your main print merge document with these steps.

1. Enter and format the text of the main document that you want to include in each version of the merged document.
2. Place the insertion cursor where you want the first variable information to be inserted.
3. Select the appropriate field name from the Insert Field Name pop-up menu. The field name will be inserted with surrounding print merge characters (« »).

4. Repeat Step 2 and Step 3 for each variable information element you want to add to your merged documents.

- You can reuse the field names as many times as you like within the document.

5. Select the Save command on the File menu.

The final step in using Word's print merge function is to actually merge and print the documents. You can do this with the following steps.

1. Click the **Check Errors** button in the Print Merge Helper bar, shown in Figure 122.

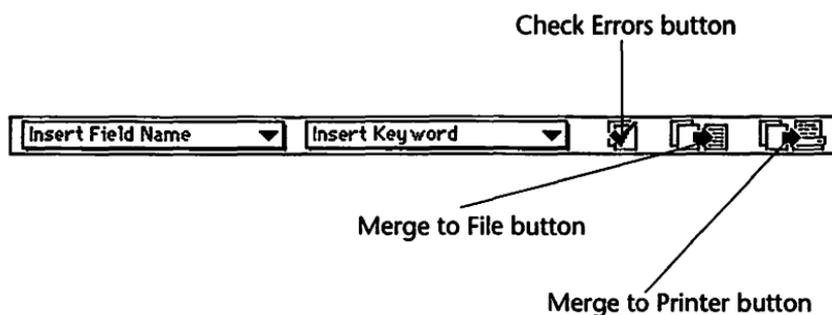


Figure 122 *Print Merge Helper bar.*

2. Click the **Merge to File** button to create a series of new documents—one for each record in the data document—with unique variable information. You can print each of these documents individually by selecting the Print command on the File menu.
3. Click the **Merge to Printer** button to print the customized documents, one for each record in the data document.

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**RAPID REFERENCE GUIDE TO SYSTEM 7, THE LASERWRITER® FAMILY,
AND MICROSOFT® WORD 5.0**

Michael Fraase

If you're like many Macintosh® users, your operating system is System 7, your printer is a LaserWriter, and your word processing program is Microsoft Word. Now, with this Rapid Reference guide, you can quickly locate the solutions to common questions in one easy-to-use resource!

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About the Author...

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