Software Architects Inc.

User's Guide

DOSMounter98™

DOS Mounter 98 User's Guide

> **Note:** The product screen shots in this guide were taken using DOS Mounter 95 and you may notice some minor differences in the screen shots and the DOS Mounter 98 product you are using.

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Please read the License Agreement in Appendix F carefully prior to using DOS Mounter 98. By opening the accompanying sealed disk envelope and inserting the floppy disk into your computer's disk drive, you acknowledge that you have read the License Agreement, that you understand it, and that you agree to be bound by its terms and conditions. If you do not agree to the terms presented, please return the package promptly to the place of purchase for a refund.

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INTRODUCTION

In today's business world, Apple Macintosh® computers coexist with other desktop computing environments, such as IBM PC-DOS, MS-DOS, Microsoft® Windows® 3.X, Windows 95 and Microsoft Windows 98. Users need the ability to exchange data between DOS or Windows-based computers and Macintosh computers. Software Architects' DOS Mounter 98™ software provides the tools needed to move files of any size from Macintosh to DOS/Windows and back and to prepare high capacity removable drives and hard drives for use with both Macintosh and DOS systems.

Seamless and transparent access to DOS/Windows files

DOS Mounter 98 automatically mounts DOS disks on your Macintosh desktop. With DOS Mounter 98, Macintosh users can read, write and transfer DOS, Windows 3.X and Windows 95 files as easily they would ordinary Macintosh files. Once you have DOS Mounter 98 installed, interface with DOS disks is transparent. You can:

- Read DOS disks on the Macintosh, including high-density floppy disks, magneto-optical (MO), SyQuest, Bernoulli, Zip and Jaz removable disks and other rewritable media as well as hard drives.

- Open DOS, Windows 3.X, Windows 95, and Windows 98 files directly from the Macintosh

- Map DOS/Windows file extensions so they automatically launch Macintosh applications

- View Windows 95/98 long file names in their extended configuration and/or their Macintosh and DOS equivalent

- Copy Macintosh files to DOS disks for use on the PC

- Prepare removable media and hard drives for use on the PC

Note: Macintosh 800K drives cannot read DOS disks. A SuperDrive, or compatible drive, is required. If your Macintosh was built after 1989, it has a SuperDrive.

The ultimate "sneaker net" utility

In addition to reading and writing files, DOS Mounter 98 can create both DOS and Macintosh partitions on the same disk. This ability makes DOS Mounter 98 the perfect solution for organizations using removable media or hard drives to transfer

data between platforms. Using DOS Mounter 98, users can format, partition and test removable media directly from the desktop.

BENEFITS OF USING DOS MOUNTER 98

DOS Mounter 98 now includes 148 new extension mappings including mappings for Word98, Excel98 and PowerPoint98.

The highest level of data integrity is assured because DOS Mounter 98 is a file-transfer utility. There is no danger of data loss due to file-conversion or translation operations. Dos Mounter 98 mounts volumes up to 9GB and provides seamless access to DOS and Windows directories and files from DOS disks. Unlike any other file interchange utility, DOS Mounter98 provides bi-directional transfer capabilities so files returned to the PC retain their Windows95 long filenames and extended Mac filenames are automatically truncated to standard 31 characters. Partitioning and formatting options for creating hybrid disks makes it essential for cross platform environments.

New Features:

- Over 100 new extension mappings ensure access to nearly all types of files

- Native PowerPC drivers optimized for OS 8.5 accelerate file access time

- Universal drivers for SCSI or IDE removable drives makes it possible for users to mount almost every popular storage devices-even hard drives

- Ability to create HFS+ partitions on Mac drive or media

- Multimounter extensions creates an activity log in the preference folder

Note: Like Windows 95/98, DOS Mounter 98 supports Windows NT's long filenames (VFAT), yet it does not support NTFS.

HOW TO USE THIS GUIDE

This guide describes how to install and use DOS Mounter 98. Instructions and procedures detailed in the following chapters assume you have a working knowledge of Macintosh computers and applications. It is strongly recommended that you read this guide regardless of your level of Macintosh experience.

The *DOS Mounter 98 User's Guide* is structured sequentially in four chapters and a series of appendices. Following is a content summary of the major sections in this guide.

Chapter 1 • Installing DOS Mounter 98

This section guides you through the process of installing DOS Mounter 98 on your Macintosh and provides a brief description of its functionality so you can get started right away.

Chapter 2 • Using DOS Mounter 98

This section describes procedures for using DOS Mounter 98. Sections describe:

• Understanding file compatibility between platforms

• Working with DOS and Windows disks

• Handling of DOS and Windows file names

Chapter 3 • Mapping Extensions to Applications

This section describes how to map DOS and Windows files to Macintosh applications so that the correct application launches automatically when the file is opened. Sections describe:

• Mapping DOS and Windows files to Macintosh applications

• Customizing extension mappings

• Specifying extensions for Macintosh applications to use when saving files

Chapter 4 • Mounting, Formatting and Changing Partitions

This section describes procedures for mounting, formatting and changing partitions. Sections describe:

• Formatting disks and drives

• Specifying partitioning options on disks and drives

• Testing and verifying media

Appendices

The appendices contain problem-solving techniques, information on supported devices, a technical discussion about SCSI drives, and term definitions to help you better utilize DOS Mounter 98. If you encounter difficulty with any operation, you may find answers in the appendices.

The final appendix contains the License Agreement for the DOS Mounter 98 software. Please read this prior to using DOS Mounter 98.

TERMS AND CONVENTIONS

This guide uses a few special terms and conventions.

- "Windows" refers to Microsoft Windows 3.X Windows 95 and Windows 98, unless otherwise noted.

- "DOS" refers to IBM PC-DOS and MS-DOS. All references to DOS also apply to PCs running Microsoft Windows 3.X, Windows 95, and Windows 98 unless otherwise noted.

- "PC" refers to computers running DOS and/or Microsoft Windows 3.X, 95, and 98.

- "Disk" and "media" are used interchangeably, except where noted.

- Items in **bold** type represent actual menu commands or dialog box items.

The **Note:** icon draws your attention to important installation and operation information that might otherwise be missed.

The **WARNING!** icon indicates that the step you are about to take will result in the irreversible loss of data or other serious consequences. Read all warning information carefully before proceeding.

PACKAGE CONTENTS

The DOS Mounter 98 package includes:

- DOS Mounter 98 disk (1.44Mbytes)

- DOS Mounter 98 User's Guide

- Warranty Registration Card

DOS Mounter 98 Disk

The disk contains the DOS Mounter 98 control panel, the MultiMounter Init, the MultiFormatter application, online registration documents, the Software License Agreement and a Simple Text "Readme" file. Please read the Agreement before using this product.

Warranty Registration Card

You must register to receive product support from Software Architects, Inc. Please take a minute to fill out the registration form and submit it to us.

As a registered user of DOS Mounter 98, you will be eligible to take advantage of special upgrade offers and discounted pricing on a variety of Software Architects' complete line of software solutions. To ensure that you receive notice of these special offers, please complete your registration form and send it to Software Architects, Inc. today.

Application Compatibility and File Translation

DOS Mounter 98 enables the transfer of files between Macintosh and PC systems, making it easy for you to work with compatible cross-platform applications. Using compatible applications, you can work seamlessly with files on both the Macintosh and the PC. To determine the extent of cross-platform compatibility available in your applications, you should consult the documentation provided with those applications and Chapter Three, "Mapping File Extensions to Applications," later in this manual.

Some files must be translated before you can use them on another platform, even with compatible applications. For example, on the PC, the .TXT extension is usually assigned to simple ASCII text files that contain no formatting codes. Most PC-based text applications can save files in ASCII-text format. However, the format for ASCII text files differs on the Macintosh. That means that ASCII text files generated on the PC need to be translated before you can work with them reliably on the Macintosh. If you do not translate the files, your results will be unpredictable. DOS Mounter 98 is fully compatible with Apples Easy Open.

Note: Although DOS Mounter 98 makes DOS and Windows disks work on your Macintosh, it is not designed to translate or convert the data itself. You can choose from several conversion utilities to translate data in the files you want to transfer between platforms. Consult your software reseller for more information.

SYSTEM REQUIREMENTS

Macintosh System 7.0 or later (supports System 8.x)

MS-DOS® Version 3.3 or later (optional)

Note on MS-DOS 3.3: MS-DOS 3.3 has a 32 megabyte partition size limit. Later versions do not have this limitation.

DEVICES SUPPORTED

DOS Mounter 98 supports high density floppy drives and most storage systems including hard drives, rewritable optical, and removable disk (including SyQuest, Zip and Jaz) drives. See Appendix C, "List of Supported Devices" for more details. Unless otherwise noted, the application will operate consistently with all storage devices.

SCSI MANAGER 4.3

DOS Mounter 98 lets you take full advantage of the increased performance of SCSI Manager 4.3 by automatically supporting asynchronous data transfer. DOS Mounter 98 also supports older Macintosh models that don't use SCSI Manager 4.3.

LICENSE AGREEMENT

Please read the software license agreement in Appendix G or on the disk. By accepting this software package, you are agreeing to the terms of the software license and disclaimer of warranty. If you do not agree to the terms presented please return the package promptly to the place of purchase for a refund.

CHAPTER ONE:
Installation

PREPARING AND PROTECTING DISKS

When using removable media other than floppy disks, you may encounter init conflicts. Therefore, you should remove existing device inits from your System Folder. For more information, see Chapter Four, "Working with Removable Drives."

WARNING! Having more than one DOS mounting utility installed on your Macintosh can result in corrupt DOS directories. Before proceeding, you should remove all other mounting utilities from your Control Panel, Extensions or System Folder to ensure that DOS Mounter 98 is the only utility present.

INSTALLING DOS MOUNTER 98

DOS Mounter 98 comes with an installer that prepares your system for using DOS Mounter 98, including copying files into the appropriate directories, removing previous versions of the software if necessary, and rebooting after installation is complete.

Note: Before you install, you should save any work in progress and quit all open applications.

To install DOS Mounter 98

1. Insert the DOS Mounter 98 disk in your Macintosh floppy disk drive.

Installation • DOS Mounter 98 disk contents

2. Double-click the **DOS Mounter 98** Installer icon.

Installation • DOS Mounter 98 loading install

3. Press **Continue**.
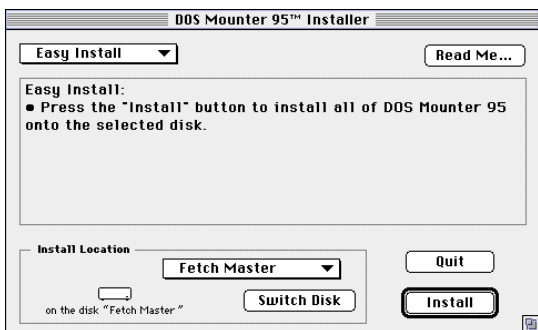
Installation • DOS Mounter 98 installation window

4. Choose **Easy Install** to install all DOS Mounter 98 files.

OR:

Choose **Custom Install** to manually select items to install.
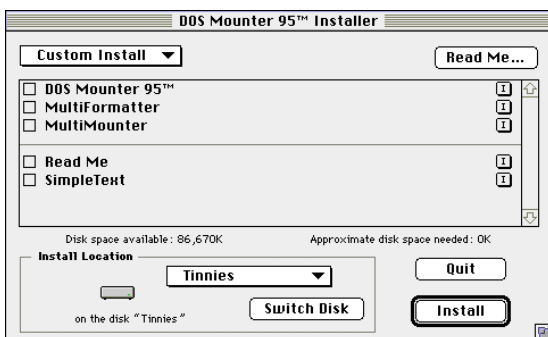
*Installation • **Custom Install** window*

You can choose to install individual items. For more
information about each item, press the *I* icon at the far right
of each item.

5. If needed, select a different destination drive or folder in
    Installation Location.

6. Press **Install** to begin installing DOS Mounter 98.

REMOVING DOS MOUNTER 98

Some applications require the Macintosh to recognize DOS disks
directly rather than through the DOS Mounter 98 driver. To allow
DOS disks to work with such applications, you must disable DOS
Mounter 98 using the procedure described in Chapter Two,
"Using DOS Mounter 98." If you need to remove DOS Mounter
98, drag the DOS Mounter 98 icon out of your Control Panels
folder.

CHAPTER TWO:
Using DOS Mounter 98

DOS Mounter 98 is a file-transfer utility designed to take full advantage of the cross-platform capabilities found in many of today's leading software applications. Using DOS Mounter 98, you can mount a DOS disk from your Macintosh, access and work with DOS files just as you would Macintosh files, map three-character DOS or Windows file extensions to Macintosh applications for automatic launching and use your Macintosh to perform DOS format and partition operations.

Most major software companies provide applications in both Macintosh and PC versions. For example, you can find Macintosh and Windows versions of Microsoft Word, Microsoft Excel, Adobe PageMaker and many others. Typically, cross-platform applications provide seamless editing of the same file in different environments. With built-in functionality for handling files created on the other platform, it's simple to edit files on either platform.

Despite the cross-platform functionality of these applications, the two operating systems differ substantially.

Often, the process of using a Macintosh to read large DOS files or a large number of DOS files can be time consuming. Combined with the difficulty PCs have reading Macintosh disks, users face challenges moving files from one platform to the other.

That's where DOS Mounter 98 comes in. With DOS Mounter 98, you can read, write and transfer PC files to the Macintosh and back to the PC. DOS Mounter 98 performs the steps necessary to make your DOS or Windows disk automatically appear as a Macintosh volume, while preserving platform-specific file information. DOS Mounter 98 supports high-density, 3.5-inch floppy disks and other storage device such as rewritable-optical disks, PD and phase-change media, Zip, Jaz, SyQuest, Bernoulli removable disks, and hard drives.

Note: If you have not already reviewed the "Application Compatibility and File Translation" section in the introduction to this guide, you may want to do so before proceeding.

VIEWING DOS DISKS

Once DOS Mounter 98 is installed, the interface for viewing DOS disks is completely transparent, you simply insert the disk in the drive or connect the drive to your Macintosh and double-click the disk's icon. When you open the disk, directories are shown as Macintosh folders and files are shown as Macintosh documents. All the familiar Macintosh techniques are available for manipulating the disk and its contents. You can select, drag, copy, duplicate, rename, or put items in the Trash, just as you would Macintosh files.

A special note about file names

On a computer running Windows 95 or 98, file names must conform to the naming conventions. Windows 95/98 allows up to 253 characters for the complete path to any file, including the file name, which may contain spaces and punctuation marks.

When you use a DOS, or disk on your Macintosh, Macintosh naming conventions apply. The Macintosh, however, allows only 31 characters in a file name. Since Macintosh and DOS naming conventions are different, DOS Mounter 98 keeps three names for every item on a DOS disk: a DOS file or directory name in the truncated 8.3 format the 31-character Macintosh document or folder name, and the expanded Windows 95/98 file name. On a Macintosh computer, DOS Mounter 98 converts the Windows long file name to comply with Macintosh standards, inserting a tilde (~) character to indicate deleted characters, where applicable.

Note: A DOS or Windows directory or file name cannot include the following characters: backslash (\), slash (/), colon (:), asterisk (*), question mark (?) inch marks ("), less than (<), greater than (>) and bar (|). DOS Mounter will substitue the "&" character in the DOS/Windows file name if any charters are used that are not allowed.

Opening the DOS Mounter 98 Control Panel

Whether your Macintosh uses System 7 or a later version of the operating system determines the visual appearance and functionality available for DOS Mounter 98.

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

2. Double-click the DOS Mounter 98 icon
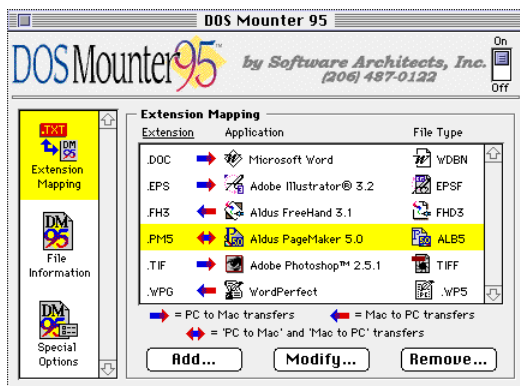
Procedures • DOS Mounter 98 Control Panel window for users of System 7 or later

DOS MOUNTER 98 PROCEDURES

Because of visual and functional differences, the following procedures are divided into parts, depending on system software.

Getting File Information

Using the DOS Mounter 98 control panel, you can get file information not available using the Macintosh Finder **Get Info** command. For example, you can see the extended Windows 95 file name, the DOS file name, the file size, the type of file and creation and modification dates.

System 7.5.X or later:

1. Open the DOS Mounter 98 Control Panel window.

2. From the list of icons along the left side of the window, select **File Information**.

The contents of the window change to the following:

Instructions and other helpful information

Windows 95 extended file name

Windows file type

DOS file name
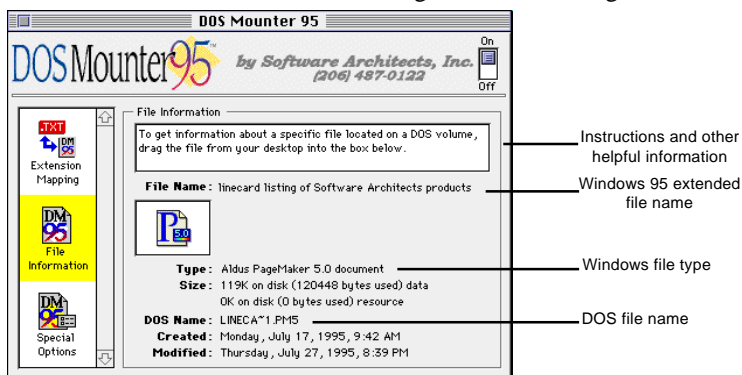
3. In the Macintosh Finder, open the DOS disk containing the directory or file you want to view, if it's not already open.

4. Drag the file onto the File Information box in the DOS Mounter 98 window.

The file information is listed in the appropriate category. For example, the previous figure shows the file information for a PageMaker 5.0 file created under Windows 95.

System 7.0.X to System 7.5.X:

Follow the first two steps described in the 7.5.X procedure. Then:

3. Click the File Information box in the DOS Mounter 98 window.

   A standard Macintosh file-open dialog box appears.

4. Select the file whose information you want to get.

5. Click **OK**.

Setting DOS Mounter 98 Options

You can set options for loading and using DOS Mounter 98.

System 7 and later:

1. Open the DOS Mounter 98 Control Panel window.

2. From the list of icons along the left side of the window, select **Special Options**.

The contents of the window change to the following:
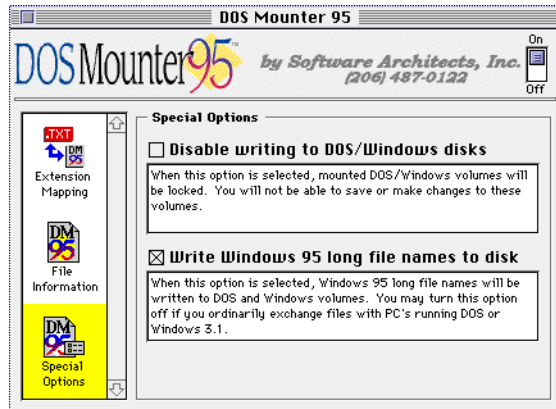
Disable writing to DOS/Windows disks prevents the modification of the contents of any DOS or Windows disk, similar to the functionality of a write-protect tab on a disk.

Write Windows 95 long file names to disk allows the user to determine whether the Windows 95 file names will be used.

3. Select the options you want.

Working with Disks

With DOS Mounter 98, you can use your Macintosh to format and partition removable media and to format floppy disks. When your Macintosh encounters an unformatted floppy disk, you can choose to format the disk in Macintosh or DOS format. See Chapter Four, later in this guide, for information on formatting and partitioning.

Turning DOS Mounter 98 On or Off

You can control whether DOS Mounter 98 is active or inactive. In order to function correctly, some applications require the Macintosh to recognize DOS disks directly rather than through the DOS Mounter 98 driver. For these applications, you must disable DOS Mounter 98.

System 7 and later:

1. Open the **DOS Mounter 98** Control Panel window.

2. Click to toggle the button to the **Off** position to disengage DOS Mounter 98.

OR:

Click to toggle the button to the **On** position to activate DOS Mounter 98.

Mapping Extensions

Information on DOS Mounter 98 extension mapping functionality is contained in Chapter Three, "Extension Mapping."

Ejecting a DOS Disk

You can choose from several options to eject a DOS disk from the drive. Once you select the disk icon, you can do one of the following:

- Drag it to the Trash

- Choose **Eject Disk** from the Special menu

- Choose **Put Away** from the File menu

- Press and hold down the Command key while pressing the E key

Note: Do not manually eject a disk without first following standard Macintosh disk ejection procedures.

CHAPTER THREE:
Extension Mapping

The three characters that immediately follow the period in a DOS file name comprise the file extension. The extension is what the PC uses to identify a file as belonging to a particular application. The extension mapping technology in DOS Mounter 98 uses a table that associates DOS file extensions with Macintosh applications. Once an extension is mapped, you can open a DOS file by double-clicking the file's icon on your Macintosh desktop.

Without this mapping function, the Macintosh does not know which application to launch when you double-click the DOS file icon. That means you have to open the DOS file from within the appropriate Macintosh application. Once the DOS extension is mapped to the Macintosh application, the application launches automatically.

Note: You do not have to turn Extension Mapping on. It is automatically enabled when DOS Mounter 98 loads at system startup.

DOS MOUNTER 98 EXTENSION MAP

Each item in the DOS Mounter extension map associates a specific DOS extension with the appropriate Macintosh application. DOS Mounter 98 comes with defaults that include extension mappings for the leading applications. If the settings in the default extension map do not match what you need, you can easily customize them. You can add mappings for new entries, modify settings for existing mappings, or delete obsolete entries from the map.

Adding an extension mapping is particularly critical when you encounter applications not covered by the default settings. For example, Microsoft Write `.WRI` files have no equivalent Macintosh application. In that case, you might map `.WRI` files to a compatible Macintosh application that has appropriate filters for opening Microsoft Write files. Consult your application manual for compatibility information.

You will probably edit extension mappings for many of the same reasons you add new entries; that is, updates and new releases requiring changes to your existing extensions map. You may also find that an existing mapping involves an extension that you need mapped to another application.

For example, your company may use Lotus 1-2-3 worksheets that carry an extension of .XLS. You use Microsoft Excel to edit the files on your Macintosh at home, but you use Lotus 1-2-3 to edit the files on your office PC. In the default file name configuration map, .XLS is assigned to Microsoft Excel. You want to change the assignment so that Lotus 1-2-3 launches instead of Microsoft Excel, so you need to edit the file name configuration map.

Multiple Mappings

You may map more than one extension to a specific application. For example, on your PC you use both Word Perfect and Microsoft Word to work on word-processing files. You may not have Word Perfect for your Macintosh, but you do have a filter for the Macintosh version of Microsoft Word that lets you work with Word Perfect files from the PC. In this case, you would need two entries in the extension map, one mapping PC Word files to the Macintosh Word application and one mapping Word Perfect files to the Macintosh Word application.

Note: You cannot map a single extension to more than one application. If you try to add a mapping for an extension that is already in the map, DOS Mounter 98 replaces the existing mapping for the extension.

Special Notes for Mapping Extensions

Nothing prevents you from mapping extensions to applications that do not support files of a given type. You can also map extensions to applications you do not have. However, you may experience unpredictable results. Therefore, you should make sure you have the applications you need when mapping extensions to applications.

It is also important to understand that simply mapping an extension to an application does not eliminate the need for file translation. If you map an extension to an incompatible application, you will have unpredictable results. While the file may open, some characters may appear incorrectly, extra characters may be inserted, formatting may be lost, or a number of other possible results. For more information about compatibility issues, see "Application Compatibility and File Translation," in Chapter One.

Finally, extension mapping has no effect on Macintosh files. The Macintosh does not use extensions to determine which application to launch.

Understanding Creator and Type

Macintosh file names typically do not carry an extension, though they may. Instead, when a Macintosh application saves a file, it adds Creator and Type information. However, unlike extensions on PC files, the Creator and Type are hidden within the Macintosh file. The Creator is a four-character string that uniquely identifies the application used to create and save the file. The Type is a four-character string that indicates the kind of data the file contains.

Creator and Type information is used in a manner similar to extensions on the PC: it gives the file the correct icon for display and lets the Macintosh know which application to launch when the file is opened.

EXTENSION MAP SETTINGS

DOS Mounter 98 comes with an extension map already set up. The default map represents applications widely recognized as leaders in the industry. The entries themselves associate the most appropriate applications with the most appropriate extension.

Mapping extensions does not remove the need for file translation or conversion, if applicable. The "File Compatibility and File Conversion" section, in the introduction to this guide, contains some information on file compatibility issues. For more information on application compatibility, consult your application documentation.

Modifying the Extension Map

You may find that some of the mappings do not match the applications you have. Or you may acquire applications not covered in this set of mappings. Therefore, the DOS Mounter 98 control panel lets you add, modify and remove extension map settings.

Note: If you modify the extension map, you can always restore it by deleting the DOS Mounter Preferences file from the Preferences Folder of the System Folder and opening DOS Mounter again.

1. Open the DOS Mounter 98 Control Panel window.

2. Click the **Add...** button to add a new mapping.

OR:

Select an extension and click the **Modify...** button to edit an existing mapping.

The following dialog box appears:
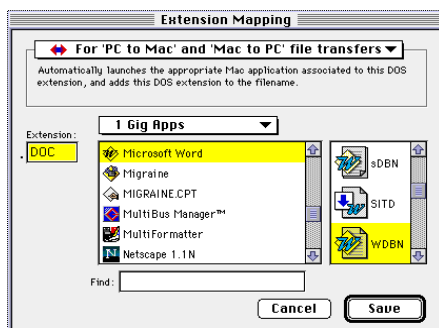
3. From the dropdown menu at the top of the window, select **For PC to Mac file transfers**, **For Mac to PC file transfers**, or **For PC to Mac and Mac to PC file transfers**, depending on how you plan to use the mapping.

Note: When you select **From Mac to PC file transfers**, the extension you enter in the Extensions edit box will be appended to files created using the selected application and File Type on the Macintosh.

4. Enter a new extension or edit the existing extension in the **Extension** edit box. Select drive where application exists.

5. From the larger listbox, choose an application you want the Macintosh to associate with the specified extension.

6. Select a file type from the file type listbox.

Note: To map graphics files to the MacPaint application, they must be assigned a type of PNTG.

7. Click **Save** to confirm the addition or modification and return to the DOS Mounter control panel window. Click **Cancel** to return to the DOS Mounter control panel window without making changes.

WARNING! When you click **Save** in the **Add** or **Modify** extension mapping dialog box, your changes are accepted immediately. There is no confirmation dialog. Make sure you are satisfied with the settings before you click **Save** after adding or modifying a mapping.

6. Click **Done** to confirm the addition or modification and return to the DOS Mounter control panel window. Click **Cancel** to return to the DOS Mounter control panel window without making changes.

Using Wild-Card Characters

DOS uses the question mark (?) and the asterisk (*) as "wild-card characters" to let you substitute either a single character (?) or several characters (*) to do file operations. DOS Mounter 98 supports the wild-card characters, so you can map similar extensions such as WK1, WK2 and WK3 to the same application. For example, if you want to map all extensions beginning with WK, you specify WK? or W* as the extension.

Note: Use caution when establishing mappings with wild-card characters or you may encounter unexpected results. For example, if you map W* to the Microsoft Excel application, all files whose extensions begin with a "W" will be affected, including .WP and .WRI files, for which word-processing applications may be more appropriate .

Removing an Extension Mapping

1. Open the DOS Mounter 98 Control Panel window.

2. Select the extension whose mapping you want to delete.

3. Click the **Remove...** button to delete the mapping.

The following dialog box appears:

4. Click **Remove** to confirm the deletion and return to the DOS Mounter control panel window. Click **Cancel** to return to the DOS Mounter control panel window without making changes.

COPYING OR SAVING FILES IN DOS FORMAT

Whenever you use a Macintosh application to copy or save a file to a DOS or Windows disk, the Macintosh Creator and Type become permanently frozen in the file. Since PCs handle files differently than the Macintosh, this can cause unpredictable results when transferring a file back to the Macintosh.

If you want to open Macintosh files on a PC, you'll need to make sure you have a compatible application. Using Software Architect's Here & Now software on your PC provides functionality equivalent to DOS Mounter 98 and helps simplify the process of determining compatible application. Like DOS

Mounter 98, Here & Now provides a default set of extension mappings that enables automatic launching of DOS or Windows applications by double-clicking Macintosh files.

For more information on file compatibility, see "Application Compatibility and File Translation," in the introduction to this guide and your application's documentation.

CHAPTER FOUR: Working with Removables and Hard Drives

DOS Mounter 98 comes with two utilities that let you mount, test and format DOS removable media, magneto-optical drives, and hard drives. MultiMounter is a driver designed to mount DOS drives on your Macintosh desktop. With the MultiFormatter utility, you can format and partition media, choosing from DOS, Macintosh, or a mix of the two formats.

Note: For MultiMounter and MultiFormatter to work with Iomega drives you must remove previous Iomega drivers from the Extensions folder.

USING MULTIMOUNTER

MultiMounter

Many drives support both Macintosh and DOS computers. Their drivers, however, are seldom written to support both systems at the same time. In addition, a number of available Macintosh drivers are not written to Apple's specifications. MultiMounter provides a fully Macintosh-compatible driver that enables DOS Mounter 98 to mount both DOS- and Macintosh-formatted media in virtually all drives. Once MultiMounter is installed, operation is completely transparent.

You should use only one device driver for working with drives. To avoid potential init conflicts, you should remove any existing storage device driver from the Extensions folder in the System Folder and replace it with the MultiMounter driver.

Note: CD-ROM drives are an exception. You should not delete the driver for your CD-ROM drive.

THE MULTIFORMATTER UTILITY

MultiFormatter

MultiFormatter is a utility that lets you format, partition, test and mount DOS media from your Macintosh. To avoid potential init conflicts, before using MultiFormatter you should remove any existing device driver from the System folder (or under System 7.X, from the Extensions folder in the System Folder) and replace it with the MultiMounter driver.

MultiFormatter supports Macintosh System 7.0 or later including System 8.x, and is compatible with DOS Version 3.3 or later. While DOS 3.3 has a 32 megabyte partition size limit, later versions of DOS support larger partitions.

MultiFormatter works with storage systems, including most third-party storage systems using rewritable optical, removable Winchester disk drives, and hard drives. See Appendix C for a list of supported SCSI devices.

Note: You cannot use MultiFormatter to format or create partitions on high-density 3.5-inch floppy disks. Therefore, in this section "disk" refers to removable media drivesand hard drives and excludes floppies.

USING MULTIFORMATTER

The MultiFormatter utility enables you to prepare storage devices for use on DOS or Windows computers and on Macintosh systems that have DOS-mounting capabilities.

Open MultiFormatter by double-clicking on the application icon. The following window appears:
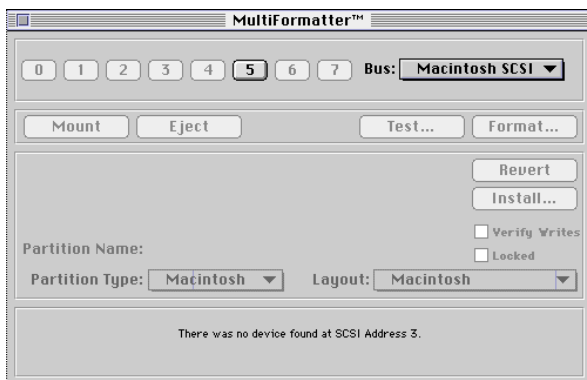
As you move the cursor over different areas of the MultiFormatter window, the contents of the bottom panel of the window changes to provide descriptive information, functional instructions and helpful suggestions associated with the area containing the cursor. It is especially important to read each help message carefully the first time you install partitions, format disks, or test partition and format information on a disk.

Selecting the Drive ID Number

With MultiFormatter, you will need to know the drive ID of each drive you will be working with. To identify the drive ID number, look on the back of the drive or consult your hardware documentation. Make sure each drive connected to your Macintosh has a unique drive ID number and that it is terminated correctly. For more information on SCSI termination, see Appendix D, "Termination."

At the top of the window is a row of buttons representing the ID numbers and a pop-up list representing the available buses in your computer. Buses let you attach peripherals to your computer. Interfaces enable communication between those buses and your computer. SCSI is one interface, IDE is another, and other interfaces may be available from third-party developers.

The type and configuration of your Macintosh determine what items will appear in the **Bus** list. All Macintosh computers contain an internal SCSI bus with seven available drive ID numbers (also called "SCSI addresses"). Some computers contain two buses: an internal SCSI bus and an external SCSI bus, each with seven available drive ID numbers.

Darkened text and a raised button appearance indicates an ID you can select. Dimmed text next to a button indicates an ID number that has no device connected or a drive that MultiFormatter cannot work with. When you select a button representing the ID to be worked on, the content of the window changes to reflect the state of that disk or drive.

Note: If you cannot select any button, verify that your drives are turned on, properly cabled and terminated correctly and that the correct bus is selected.

SCSI ID LUN (Logical Unit Number) Support

Some devices allow for more than a single drive or disk to be represented by a single SCSI ID. Because you can have multiple drives or disks on the same SCSI ID, MultiFormatter provides a pop-up menu for selecting the Logical Unit Number (LUN). Each LUN has a unique number.

Note: Only devices that support LUNs will have a pop-up menu available.

When you click a SCSI ID that contains LUNs, a pop-up menu appears, as shown in the following window:
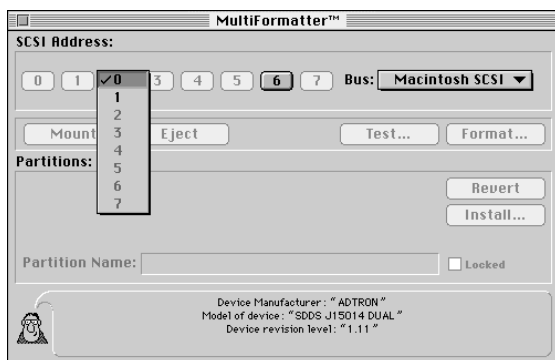
*Using MultiFormatter • MultiFormatter window
with LUN pop-up menu for SCSI ID number 2*

The pop-up menu contains numbers 0 through 7. Numbers representing LUNs you have available appear bold, indicating that you can select them.

Note: Because you can only work with one LUN at a time, you will have to select a number for each LUN you need to format or partition.

Mounting and Ejecting Disks

MultiFormatter comes with a driver that enables your Macintosh to mount DOS-formatted drives, disks and partitions. When you select an unmounted drive, disk or partition, the button in the center panel of the MultiFormatter window changes to read **Mount**. When you click on **Mount**, MultiFormatter attempts to mount the unmounted drive, disk or partition. If all hard drives and their partitions are already mounted, the button changes to read **Unmount**. The **Eject** button is for ejectable media whose partitions are already unrmounted.

Once you select a drive ID, you can install a disk that has not been formatted previously, reformat a previously formatted disk, or certify the format of the media. Because the format process uses the partition settings that are established at the time you press the **Format** button, you should check the partition settings to make sure they match what you want. See "Creating Partitions," later in this chapter, for information on specifying partition options.

WARNING! Any data previously stored on the disk will be erased during the formatting process. Make sure you back up the data on the drive before formatting or partitioning.
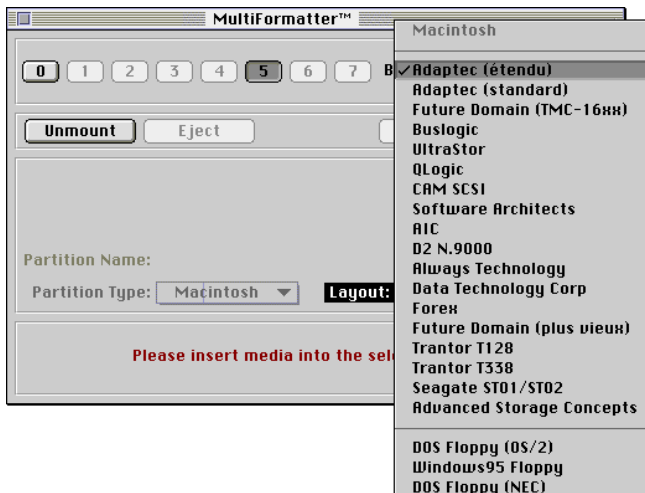
Selecting a Layout

The **Layout** pop-up menu contains a list representing partition layout methods for associated adaptor boards and special partition types. For each partition you want to install, you must select the layout that matches the host adapter board or special format type for the computer where you plan to use the drive or disk. MultiFormatter then installs the appropriate partition information on your disk.

From the **Layout** pop-up menu, select the item that matches your SCSI, IDE, or third-party bus.

Layout Menu Functionality

In the **Layout** pop-up menu, selections become available or unavailable depending on the type and number of partitions that you are working with. Some layout types support only a single partition. When this is the case, appropriate items in the pop-up menu become dimmed, indicating that they cannot be selected.

If you are installing Macintosh partitions only, all DOS-related choices become dimmed. If you are installing DOS partitions only, all Macintosh-related items become dimmed. If you create more than one DOS partition, Adapted (extended) is selected by default. See Appendix C for additional information on layout support.

Formatting • Selecting a Layout

If you have an Adaptec 1520 series SCSI Host Adapter in your PC, select Adaptec (standard) from the SCSI Host adapter pop-up menu when creating DOS partitions. If you have an Adaptec 1540 series with Extended BIOS SCSI Host Adapter, select Adaptec (extended).

Note: If you change the layout for a DOS SCSI Host Adapter Board, there may be a compatibility conflict with old partitions, due to differences in implementations of SCSI Host Adapter Boards. MultiFormatter may need to reformat the DOS partitions on your disk. If this happens, you will lose all data stored in those partitions. Make sure you have backed up any data you need before proceeding.

Formatting a Disk

When the desired formatting options are set, press **Format**. The following dialog box appears:

Formatting • Format warning dialog.

Press **Proceed** or **Format** to begin formatting and partitioning the disk, or press **Cancel** to return to the MultiFormatter window without performing formatting and partitioning operations.

Note: Macintosh partition information is written in standard Apple specification format as described in *Inside Macintosh, Devices*. When interchanging disks with other drives on other Macintosh computers, all driver software and file formats must adhere to Apple standard specifications.

WARNING! Once begun, the only way to stop the formatting process is to turn off the Macintosh computer. Data will still be lost, however, so be sure you are ready to format the drive or disk before you press **Proceed** or **Format** .

CREATING PARTITIONS

The process of dividing the disk into several volumes is called "partitioning." Data storage space on a disk can be allocated for different uses by creating partitions. Partitions can be made accessible either to Macintosh systems, DOS/Windows systems, or both. If you are working with a new or unformatted disk, you must format the disk before you can install new partitions.

Typically, you use Macintosh partitions for storing Macintosh files and applications and DOS partitions for storing DOS and Windows files and applications. Empty partitions can be created to reserve space for later use.

Note: You cannot create or change partitions on a disk that contains open files. Before changing the disk, close all files, quit all applications and turn off file sharing using the **Sharing setup** Control Panel under the Apple menu.

You can set up or modify the partitioning setup on your disk using the partition status bar of the MultiFormatter window to create the desired number, sizes and types of partitions

WARNING! Creating or changing partitions results in the destruction of some or all of the data on the disk. Make sure you back up data on your startup drive before installing or changing partitions.

Using the Partition Status Bar

The MultiFormatter window contains information on how disk space has been allocated. A horizontal status bar shows the current status of all the space on the selected disk. A dark gray section of the status bar indicates an installed and unchanged partition. A yellow-striped section on the status bar indicates a partition that is new or has been changed.

If you are working with unformatted media, or if the disk contains partitions that MultiFormatter does not recognize, MultiFormatter will select a single Macintosh partition by default.

WARNING! MultiFormatter does not recognize Unix or NTFS partitions. In this case, if you format or install partitions, all data on the Unix or NTFS partition will be lost. Make sure you have backed up all data you need before proceeding.

At the right end of each section of the partition status bar is a size-indicator flag. The flag shows the size in megabytes currently allocated to each partition.


Partitions • An example of the status bar for a 53 Mbyte installed partition. Dark gray indicates a formatted and installed disk.

Partitions • Status bar after changes have been made to the original partition map. Yellow striped areas indicate that data will be destroyed when the new partitions are installed.

Setting Partition Attributes

As you click on a section of the partition status bar or on a partition's size-indicator flag, an arrow appears below the bar and the information in the **Partition Name**, **Partition Type,** and **Layout,** boxes change to reflect the name and type of the selected partition.
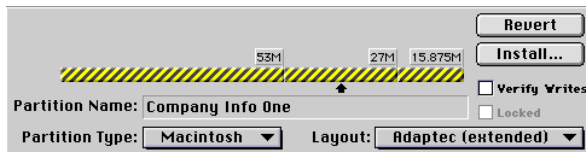
Partitions • Partitions panel with second partition selected.

You can drag the size-indicator flag to change the size of a partition or you can click in the flag to edit the number directly. To add a new partition, drag the size indicator flag at the right-most edge of the bar. Dragging the size-indicator flag or modifying the partition size number directly changes both partitions.

Partitions • Reducing the size of the first partition from 53 Mbytes to 50 Mbytes increases the size of the second partition from 27 Mbytes to 30 Mbytes.

A partition can be split into two smaller partitions. To split a partition, hold down the Option key while clicking on a partition size-indicator flag. A new partition size flag of 0 Mbytes appears. Edit the partition size by dragging the flag or by highlighting and modifying the number inside the partition size flag.

Partitions • Splitting a partition.

Maximum Partition Sizes

Computer system software determines partition size limitations. For Macintosh computers with system software prior to system 7.1 update 3, the limit is 2 Gbytes. For Macintosh computers with system 7.1 update 3 through 7.5.1, the limit is 4 Gbytes. For Macintosh systems with system 7.5.2 or later, the limit is 2 Tbytes.

DOS 3.3 has a 32-Mbyte partition size limit. DOS 4.0 or later or Compaq 3.31 is needed for partitions larger than 32 Mbytes. For computers with DOS 4.0 or later or Compac 3.31, the limit is 2 Gbytes.

Note: Although the typical DOS limit is 2 Gbytes, if you have proprietary software that allows DOS formatting of up to 4 Gbytes, DOS Mounter allows you access to the disk, drive or partition.
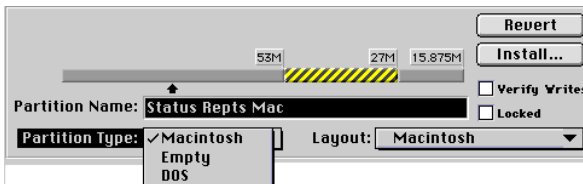
Naming Partitions

Once the size is established, you can edit the name and partition type. To name the selected partition, click on the **Partition Name** text entry box and type the partition name. Even though Macintosh allows 31 characters for file and folder names, you can

use no more than 27 characters for Macintosh partition names. Under DOS, you can use no more than 11 characters for partition names.

To change partition names without changing partition sizes or types, click on the partition on the Macintosh desktop and enter in the new name.

Using the Partition Type Menu

To change the partition type, select a type from the **Partition Type** pop-up menu. When you change the partition type, the partition bar changes to yellow stripes, indicating that data will be lost when you install.

Partitions • Partition type pop-up menu.

You can choose types of **Macintosh** or **DOS**, or you can reserve space for later use with the **Empty** partition type option.

Locking Partitions

To lock Macintosh partitions, click the **Locked** check box located next to **Partition Type** pop-up menu. This feature functions similar to the "write-protect" tab on a floppy disk, allowing read-only access to the files on a Macintosh partition.
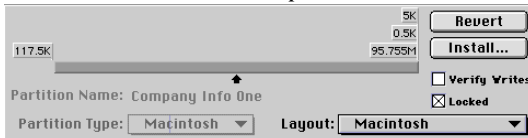
Note: DOS partitions cannot be locked in this manner.

Partitions must be installed before they can be locked. Once a Macintosh partition is locked, data cannot be changed until the partition is unlocked by clicking the **Locked** check box again.

Partitions • The selected partition is unlocked.

Partitions • The selected partition is locked.

WARNING! Locking a partition will not prevent data from being destroyed during a Destructive Test of the partition. See the "Testing Partitions" section, later in this chapter, for more information on data loss during destructive testing.

Verifying Write Operations on Partitions

For additional data-transfer assurance, you can select the **Writes Verify** check box. When **Writes Verify** is selected, all subsequent write operations to that disk, drive or partition will be verified. Verifying each write operation impacts disk-access performance. However, because each write is verified, you have greater assurance that data is not lost when it is written out to the drive.

Creating "Bootable" Partitions

Creating a "bootable" or startup drive means creating a partition for the placement of system startup files. During startup, Macintosh and DOS systems look for critical information at specific locations on the disk. The startup files must be present at the expected locations, or the disk or drive will not be able to boot the computer.

When creating multiple partitions, the left-most partition is the startup volume. When you select a mix of DOS and Macintosh partitions on a single drive, you can specify whether the disk will be bootable on the Macintosh or under DOS. A disk may be bootable for Macintosh or DOS systems, or both.

The preparation of bootable partitions is different for Macintosh and DOS systems.

Note: When creating bootable Macintosh partitions, make sure you use the System Folder from your Macintosh systems disks to make sure your disk receives the system software appropriate for the drive.

Installing Partitions

Press the **Revert** button at any time during partition setup to restore the original partitioning information. When the information is correct, begin the installation process by pressing the **Install** button in the dialog box. Before data on your disk is destroyed, a confirmation dialog box appears, giving you the opportunity to cancel the installation.

Note: Once you begin the installation process, you will not be able to quit. If you wish to abandon installation you must press the **Cancel** button before the process begins.

When you press **Install**, the following dialog box appears:


```
┌──────────────────────────────────────────────┐
│ (✋)  Stop!                                      │
│      Your partition settings have been changed. All data │
│      on the partitions which are marked with yellow and  │
│      black stripes will be destroyed.                    │
│                                                          │
│      If any of those partitions contain data which is    │
│      important, you must cancel this operation and back   │
│      up the data before proceeding.                      │
│                        50M          30M  15.875M          │
│      ///////////////////////////////////////////         │
│                        ( Proceed )  ╔ Cancel ╗            │
└──────────────────────────────────────────────┘
```

Press **Proceed** to continue partitioning or **Cancel** to terminate the process and return to the MultiFormatter window.
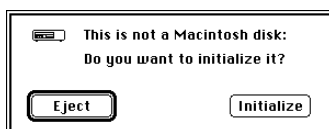
Note: For partitions already verified by MultiFormatter, clicking on **Install** updates the driver without affecting the data.

During Format and Partitioning

As MultiFormatter formats and installs partitions on your disk, a dialog box indicating progress is posted. The dialog box contains the name of the partition. Installation time varies depending on drive size and partitioning information.

The Macintosh attempts to mount each partition after installation. Disk errors or other circumstances may result in an inability to mount a DOS partition when it is encountered.

In that case, the following dialog box appears:


```
┌──────────────────────────────────────────┐
│  [💾]  This is not a Macintosh disk:        │
│        Do you want to initialize it?        │
│                                             │
│  ╔ Eject ╗                 ( Initialize )   │
└──────────────────────────────────────────┘
```

WARNING! For DOS partitions created using MultiFormatter, you should always respond to this dialog by pressing **Eject**. *Never* use this dialog box to initialize a DOS partition created by MultiFormatter.

For more than one DOS partition, you will need to click the **Eject** button each time the dialog box appears, once for each DOS partition you are installing.

As a precaution against initialization, the MultiFormatter driver blocks such initialization requests. If you select **Initialize** in response to the dialog box, the message "This process will erase all data on the disk" appears.

If you choose **Continue**, you will be asked to name the disk. Even when you enter a name and press **Continue**, the MultiFormatter device driver software blocks the initialization request and posts the following dialog box.

When installation is finished, the main MultiFormatter window reappears with the partition status bar updated to indicate the newly installed partition information.

USING THE OPTIONS MENU

When MultiFormatter is loaded, the menu bar contains an **Options** menu item.

*Partitions • The MultiFormatter **Options** menu.*

DOS Mounter

You can use the **DOS Mounter** item to open the DOS Mounter control Panel. See Chapter Two for information on using DOS Mounter.
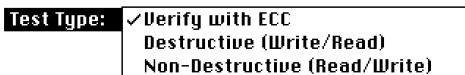
TESTING DRIVES AND PARTITIONS

MultiFormatter lets you test and analyze media over time. Press the **Test...** button in the main MultiFormatter window to bring up the test window.
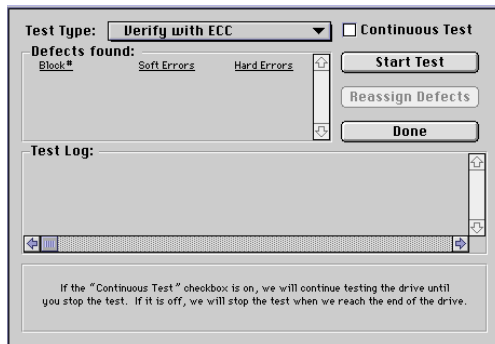
Testing • Test window.

From the **Test Type** pop-up menu you can choose from three types of tests:

Test Type:	✓Verify with ECC
	Destructive (Write/Read)
	Non-Destructive (Read/Write)

*Testing • **Test Type** pop-up menu.*

Verify with ECC: Looks at each block on the disk and reports any blocks where the Error Correction Codes do not match. This test may not support older drives.

Destructive (Write/Read): Writes a test pattern to the drive, reads it back and compares the results.

WARNING! Even on disks locked using MultiFormatter, a **Destructive (Write/Read)** test erases *all* data on the drive. Be sure you have backed up any data you need before proceeding.
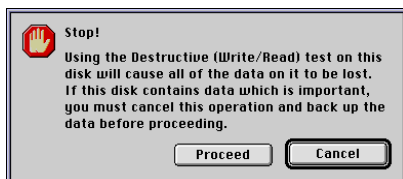
Note: You cannot perform a **Destructive (Write/Read)** test on disks that have been locked using the write-protect tab on the disk itself.

Non-Destructive (Read/Write): Same as **ECC Verify**, except that the data from each block is read and reported. This test is provided for drives not supported by **ECC Verify**.

When you check the **Continuous Test** check box, testing continues until you press the **Stop Test** button to stop it. Otherwise, the test performs one complete pass through the disk and stops.

Press the **Start Test** button to begin testing. Press the **Done** button to return to the MultiFormatter window without performing any tests on the media.

If you have selected **Destructive (Write/Read)**, the following dialog box appears:

> **Stop!**
> Using the Destructive (Write/Read) test on this disk will cause all of the data on it to be lost. If this disk contains data which is important, you must cancel this operation and back up the data before proceeding.
>
> [Proceed]   [Cancel]

Press **Proceed** to continue with the test or **Cancel** to return to the text window.

Once a test is running, you can press the **Stop Test** button to terminate any kind of test at any time. When you are through testing, press the **Done** button to return to the MultiFormatter window.

Saving the Log Report

When a test cycle begins, a notation appears in the test log, including the time, the type of test and type of device. Errors automatically display in the **Defects found** list as they occur. "Soft" errors are block reads where the data could be recovered with ECC error correction. "Hard" errors are those that could not be recovered at all.

The following dialog box contains a sample test run:
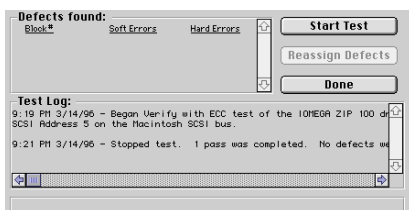
After the test is complete, you can save the results using the **Save Log** or **Save Log as** options in the **File** menu. You can also choose **Print** from the **File** menu to print the results. If you close the test window and quit MultiFormatter before saving or printing the test results, a dialog box is posted asking if you would like to save the log before quitting the application.

Saved logs appear as TeachText documents that can be opened using TeachText or most word processors.

Macintosh icon for a test log file.

Using the Reassign Defects Button

At the completion of a test, you can automatically reassign found defects by selecting the **Reassign Defects** button. You should always reassign "hard" errors: "Soft" errors may best be handled by other means. For example, moving the drive away from radio frequency (RF) interference may solve "soft" errors.

At the completion of a test or when the test is stopped, all blocks shown in bold in the **Defects found** list will be selected for reassignment. To choose blocks for reassignment, click on the blocks and press the **Reassign Defects** button.

When you are through testing, press the **Done** button to return to the MultiFormatter window.

APPENDIX A: Using SCSI Drives in a DOS Environment

On the Macintosh, the SCSI port is built into each computer (Mac Plus and later models). As part of the Macintosh OS, Apple has provided SCSI port management routines and specifications for storage media layout. This combination of built in hardware and software support and a specification of media layout makes it possible for many vendors' media and devices to operate and interchange easily on all models of Macintosh.

SCSI (Small Computer System Interface) is not a standard in the PC environment. If you want to use SCSI storage devices on your PC, you have to add a SCSI port to the computer, typically by adding a plug-in SCSI Host Adapter Board and supporting software. You can choose from a wide variety of SCSI boards currently available for the PC.

The following sections cover some of the issues you may encounter when using SCSI drives in a PC environment.

Formatting a SCSI device using a PC

The standard disk preparation programs on a PC are DOS's FDisk and Format. SCSI Host Adapter Boards for the PC generally come with their own formatting and partitioning software. These formatting packages create DOS partitions which are read by DOS. At times you may want to format a SCSI drive on a PC and then connect it to a Macintosh.

With some SCSI Host Adapter Boards, you may be required to use the formatting software provided by the manufacturer. With others, you may have a choice of formatting software. In some cases, you will have to format the device using a Macintosh before you can connect it to a PC. In general, when you format SCSI disks on a PC, you should use the standard FDisk and Format programs.

Regardless of how the drive is formatted, you can transfer data between your Macintosh and PC systems if DOS Mounter 98 supports your SCSI Host Adapter Board.

SCSI Host Adapter Boards

There are a wide variety of PC SCSI boards available. DOS Mounter 98 creates DOS partitions that can be used with SCSI Host Adapter Boards listed in Appendix C, "List of Supported Devices."

Note: Some SCSI host adapter boards that use the 25-pin "D" connector for the external SCSI cable, do NOT follow the Macintosh pin layout. Most notable is connecting pin 25 (+5 volts Term. Power) to ground. In this case, you should use the SCSI cable that came with the SCSI Host Adapter Board and not a standard 25-to-50 Pin Macintosh-style SCSI cable. For more information, consult the installation manual that came with the device.

Differences Between SCSI and DOS

DOS version 4.01 and earlier accesses data on disk drives using a specification that closely maps the physical characteristics of the disk. DOS refers to a particular block of data by specifying head, cylinder and sector. The head is the magnetic pickup device; the cylinder refers to the tracks or "bands" of data on a disk; and the sectors are the "blocks" of storage available in a band.
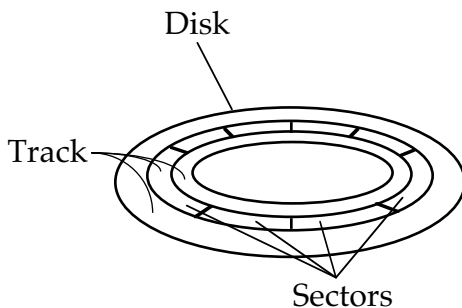
SCSI • Cylinder or "Tracks" and the sectors or "Blocks" on a disk.

This contrasts with a SCSI drive which appears as a series of logical blocks addressed from "0" to "N" (the number of blocks depends on drive size). No information about heads, cylinders, or sectors is needed in working with SCSI devices. In requesting a particular block of data from a SCSI drive, all that is needed is for the computer to specify the number of the block.

The problem for the manufacturers of SCSI Host Adapter Boards and the supporting software is how to map DOS's head, cylinder and sector scheme to SCSI's "0" to "N" block scheme. There is no set formula for translating head, cylinder and sector to and from the "Logical Block" scheme. Each SCSI Host Adapter Board manufacturer has created an individual algorithm. The numbers assigned to the heads and cylinders changes from board to board and manufacturer to manufacturer.

Typically, drives or disks formatted on a computer using a SCSI Host Adapter made by one company cannot be used on a computer using a SCSI Host Adapter made by another company. It is unfortunate, but the majority of DOS SCSI Host Adapter Boards cannot format disks that can be used by other DOS SCSI Host Adapters Boards.

APPENDIX B:
Problem Solving

If you are experiencing difficulties, you may find the answer in this section. If you still cannot solve the problem after reviewing this section, contact Software Architects' Technical Support.

Note: to be eligible for complimentary technical support, you must register your product. If you have not done so already, please complete your registration card and return it to Software Architects, Inc. today.

Technical Support

Software Architects, Inc.
19102 North Creek Parkway #101
Bothell, WA 98011-8005
USA

Phone: (425) 487-0122   (9 a.m. to 5 p.m. PST)
Fax: (425) 487-0467   (Monday - Friday)

email: support@softarch.com
http://www.softarch.com/

Some Commonly Encountered Problems and Their Solutions

1. "My computer doesn't recognize the drive."

A1: Possible SCSI ID conflict. Two SCSI peripherals set to the same SCSI address can cause your computer to crash or act erratically. Try changing the SCSI ID number of your external drive.

A2: DOS Mounter 98 not installed. Check at startup to make sure that the DOS Mounter 98 icon appears in the lower left corner of your screen. If the DOS Mounter 98 is installed but the system will not recognize the drive, refer to Troubleshooting question #7. If the DOS Mounter 98 icon does not appear, reinstall DOS Mounter 98 as described in "Installation," earlier in this guide.

2. "My computer recognizes the drive sometimes and other times it doesn't."

A: Improper Cabling or Termination. Good cabling and termination determines whether or not your hardware will work consistently. For best results, use the cable that came with your Macintosh drive or PC SCSI Host Adapter Board. Twisted or improperly seated cables can cause problems, as can incorrect termination. Make sure power to each drive is turned on before starting the computer.

3. "The MultiMounter icon appears at startup, but my system does not recognize the drive."

A1: Probable init conflict. If you are using a removable media drive, you **MUST** remove any inits that came with the drive from your System Folder. This step is necessary to avoid init conflicts with the DOS Mounter 98.

If there is an init conflict, the "Driver Preloaded" Error icon will appear on your screen at startup.

A2: Drive not supported. Scan SCSI bus, place cursor over SCSI ID number of the drive and read drive description in the help box. Contact Software Architects' Technical Support.

4. "I have installed DOS Mounter 98, but my DOS partitions will not mount on the Macintosh desktop."

A: Possible conflict with third-party utility drivers. Restart your Macintosh and check the appearance of the MultiMounter init icon when it loads at startup. If the icon is superimposed with an inverted "V" you may have a conflict with third-party drivers. Remove all suspect utilities and restart your system.

5. "I can't start my system from the startup partition I created with MultiFormatter."

A1: No valid System Folder on disk. Make certain you've installed the correct system for your Macintosh model using the system disks that came with your computer.

A2: Incorrect System Folder location. In order to boot from a partitioned disk, your System Folder must be located in the left-most partition as viewed on the MultiFormatter partition status bar. See the "Partitions" section, earlier in this guide, for more information.

6. "I can't access the DOS partition on my disk."

On a PC:

A1: Partition size limitations. DOS 4.0 or later or Compaq V3.3.1 or later is needed to support partitions larger than 32 Mbytes on your PC.

A2: Wrong SCSI Host Adapter Board selection. If you have an Adaptec **1520** series SCSI Host Adapter in your PC, make sure you select **Adaptec Standard** from the SCSI Host adapter pop-up menu when creating DOS partitions. The maximum drive size for Adaptec Standard SCSI Host Adapters is 1 Gbyte. If you have an Adaptec **1540** series with Extended BIOS SCSI Host Adapter in your PC, make sure you select **Adaptec Extended** from the SCSI Host Adapter pop-up menu when creating DOS partitions.

On a Mac:

A3: DOS Mounter 98 not installed. See the "Installation" section for DOS Mounter 98, earlier in this guide.

A4: Incompatible SCSI Host Adapter Board. DOS partitions were created with a SCSI Host Adapter Board that is incompatible with DOS Mounter 98. See Appendix C, "List of Supported Devices," for more information.

7. "I selected the 'DOS Bootable' button before I installed my DOS partitions, but the partition won't boot when I put it in my PC."

A: DOS system files were not copied to the "bootable" partition. Selecting the "DOS Bootable" button before Install instructs MultiFormatter to prepare the first partition as a startup partition. To boot from the disk, you must manually copy the system files that came with your DOS computer into the bootable partition.

Note: You cannot boot your PC from a SCSI drive if you have a non-SCSI hard drive, such as an internal hard disk, mounted inside the PC.

8. "The DOS volumes that I created with my Soft PC software do not show up on the MultiFormatter partition status bar."

A: They are not true DOS volumes. Volumes created with Soft PC are Macintosh files designed to emulate DOS volumes. They are not true DOS volumes and thus will not appear on the DOS Mounter 98 partition status bar.

9. "I have removable disks formatted or partitioned on a number of different drives and sometimes I experience problems."

A: Possible disk driver conflicts. Always start the system without any disks in the drive. This will force the system to use the DOS mounter 95 driver and should eliminate most problems. If you still experience problems with a disk, back up the disk and reformat it using MultiFormatter.

10. "I am having problems reading data from my magneto-optical disk. Data is corrupted and sometimes lost."

A: Possible dust problem. Carefully open the sliding door on the magneto-optical disk and inspect it for dust buildup. Clean the disk using a cleaning device approved by the disk manufacturer. Before cleaning, test the disk using the DOS Mounter 98 test function, available in the MultiFormatter utility. Test the disk again after cleaning and compare the results. If problems persist, have the drive inspected by a qualified technician.

DOS MOUNTER 98 ICONS

Once you have placed the DOS Mounter 98 in your System Folder, one of the following icons will appear in the lower portion of your screen at startup. If your system does not recognize your drive, or if you are having any other sort of problem, refer to these icons.

S 0,2

 SCSI Driver Loaded

The Driver Loaded icon means that the init loaded properly and should provide normal operation as described in this guide. The ID Number that the init is loading a driver for appears in the upper right corner of the init icon. The "S" stands for SCSI, if a letter "A" appears that stands for ATAPI. The number 0,2 stands for Bus 0, ID 2.

 SCSI Driver Pre-Loaded

The Driver Pre-Loaded icon means that a disk driver loaded before the MultiMounter Init. DOS Mounting capability may not work. Possible Init conflict. See question number 3. The ID

Number that the disk driver loaded from appears in the upper right corner of the init icon.

 SCSI Driver Load Cancelled

This icon appears if you have turned off the DOS Mounter 98 Init at startup by holding down the mouse button as you turn on the system. If you did not intend to turn the init off, restart making sure that the mouse button is not pressed.

 No SCSI Devices Found

The DOS Mounter 98 Init was unable to locate a supported drive. Make sure that your drive is properly cabled and terminated. It is also possible that the drive is not supported by DOS Mounter 98. See question number one in Appendix A, "Problem Solving" for additional information.

Load Error

The Load Error icon usually means that the init has somehow become corrupted. Reinstall the init from the DOS Mounter 98 installation disk.

 DOS Mounter 98 (note: the number will be 98)

The DOS Mounter 98 icon indicates the software required to mount DOS volumes has been properly loaded.

Memory Error

The Memory Error icon usually means that Multimounter requires additonal system memory. Restart your Macintosh.

APPENDIX C:
List of Supported Devices

DRIVES SUPPORTED

- Fixed hard drives.

- SCSI and IDE drives.

- Removable disk systems using SyQuest, Bernoulli, Zip, Jaz, and Ricoh drives.

- Rewritable optical disk systems using Sony, Ricoh, Hewlett-Packard, Maxoptix, Olympus, Sharp, Matsushita, Pioneer and most Storage Dimensions' brand drives.

- DOS Mounter 98 specifically supports over 300 devices including hard drives. For any removable or optical disk system not specifically supported, DOS Mounter 98 provides a Universal Driver to extend functionality and support to these additional devices.

SCSI HOST ADAPTER BOARDS SUPPORTED

The following listing shows the SCSI Host Adapter Boards currently supported by the DOS Mounter 98 application. This means the application can create partitions that can be read on a DOS system using one of the following SCSI boards. It can also read files from DOS disks formatted on a DOS system using one of the following boards.

Adaptec (Standard & Extended)	Future Domain
Advanced Information Concepts (AIC)	Seagate (ST01/ST02)
Always Technology	Software Architects, Inc.
ATL Controller	Trantor (T338 and T128)
Buslogic	UltraStor
Data Technology Corporation (DTC)	Western Digital *
Electronique D2	

DOS Mounter 98 can read and write disks created using this host adapter, but it cannot install partitions for use on a PC.

Please contact Technical Support for information on drives or boards not listed in this section.

APPENDIX D: Termination

In order for SCSI devices to perform reliably, the beginning and end of the "SCSI" chain" must be identified with properly placed termination plugs or resistors. This process, known as **termination,** is necessary so that signals will not be lost when they are sent from the computer to all devices connected to the SCSI port. When more than one external device is connected, you must install a termination plug on the last physical SCSI device on the SCSI "chain."

Your Macintosh user's guide, your drive user's guide and the manuals for your other SCSI devices will explain proper termination for each respective product. For your convenience, we have explained the basics of termination below. Most Macintosh computers follow the guidelines shown in the following chart. Consult your Macintosh reference manual for more specific details.

Note: Proper cabling is important for consistent hardware operation. For best results, use the cable that came with your drive. Remember that improperly seated cables can cause problems.

System Configuration	One Device	Two or More Devices
Macintosh **with** internal termination and external devices **with** terminators	No action needed	Have authorized dealer remove termination from all but last external device
Macintosh **without** internal terminator and external SCSI devices **without** terminators	Add terminator to external device	Add terminators to first and last external devices
Macintosh **with** internal terminator and external SCSI devices **without** terminators	Add terminator to external device	Make sure last external device is terminated
Macintosh **without** internal terminator and external SCSI devices **with** terminators	No action needed	Remove terminators from all but the first and last external devices

Termination • Recommended termination for different Macintosh systems.

If one device is internally terminated and one isn't, place the terminated device at the physical end of the SCSI chain.

Note: For most Macintosh computers, both ends of the SCSI chain must be terminated. All other termination must be removed from all external devices. Some devices are internally terminated and must be placed at the end of the SCSI chain (or termination can be removed by a qualified technician.)

Macintosh IIfx: Some Macintosh models (including the IIfx) may require different types of SCSI termination plugs. If the wrong terminator plug is used, damage to data and/or hardware may result. Check your Macintosh user's guide for specific details on your configuration. The Macintosh IIfx requires a specific terminator when adding devices. Terminator plug and filter types for the IIfx include:

1. Apple SCSI Cable Terminator II: This is an updated external terminator for the *Macintosh IIfx*. It is *black*, so it is easily distinguishable from other terminator plugs.

WARNING! There should never be more than one Apple SCSI Cable Terminator II plug installed on an external SCSI chain. If more than one plug is used, damage to data and/or hardware may result.

2. Internal SCSI Termination Block: This internal block is provided for IIfx systems *without* internal hard drives. It is a gray, T-shaped block that is located on the internal SCSI port on the motherboard. Unless you have added an internal hard drive or otherwise internally changed your computer, your IIfx should already be internally terminated.

3. Internal SCSI Filter: This filter is installed in all IIfx computers *without* internal hard drives. It is also used on IIfx systems with internal hard drives that were shipped before March 19, 1990. It is a rectangular gray block located on the internal SCSI port on the motherboard (under the internal SCSI termination block). If your IIfx is not equipped with an internal SCSI filter, you should have one installed by an authorized Apple dealer.

Macintosh PowerBooks: Macintosh PowerBooks also have specific termination requirements. Because there is no termination power for these models, they require one of the following:

1. An internal or external SCSI device that is self-terminated

2. An external SCSI device which supplies termination power and has a terminator plug.

APPENDIX E:
Glossary

Alert dialog box • A box that appears on the screen to give a warning or to report an error during use of an application.

Backup disk • A copy of a disk made as to guard against the loss of files.

Bit • A contraction of the words binary digit and the smallest unit of information that a computer can hold. The value of a bit, 0 or 1 represents a simple choice, such as on or off, true or false, black or white, etc. Bits are combined to represent text characters, numbers, images, etc.

Bootable disk • Same as startup disk. A disk or partition that holds the necessary program files — such as the Finder and System files contained in the System Folder —to set the Macintosh into operation. On PC computers, the partition that boots the computer must be specially prepared. Such partitions are said to be bootable.

Bus • Circuits inside the computer that transmit information from one part of the computer system to another. The SCSI Bus connects the components of a Macintosh system.

Byte • A unit of computer memory consisting of eight bits. A byte is the amount of storage used to represent a single character.

Cancel button • A button that appears in some dialog boxes. Clicking it returns you to where you had been without performing the command.

Certify media • The process of checking every block on the media to verify that it is usable.

Control Panel • A file placed in the Systems Folder of a Macintosh that is automatically opened and run by the System at startup.

Current startup disk • Contains the current System and startup information. On a Macintosh, the startup disk icon always appears in the upper right corner of the desktop. In DOS, the A: or C: drive is used.

Desktop • Your working environment on the Macintosh. The menu bar and the background area on the screen. You can have a number of documents open on the desktop at the same time.

Destination disk • The disk or folder that receives a copied or translated file.

Directory • A list of the contents of a folder or a disk.

Disk • A flat, circular, magnetic surface on which data can be recorded in the form of small magnetized spots.

DOS • An abbreviation of the words "Disk Operating System." A PC operating system developed by the Microsoft Corporation often referred to as DOS. A group of programs that coordinate the functioning of PC hardware components and provide an interface for application programs and users.

DOS Mounter 98 • A Control Panel device that supplies drivers that allow access to all SCSI storage devices, the driver enabling mounting of DOS volumes on the Macintosh, and the mapping capability for automatically launching Macintosh applications when a DOS or Windows file is double-clicked on the Macintosh.

Driver • A system program that allows the microprocessor to direct the operation of a peripheral device, such as a hard drive.

ECC • Stands for "Error Correction Code." A form of common error correction for data on storage devices. Some drives do not support error correction.

FDisk • This is a menu driven utility for DOS machines that will partition and setup a PC hard drive.

Filter • A file usually placed in the same folder or directory as an accompanying utility program for the use of stripping away unwanted data in the transfer of information from one format or type of computer to another. Example: Apple File Exchange: the filter would be DCA-RFT MacWrite.

Floppy disk • Used for storing programs and files. In this guide, the term floppy disk refers to 3.5-inch disks.

Format • To prepare a blank disk to receive information.

Hard error • Areas in the data on the disk that are damaged and unrecoverable. Reassigning hard errors will inform the SCSI drive to place data elsewhere when that particular block is requested.

Initialize • Performs a low level format, followed by a partition, followed by a high level format. These three steps are performed by the Format command.

Interleave • Changing the ordering of how data is physically stored by mixing in one data stream with another. Interleaving a hard drive refers to "spreading" out the data so that the drive isn't faster than the computer. Modern drives have on board caching which makes interleaving media obsolete.

Locked partition • An area on a disk that is write-protected and cannot be altered. Activated by using the Locked check box in the Partitions panel.

Logical block • Space on a drive is accessed by the Macintosh as a sequence of blocks. Logical block refers to the fact that the computer does not need to refer to the physical location of data on a drive, but simply refers to the logical sequence number of a block.

Mbytes • See **Megabytes**.

Media • The data recording surface of a storage device. In this guide it refers to removable hard drive disks, rewritable optical disks and the fixed platters inside a hard drive.

Megabytes • Approximately one million bytes of storage capacity. Typically one byte stores one character of text. Megabytes is abbreviated as "Mbytes" in this guide.

OS • An abbreviation of the words "Operating System." A group of programs that coordinate the functioning of computer hardware components and provide an interface for application programs and users.

Partitioning • Allocating data storage space to one or more defined storage areas on the media for different uses.

Partition • A defined storage area on a disk or disk.

SCSI • An abbreviation of "Small Computer System Interface." An American National Standards Institute (ANSI) specification for connecting peripherals to computers.

SCSI cable terminator • A device used at the end of a SCSI chain to maintain the integrity of the signals passing along the SCSI chain. A SCSI chain should always have two terminators, one at each end of the chain. On some drives, the terminator is built in.

SCSI chain • A group of SCSI devices linked to one another through SCSI peripheral interface cables and linked to the SCSI port on the computer through a SCSI system cable.

SCSI Host Adapter Board • A removable circuit board that plugs into expansion slots in PC computers. It enables the computer to use SCSI devices through the use of a built in SCSI port.

Soft error • Areas in the data on a disk that are damaged and recoverable by using error correction codes embedded within the data.

Startup drive • The disk drive from which your computer system will load operating system files when it is turned on or reset.

SYLK • A file format defined by Microsoft and used frequently with spreadsheets. Apple File Exchange can transfer SYLK files back and forth between Macintosh and DOS systems.

Unused partition • A partition not recognized as being designated for use by any operating system.

Volume • A general term referring to a storage device. Often used in reference to hard disks and file servers, it is used primarily in this guide to describe removable media and high-density 3.5-inch floppy disks. A volume can be an entire disk or only part of a disk (a partition). Each mounted Macintosh partition will appear as a volume on the desktop as a separate icon.

Write • To transfer information from the computer to a destination external to the computer such as a disk drive, or from the computer's processor to a destination external to the processor such as main memory.

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Appendix G: Index