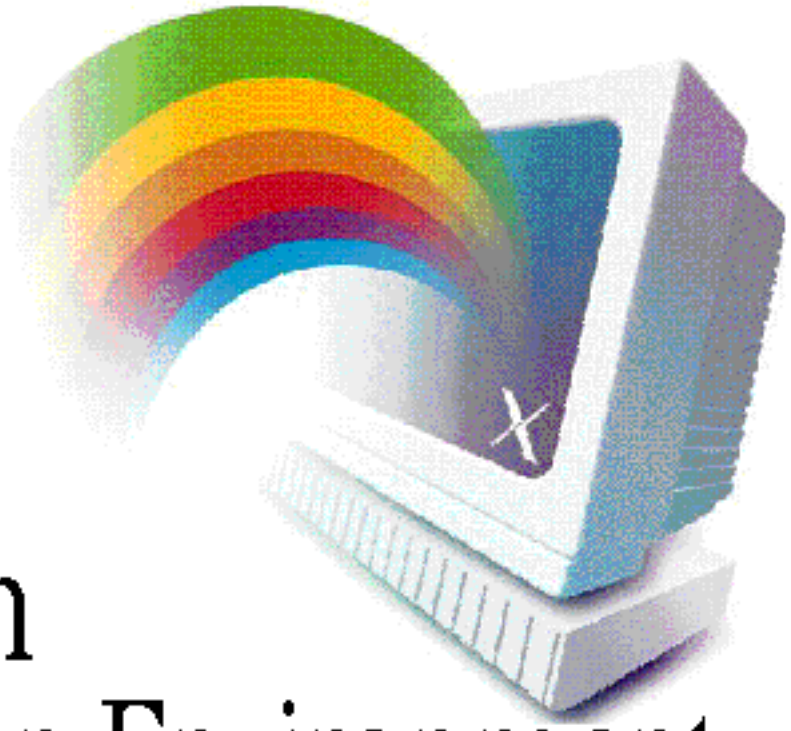

Macintosh Application Environment

User’s Manual

Apple Computer, Inc.

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About This Manual

The Macintosh Application Environment (MAE) is software that, with a few extra features to adapt it for use on a UNIX® system, runs a virtual Macintosh environment within the X Window System™ on your workstation. MAE displays the Macintosh desktop interface in an X window. The Macintosh desktop within the MAE window gives you access to your Macintosh applications as well as to UNIX files.

This book explains how to install and set up MAE and how to install Macintosh applications in your Macintosh environment. It also explains how to perform Macintosh tasks in MAE, how to manage UNIX files on the MAE desktop, and how to customize MAE. This manual discusses only features and tasks that you perform in order to work with MAE. It does not explain the basics of how to work in the UNIX (or X Window System) environment on a workstation.

What you need to know

This book assumes that you are familiar with UNIX and with the X Window System. You should know how to perform basic tasks on your workstation, including starting and quitting X applications.

For general information about the X Window System, you may want to read *X Window System User's Guide* (Valerie Quercia and Tim O'Reilly, O'Reilly and Associates, 1990).

This book also assumes that you are familiar with the Macintosh user interface, including the use of icons, windows, and folders. For a summary of Macintosh basics, see Appendix A. For complete information on the use of the Macintosh, see *Macintosh User's Guide* (part number 030-2651-B). *Macintosh User's Guide* is not included with MAE.

New features in MAE version 3.0

MAE version 3.0 contains the following new features:

- **Improved performance—**enhanced emulator speeds up all applications.
- **System 7.5.3 support—**provides the benefits of this version of the Mac OS.
- **An enhanced installer—**provides several options to improve the installation process when it is run from the command line and an option to have the system reboot automatically after kernel modules are installed.
- **Foating licenses—**simplifies the use of MAE in a networked environment and allows users to share licensed copies of MAE more efficiently using FLEXlm technology.
- **Multiple independent volume support—**allows UNIX directories to be mounted and used as if they were Macintosh volumes.
- **Additional CD-ROM formats—**allows the use of CD-ROM discs in the standard ISO 9660 format as well as the single-session Photo CD format.
- **Multiple LAN interface support—**allows you to have multiple local area network (LAN) interface cards in your workstation and to specify which one MAE will use for MacTCP services.
- **An improved Find File utility—**improves the performance of the Find File utility and allows you to differentiate between AppleShare and NFS servers in your searches.
- **Improved performance for remote X display servers—**improves the performance of MAE when it is displayed on a remote X server.
- **X Window scaling—**allows you to easily magnify your MAE window to two times the standard size for easier viewing.

- **Smaller system folders—**reduces the disk space required by additional System Folders on a single workstation.
- **Improved Software FPU utility—**significantly increases the speed of floating-point operations.
- **A greater number of simultaneously open files**—allows up to 1024 files to be open at the same time.
- **Improved keyboard support—**provides easy-to-recognize keyboard maps and automatically determines which one to use.
- **Improved file-sharing security—**increases the administrator's options for restricting the user's ability to share files and folders.

Terminology used in this manual

This section explains the terminology used in this manual to refer to certain keys and to basic mouse and keyboard operations within MAE.

Modifier keys

This book refers often to several modifier keys that appear on standard Apple keyboards: Command (x), Option, Control, and Caps Lock. Since your workstation keyboard may not have these keys, MAE assigns them to keys on your workstation keyboard. When this manual tells you to use one of these keys, use instead the key on your keyboard to which it has been assigned.

MAE also assigns two commonly used X Window System modifier keys, Alt and Mode Switch, to keys on your keyboard.

To find out which keys to use, open the MAE Keyboard control panel. To learn how to assign the keys to different keys on your keyboard, see "Reassigning Modifier Keys" in Chapter 9 of this manual.

Mouse buttons

This book often refers to the mouse button, because the Macintosh operating system (Mac OS) was designed to be used with a single-button mouse. The phrase "the mouse button" refers to the first button (often called "the leftmost button" or "Mouse Button 1") on a mouse or trackball with multiple buttons. For example, if a step instructs you to press the mouse button, press the first button on a three-button mouse.

You can use X window features to change the mapping of the mouse buttons.

Basic mouse and keyboard operations

In this manual, some terms represent a series of actions that you perform with the mouse, keyboard, or both. For example, the word "enter" indicates that you type a character (or a series of characters), and then press the Return key.

Here is a list of standard terms for mouse and keyboard operations and the meaning of each term.

Term	Action
Click	Press and then immediately release the mouse button.
Double-click	Press and release the mouse button twice in quick succession without moving the mouse.
Drag	Position the pointer on an item on the screen. Press and hold down the mouse button while moving the mouse until you have accomplished the desired task, such as moving the icon to a new location, and then release the mouse button.
Choose	Activate a command in a menu by positioning the pointer on the menu title and dragging (usually downward) through the menu until the command you want is highlighted. Then release the mouse button.
Select	Designate where the next action will take place. To select an object such as an icon, position the pointer on the object and click the mouse button once. When selected, the object appears highlighted. To select text, drag across the text until the entire range of text that you want to select is highlighted.
Type	Type a series of characters without pressing the Return key.
Press	Press a single key or key combination without pressing the Return key afterward.
Enter	Type a series of characters and then press the Return key.

Where to go for more information

You can find helpful information about MAE in a number of different sources. In addition to the onscreen documents such as this one, MAE includes onscreen help in the form of Balloon Help, Apple Guide, and Toolbar help, which are briefly described in this section. Late-breaking MAE information is provided in the Read Me file. You can find information on the MAE Web page that may be even more up-to-date. You can find the MAE Web page at http://www.mae.apple.com.

To use an onscreen document, double-click the document icon located in the `docs` directory in your home directory. For details on using the onscreen documentation, see the online documentation for the Acrobat™ Reader.

Manuals provided with MAE

In addition to this onscreen manual, the *Macintosh Application Environment Administrator's Manual* (referred to here as the *MAE Administrator's Manual*) is shipped with the Macintosh Application Environment (MAE).

The onscreen *Macintosh Application Environment Administrator's Manual* contains information on placing MAE on a server for installation onto separate workstations, resource requirements (cache, memory, and disk), installation packages, networking and license management.

The Read Me file (**`README.TXT`**)

MAE also includes an onscreen Read Me file, which provides late-breaking information at the time this version of MAE was released, and troubleshooting information about installing and using MAE on your workstation. The Read Me file also explains how to get the most current MAE information, provided by Apple on the World Wide Web.

The Read Me file (named `README.TXT`) is located in the root directory of the *Macintosh Application Environment* CD-ROM disc. You can view the Read Me file by using the SimpleText application within MAE or by using a standard UNIX tool, such as `more`(1) or `vi`(1).

Balloon Help

MAE comes with a feature called Balloon Help, which provides immediate onscreen help when you need it. If you want to know more about a window, button, menu, command, or icon in the MAE window, use Balloon Help to get the information you need.

Many Macintosh programs also have Balloon Help.

To use Balloon Help, click on the question mark at the right end of the menu bar and choose the Show Balloons command. Now, balloons containing explanatory text appear next to objects that you point to on the screen. To turn off Balloon Help, choose Hide Balloons from the question mark menu.

MAE Toolbar help

MAE provides immediate onscreen help for the MAE Toolbar when you need it. If you want to know how to use a feature of the Toolbar, click the Get Toolbar Help button at the right end of the Toolbar.

MAE information on the Web

Apple maintains a World Wide Web page to provide you with updated information about MAE. You can also find the most up-to-date versions of the MAE manuals on the MAE Web page. You can reach the MAE Web page at http://www.mae.apple.com.

MAE Guide

MAE Guide is an onscreen tool that explains tasks step-by-step. To use MAE Guide, choose MAE Guide from the Guide menu (indicated by the question mark icon) in the menu bar.

1 Installing the Macintosh Application Environment

This chapter describes how to install the Macintosh Application Environment (MAE) software, the MAE onscreen documentation, AppleTalk, the reference manual pages, and Macintosh demonstration applications on your UNIX workstation. It describes how to perform the following tasks:

- starting the MAE installer locally on your workstation
- starting the MAE installer remotely from a server on the network
- installing the MAE software by using the Easy installation option
- installing selected MAE software packages by using the Custom installation option
- removing MAE from your workstation

In addition, this chapter lists the resources needed to run MAE and includes troubleshooting information about error messages that may appear during the installation.

What you need to install and run MAE

To run MAE, you need the hardware and software listed in the following sections.

For all users

Everyone who wants to run MAE needs the following:

- a UNIX workstation that supports MAE
- a minimum of 35 megabytes (MB) of free disk space. (If you want to install AppleTalk, the onscreen documentation, and the demonstration applications, you need approximately 66 MB of total disk space.)
- a minimum of 32 MB of RAM (48 MB of RAM is recommended)
- an X Window System server, Version 11, release 4 or later
- the *Macintosh Application Environment* CD-ROM disc
- a PostScript™-compatible printer or an AppleTalk printer, if you want to print from MAE
- a CD-ROM drive, or access to one over a network (if you are installing from a CD-ROM disc)
- a floppy disk drive, if you want to install applications from floppy disks

Note: If your company or organization has a license to have multiple users of MAE, your system administrator may make the MAE files available to you for remote installation from a server. If this is the case, you do not need the MAE CD-ROM disc or a CD-ROM drive in order to install MAE. For information about MAE licensing requirements, see the license agreement that comes with MAE.

For Solaris users

If you use Solaris, you need the following:

- Solaris 2.5 or later
- Volume Manager patch. Consult the MAE World Wide Web page for information about the latest patch.

  The command `/etc/showrev -p` lists all installed patches.

For HP-UX users

If you use HP-UX, you need the following:

- HP-UX version 9.05 or 10.10. (Version 9.05 requires a patch to run over an FDDI network—see the README.TXT for more information. Version 10.01 is not supported.)
- STREAMS/UX installed for versions before 10.10. If you plan to install AppleTalk, STREAMS/UX must be installed on your system first. STREAMS/UX is included with MAE.
- the Hewlett-Packard Audio Server if you are running HP-UX. For information on patches that may be needed, see the MAE Web page.

Before you begin

Read this section before you install MAE on your workstation.

About the MAE software

The MAE CD-ROM disc contains the following MAE software:

- the Macintosh Application Environment package, including Macintosh system software and Macintosh utility programs
- the software your workstation needs for AppleTalk networking capabilities
- the Onscreen Documentation package. (See “Manuals Provided With MAE” in the Preface for descriptions of the onscreen guides.)
- the Acrobat Reader for UNIX and for Macintosh systems
- the Volume Manager Extension package for Solaris users
- extras from Apple, including OpenDoc and sample applications
- Common Desktop Environment (and VUE, if applicable)
- FLEXlm License Manager server software
- demonstration versions of Macintosh applications, which can be installed with the Custom installation procedure described later in this chapter (optional)
- the Read Me file (`README.TXT`)

> **WARNING** You can use the MAE version 3.0 installer to upgrade a MAE version 2 system. You cannot use the MAE version 3.0 installer to upgrade a MAE version 1 system.

Installation options

The MAE installer lets you install MAE on your workstation from a local CD-ROM drive or from a remote server on the network. The installer offers you the following choices:

- **Easy installation:** This option lets you install a default set of the MAE packages in a single directory. Kernel modules are installed directly into the UNIX kernel. When you choose this option, the installer installs the MAE application, all packages that must be installed into the UNIX kernel, and the onscreen documentation. Since some packages are installed into the kernel, you need to have superuser privileges to install those packages. This installation requires 45 MB of space available in the installation.

> **WARNING** MAE is incompatible with AppleTalk versions that weren't developed by Apple Computer. Do not install AppleTalk for MAE on your workstation if you already have AppleTalk installed on the same workstation. Before you install AppleTalk for MAE, remove the existing version of AppleTalk. (Refer to the instructions that came with the existing version.)

- **Custom installation:** this option lets you select the MAE packages you want to install and specify where you want them installed. You can install the packages in a single directory or in different directories.
- **Remove:** this option lets you remove the files that were installed when you previously installed MAE. The Remove option is not for updating MAE; it is for removing it from your workstation.

Overview of installation steps

The installation steps can be summarized as follows:

1 **Obtain a license key to run MAE.**

You can install MAE without a correct license key, but you need one before you can run it. See the Read Me and `LIC_REG` files for details.

2 **Select your installation medium.**

Choose whether you want to install MAE from a CD-ROM drive attached to your local workstation or from a remote Network File System (NFS) server. (See "Mounting the Files From a Local CD-ROM Disc " or "Mounting the Files From a Remote Server," later in this chapter.)

3 **If you are upgrading from a previous version of MAE, back up all modifications that have been made to the `apple` directory, especially in the main System Folder directory, `apple/sys`.**

The installer archives your existing `apple` directory during the MAE installation process, but removes the archived files upon successful completion of the installation. Application components that may have been placed into the `apple/sys` directory include but are not limited to these:

- Fonts
- Extensions
- Control panels
- Preference files
- File format translators
- Application-specific folders
- Startup items
- Shutdown items
- Apple Menu items

Removing application components from the `apple/sys` directory can render applications unable to run. After installing MAE, you can add those items back into the new `apple/sys` directory.

When MAE updates your system, it enables all standard Mac OS extensions and control panels. If you had disabled standard extensions prior to installation, you need to manually disable them again after you complete the installation.

Note: Installing MAE over a previously installed version updates System Folders of individual users while preserving modifications that had been made to those System Folders. Also, MAE 2.0 created aliases in users' home directories that referenced several special folders that do not exist in MAE 3.0. The MAE 3.0 installation program does not remove these aliases—you need to remove these manually.

4 **Run the installer and specify whether you want to perform an Easy installation or a Custom installation, or whether you want to remove a previously installed version of MAE.**

See "Performing an Easy Installation," "Performing a Custom Installation," or "Removing MAE," later in this chapter.

5 **Install your license key in the `license.dat` file.**

Refer to the license file and the *MAE Administrator's Manual* for detailed installation instructions.

IMPORTANT If you are planning to run MAE from a central server, you must install the UNIX kernel modules (AppleTalk, the Solaris Volume Manager Extensions, and STREAMS, if applicable) on your local workstation. For further information, see Chapter 2 of the *MAE Administrator's Manual*.

Getting access to the installation files

The following two sections describe how to find and use the MAE installation files on a CD-ROM disc (local or remote), or a remote server or CD-ROM drive.

Note: You need a current and correct license key to run MAE once you have completed the installation process. For further information, see your system administrator or read the Read Me file (`README.TXT`) in the root directory of the MAE CD-ROM disc.

You must have superuser ("root") privileges to install kernel modules, such as AppleTalk and the Solaris Volume Manager Extensions.

Note: Before you start MAE for the first time, you should log in using an ordinary user account. This practice avoids creating a System Folder in the root directory, and it allows you to use your own customized System Folder in your home directory.

If you reinstall MAE over a previous installation, you must reinstall with the same login you used the last time you installed. Thus, if you installed as root previously, you must do so again.

Remember to install any necessary patches (or other software listed in the Read Me file) before installing MAE.

Mounting the files from a local CD-ROM disc

To start the installer, follow the steps listed in this section.

IMPORTANT Don't use the Solaris File Manager to start the installer if you are installing MAE on a workstation running Solaris. Start the installer in a Shell Tool or a Command Tool window, using the command-line interface.

1 **Open a terminal emulator window on your UNIX workstation.**

For example, open a Command Tool or a Shell Tool window on a Sun workstation, or an hpterm window on a Hewlett-Packard workstation.

2 **Insert and mount the *Macintosh Application Environment* CD-ROM disc.**

IMPORTANT You may need superuser privileges to mount a CD-ROM disc. See your system administrator for information.

Some workstations automatically mount a CD-ROM disc when you insert it into the CD-ROM drive. Other workstations require that you use the `mount`(1M) command. Your workstation may require that you mount the CD-ROM disc as read-only. For more information about mounting a CD-ROM disc, see the documentation that came with your workstation.

3 **Use the `cd`(1) command to change to the directory at which the MAE CD-ROM disc is mounted.**

For example, you can enter `cd /cdrom` at the command prompt.

Note: If you are running Solaris, you might need to enter `cd /cdrom/mae` to change to the directory where the MAE CD-ROM disc was automatically mounted.

To install MAE, proceed to "Starting the Installation," later in this chapter.

Mounting the files from a remote server

Your system administrator may have stored MAE on a network server or mounted the MAE CD-ROM disc on a remote server. This section tells you how to start the installer from a remote server.

Note: Before you start the installer, make sure that you know which directory on the server contains the MAE installation files, and be sure that you have read permission for that directory.

To start the MAE installer on a remote server:

1 **Open a terminal emulator window on your UNIX workstation.**

For example, open a Command Tool or a Shell Tool window on a Sun workstation, or an hpterm window on a Hewlett-Packard workstation.

2 **Mount the remote server that contains the MAE installation files.**

For example, if you are running HP-UX, mount the server at the `/mnt` directory by entering the following:

`mount -r` *`remote-host`*`:`*`/directory-path`* `/mnt`

Replace *remote-host* with the name of the server and *directory-path* with the name of the directory that contains the MAE installation files (or the MAE CD-ROM disc). The `-r` option mounts the server as read-only.

IMPORTANT You need superuser privileges to mount the server remotely on your workstation. See your system administrator for information.

3 **Use the cd(1) command to change to the directory on the remote server in which the MAE installation files are located.**

For example, you can enter `cd /mnt` if you mounted the server according to the example given in step 2.

IMPORTANT Once the MAE CD-ROM disc is mounted, be sure to read the Read Me file (`README.TXT`), which is located in the root directory of the disc. The Read Me file contains information that supplements the information in this manual.

To install MAE proceed to the next section, "Starting the Installation."

Starting the installation

Once you have access to the MAE installer, install the MAE software as follows:

1 **At the command prompt, enter the following command:**

```
./INSTALL.SH
```

If you do not have superuser privileges, the installer displays the following message:

```
WARNING:
The AppleTalk Kernel Modules cannot be installed or removed unless
you log in as ´root´ before running the Installer program.

It is recommended that you install the AppleTalk Kernel Modules.
The AppleTalk Kernel Modules allow you to use AppleTalk networking
while you are running MAE on your workstation.

You can continue to install/remove other packages now, and then log
in as ´root´ later to install/remove the AppleTalk Kernel
Modules.

If you want to quit now, press CONTROL-C.

                <<< Press the RETURN key to continue >>>
```

If you do not see this warning, continue with step 2.

If you see this warning, you can do one of the following:

- If you do not want to install kernel modules, press Return and continue with step 2. (You can install the kernel packages later.)
- If you want to perform a complete installation, quit the installer by pressing Control-C, log in as the superuser (root), and then start the installer again by repeating step 1.

2 Read the Welcome message.

The installer displays a welcome message.

```
   Welcome to the Macintosh Application Environment Installer

The Installer lists the Macintosh Application Environment (MAE)
software packages that you can install on your workstation. The
Installer lets you choose an Easy or Custom installation option.
The Easy option automatically installs the required MAE packages in
a single directory that you specify. The Custom option allows you
to select the packages that you want to install. (You can choose
to install them in a single directory or in different directories.)
After you choose an installation option and if necessary, select
the packages that you want to install, the Installer copies the
software to your workstation.

The Installer provides default choices in square brackets []
whenever possible. To accept the default, press RETURN at the
prompt.

To cancel the installation, you can type ´quit´ and press RETURN at
any prompt.  For additional information, type ´help´ and press RETURN
at any prompt.

                <<< Press the RETURN key to continue >>>
```

Easy installation, custom installation, and removal of MAE are described later in this chapter in “Performing an Easy Installation,” “Performing a Custom Installation,” and “Removing MAE,” respectively.

Note: You can quit the installer at any time by entering `q` (or `quit`). You can display help information by entering `help`.

If you are well acquainted with the installation process, you can use command-line options to shorten the installation process. See the section, “Using Command Options With the Installer,” later in this chapter.

3 Press Return to continue.

The installer displays a list of packages available for the Easy and Custom installations, including space requirements for each package.

If you are not logged in as the superuser, you will not be able to install AppleTalk or the Solaris Volume Manager extensions. If this is the case, you can do one of the following:

- Continue the installation; then install the kernel packages later.
- Type `q` to quit the installer. You can then log in as the superuser and return to step 1 to start the installer again.

4 **Press Return again to continue.**

The installer displays three installation options: Easy, Custom, and Remove.

```
The Installer supports the following modes:

        Easy

        Custom

        Remove

For more information about each mode, type ´h´ or ´help´ and press
RETURN.

Type the name (or first letter) of the installation mode that you
want to use, and press RETURN.


[default=easy] >>>
```

To use the Easy installation option, see “Performing an Easy Installation,” next.

To use the Custom installation option, see “Performing a Custom Installation,” later in this chapter.

To remove MAE or one or more MAE packages, see “Removing MAE,” later in this chapter.

Performing an Easy installation

When you perform an Easy installation, the installer installs the MAE application and the onscreen documentation. In addition, if you have superuser privileges, it installs the required kernel modules.

> **WARNING** MAE is incompatible with AppleTalk versions not developed by Apple. Do not install AppleTalk for MAE on your workstation if you already have AppleTalk installed on the same workstation. Before you install AppleTalk for MAE, remove the existing version of AppleTalk (according to the instructions that came with that product).

During the installation process, you can quit by entering `q` (or `quit`). You can display help information by typing `help`.

1 **When prompted to choose an installation mode, enter** `e` **(or** `easy`**).**

The installer asks you where you want to install the MAE files.

```
The software packages will be installed in a single directory.

Which directory do you want the packages installed in?

[default=/opt/apple] >>>
```

2 Enter the destination directory into which you want to install the MAE files, or press Return to accept the default directory.

The installer recommends creating a directory called `apple` for the MAE files. Although the `apple` directory can be located in any directory for which you have write permission, it is preferable that the `apple` directory be created in your home directory. (When you run MAE, you need only read and execute permission for the `apple` directory.)

For example, if your home directory is named `benjamin` and its pathname is `/users/benjamin`, you would type `/users/benjamin/apple` to specify that the MAE files be installed in the `apple` directory in your home directory.

> **WARNING** Once the installer has created an `apple` directory and has installed MAE into it, do not move the `apple` directory to another location. If you do so, MAE will not be able to locate files it needs unless you use the `appledir` command option when you start it. (See "Using Options With the `mae` Command" in Chapter 2.)

The installer determines whether the destination directory is valid. For example, it determines whether the destination directory has enough free disk space.

Do not choose a destination directory that ends in a special character such as +, -, or &.

3 Enter `y` (or `yes`) to confirm that you want to install the packages listed.

If the destination directory is valid, the installer displays a list of packages that will be installed and asks if you want to begin installing them.

If the directory is not valid, the installer displays a message describing the problem and prompts you again to select the Easy or Custom installation.

```
ERROR:
The directory shown below does not have enough free space to
install the selected package(s).
   [ /opt/apple ]

                <<< Press the RETURN key to continue >>>
```

If you enter `n` (or `no`) when asked if you want to install the packages, the installer returns you to the opening screen. (See step 2 in "Starting the Installation," earlier in this chapter, for information.)

4 **Press Return to begin installation.**

IMPORTANT If you need to stop installation once it has begun, press Control-C. The installer removes any partially installed packages and then quits.

During installation, the installer displays status messages. When the installer completes installation, it tells you where the log file is. The shell prompt then appears.

5 **Install your `license.dat` file, if required.**

The `license.dat` file contains the information that allows you to use your licensed copy of MAE. You may have to install this file or replace it with a new one to activate your license. See your system administrator for further information.

6 **If you have installed AppleTalk, restart your workstation.**

Kernel modules, such as those installed as part of AppleTalk, do not take effect until your workstation has been restarted.

IMPORTANT If the installer displays an error message during the installation, see "If You Have Problems Installing MAE," later in this chapter, for instructions.

Performing a Custom installation

The Custom installation option allows you to install selected packages in a single location or in several locations. For a description of the MAE packages, see "About the MAE Software," earlier in this chapter.

> **WARNING** MAE is incompatible with third-party AppleTalk versions. Do not install AppleTalk for MAE on your workstation if you already have a third-party version of AppleTalk installed on the same workstation. Before you install AppleTalk for MAE, remove the existing version of AppleTalk (according to the instructions that came with that product).

During the installation process, you can quit by entering `q` (or `quit`). You can display help information by entering `help`.

To perform a Custom installation, follow these steps:

1 When prompted to choose an Easy or Custom installation, enter `c` **(or** `custom`**).**

The installer asks if you want to install the package called "Macintosh Application Environment." This package contains the software necessary to run MAE on your workstation.

```
The Macintosh Application Environment (MAE) package contains the
software that you need to run Macintosh applications on your
workstation.

Do you want to install this package?

[default=yes] >>>
```

2 Type `y` **and press Return. If you don't want to install the package, type** `n` **and press Return.**

If you typed `y`: The installer asks you where you want to install the files. Go to step 3.

If you typed `n`: The installer asks you if you want to install the next package. Repeat this step (step 2).

3 Enter the destination directory in which you want to install the MAE files, or press Return to accept the default directory.

Note: Some packages (such as AppleTalk) are automatically installed in specific places.

The installer recommends creating a directory called `apple` for the MAE files. It is recommended that the `apple` directory be created in your home directory, though the `apple` directory can be located in any directory for which you have write permission. (When you run MAE, you need only read and execute permission for the `apple` directory.)

For example, if your home directory is named `benjamin` and its pathname is `/users/benjamin`, you would type `/users/benjamin/apple` to specify that the MAE files be installed in the `apple` directory in your home directory.

> **WARNING** Once the installer has created an `apple` directory and has installed MAE into it, do not move the `apple` directory to another location. If you do so, MAE will not be able to locate files it needs unless you use the `appledir` command option when you start it. (See "Using Options With the `mae` Command" in Chapter 2 of this guide.)

The installer determines whether the destination directory is a valid directory. For example, it determines whether the destination directory has enough free disk space.

If the directory is not valid, the installer displays an error message describing the problem and asks again if you want to install this package. Correct the problem, then repeat step 2.

If the destination directory is valid, the installer asks if you want to install the next package.

Do not choose a destination directory that ends in a special character such as +, -, or &.

4 Repeat step 2 for each package that the installer asks you about.

When the installer has asked you about all the packages, it displays a list of the packages you have selected and asks whether you want to have them installed.

5 If the list of packages is correct, press Return to install the packages.

If you want to add or remove a package, or if you want to change the destination directory for any of the packages, enter `n`. The installation options screen appears. To continue with a custom installation, enter `c` or `custom`, and then return to the beginning of this section.

After you accept the list of packages by pressing Return, the installer copies the MAE files to your system.

To stop the installation process once it has begun, press Control-C. The installer removes any partially installed packages and then quits. If you want to remove any packages that were completely installed, see the section, "Removing MAE," later in this chapter.

During installation, the installer displays status messages. When the installer completes the installation, it tells you where the log file is. Your shell prompt then appears.

6 If you have installed AppleTalk, restart your workstation.

IMPORTANT If the installer displays an error message during the installation, see "If You Have Problems Installing MAE," later in this chapter, for instructions.

Installing the License Manager

In addition to installing a `license.dat` file, each user running MAE must have access to the License Manager. Usually, the system administrator installs the License Manager on a server and users do not have to install it. However, if you are the only user of MAE, you need to install it on your system and start it before you can start MAE.

You install the License Manager during the custom installation. The License Manager is package L8. During installation you can specify the location of the License Manager—the default is the same location as MAE.

Removing MAE

The Remove option allows you to remove MAE from your workstation. Do not use this option to install a newer version of MAE; use the Remove option only to remove MAE (or parts of it) from your workstation altogether (for example, if the disk space is needed). If you want to install MAE version 3.0 on a workstation running MAE version 1, first remove the older version with the Remove option of the MAE version 1 installer.

The following procedure can be used to remove all or part of MAE. It assumes that MAE is not running on the workstation, and that the installer is running, as described in "Starting the Installation," earlier in this chapter.

Note: You cannot remove the demonstration applications with the installer. You have to remove these independently.

To remove all or part of MAE, follow these steps:

1 **When prompted to choose an installation option, enter** `r` **(or** `remove`**).**

You see a list of packages that the installer can remove.

```
The Installer knows how to remove the following packages:

    Macintosh Application Environment
    AppleTalk Kernel Modules
    On-Line Documentation
    Reference Manual Pages

              <<< Press the RETURN key to continue >>>
```

2 **Press Return to continue.**

For each package, you are asked whether the installer should remove the package, as shown in the following example.

```
The Macintosh Application Environment (MAE) package contains the
software that you need to run Macintosh applications on your
workstation.

Do you want to remove this package?

[default=no] >>>
```

The default response is No.

When you enter `y` (or `yes`), if the system is unable to find a package, it prompts you to type the location of the package to be removed.

3 **For each package, enter Yes to select it for removal, or press Return to leave it installed.**

After asking about all the MAE packages, the installer lists those you have decided to remove and asks whether to remove the packages.

4 **To proceed with removing the packages, press Return. To cancel the removal, enter No.**

The default response is Yes. If you choose to proceed with removing the packages, the system lists the packages and the number of files that it has removed.

If you have not selected any packages to be removed, or if you choose not to remove the selected packages, you are returned to the installation options screen.

5 **If you are running HP-UX and have removed the AppleTalk package, restart your workstation.**

Using command options with the installer

If you are experienced in installing MAE, you can use options on the command line to tailor the operation of the installer. The command and option combinations are as follows:

`INSTALL.SH [-q][-R] -e [-d` *apple_directory*`]`

`INSTALL.SH [-q][-R] -c [`*package_list*`] [-d` *apple_directory*`]`

`INSTALL.SH [-q][-R] -r [`*package_list*`] [-d` *apple_directory*`]`

The options are as follows:

`q` Suppress warning messages.

`R` Reboot the system after the installation. Required after installation of kernel modules such as the AppleTalk kernel module.

`e` Perform the Easy installation process, installing the two basic MAE packages:

- Macintosh Application Environment
- MAE onscreen documentation (user's and administrator's manuals)

  This process provides detailed prompts (unless the `q` option is specified). It is recommended for first-time installers of MAE.

`d` *pathname*

  Specify the pathname (represented by *apple_directory)* of the `apple` directory, where MAE is to be installed. You must specify the full pathname.

`c` *package_list*

  Perform the Custom installation process, installing the listed MAE product component package or packages (specified by *package_list)*:

`E1_MAE`	Macintosh Application Environment 3.0, the MAE executable program, and support files.
`E2_ATALK`	AppleTalk Stack kernel module, which provides AppleTalk support. The user must be logged in as root to install this package.
`E3_VOLD`	Solaris Volume Manager Extension, which allows the use of Macintosh (HFS) floppy disks in the floppy drive on a Sun workstation.
`E4_DOCS`	MAE onscreen manuals, in PDF format, and the Acrobat Reader application.
`E6_APPLX`	Extras from Apple, including OpenDoc and sample applications.
`E7_DSKTP`	Common Desktop Environment (and VUE, if applicable).

`L8_LMGRD`	FLEXlm License Manager server software. Only one is needed per network.
`P1_WORKS`	Demonstration version of the ClarisWorks application.
`P2_IMPCT`	Demonstration version of the ClarisImpact application.
`P3_DRAW`	Demonstration version of the ClarisDraw application.
`P4_FMPRO`	Demonstration version of the FileMaker Pro application.

Separate package names with a space on the command line.

If you are installing kernel modules, use the `-R` option to reboot.

If you do not specify package names, the `-c` option behaves like the `-e` option.

`r` *package_list*

Performs the Remove process, removing one or more previously installed packages (specified by *package_list)*. Separate package names with a space on the command line.

If you are removing kernel modules, use the `-R` option to reboot.

If you have problems installing MAE

This section lists error messages that might appear during the installation process and explains what to try in response. For additional information, consult the MAE Web page at http://www.apple.mae.com.

ERROR: Not enough free space on [*destination-directory*]

Press Return to display the prompt that lets you enter a new destination directory or press `q` to quit the installer. If you want to install MAE in the current destination directory, free some disk space and run the installer again.

ERROR: Cannot create directory [*destination-directory*]

You do not have the correct access permissions for the destination directory that you selected. Press Return and enter a new directory or contact your system administrator for the necessary permissions.

ERROR: The installer encountered an unexpected error. No information is available for this error.

The installer cannot determine what went wrong but is able to recover. If it was installing a package, that package will be removed. If it was updating, the original files will be restored.

ERROR: The installer cannot create the directory shown below.

You probably do not have permission to create a new directory in the parent directory or the directory shown.

ERROR: Read-only filesystem.

This error is specific to AFS filesystems on HP-UX. To avoid this problem, install MAE on a local or NFS volume and copy the entire result (the `apple` directory, the System Folder, and the `.mac` folders, if any) to your designated AFS file system.

ERROR: The pathname that you have entered contains invalid characters. (For example, do not use the '~' character when specifying a pathname.)

Choose a different file or directory path that does not contain the '~' character. (Use environment variables such as `$HOME` instead of '~/'.)

ERROR: The installer cannot find any installation packages.

This can happen if the installation CD-ROM disc is mounted from a system that converts the file names on the CD-ROM discs to lowercase. The installer is case sensitive and is looking for specific file names that are all in uppercase. It can also happen if the installer program (`INSTALL.SH`) is copied from the installation CD-ROM disc but the required package files have not been copied to the same location.

ERROR: An error occurred during the installation. Some packages could not be installed.

The installer was able to continue after an error occurred, perhaps during the copy, verify, or finishing phase. Some packages may have been installed without error, but the installer always removes packages that it fails to install correctly.

ERROR: An error occurred during package removal. Some packages may not have been removed.

The installer was unable to continue after an error occurred while attempting to remove a package. Some packages might have been removed without error, but the installer might leave packages in an unknown state if they cannot be completely removed. This error is very rare. The best solution is to reinstall the package in the same location, and then remove it again.

If other problems arise during the installation process, see your system administrator or contact Apple Technical Support.

File system problems

The MAE installation program does not have special knowledge of AFS volumes so you might not be able to install directly on an AFS-mounted volume. To install, go directly to the machine that contains the file system and install locally.

Where to go from here

To begin using MAE, proceed to Chapter 2.

2 Starting and Quitting MAE

This chapter describes the following:

- starting MAE
- quitting MAE
- solving problems that may occur when trying to start MAE

Starting MAE

This section tells you how to start MAE from a command prompt in an X terminal emulator window.

Note: A license key must be correctly installed in the `license.dat` file before you can run MAE. See your system administrator for more information.

Before you start MAE, make sure that you know which directory contains the `mae` program. If you did not specify a destination directory during installation, the `mae` program is in the default directory, `/opt/apple/bin`.

IMPORTANT If you installed MAE while logged in as root, you should log in using an ordinary user account to start MAE.

To start MAE, follow these steps:

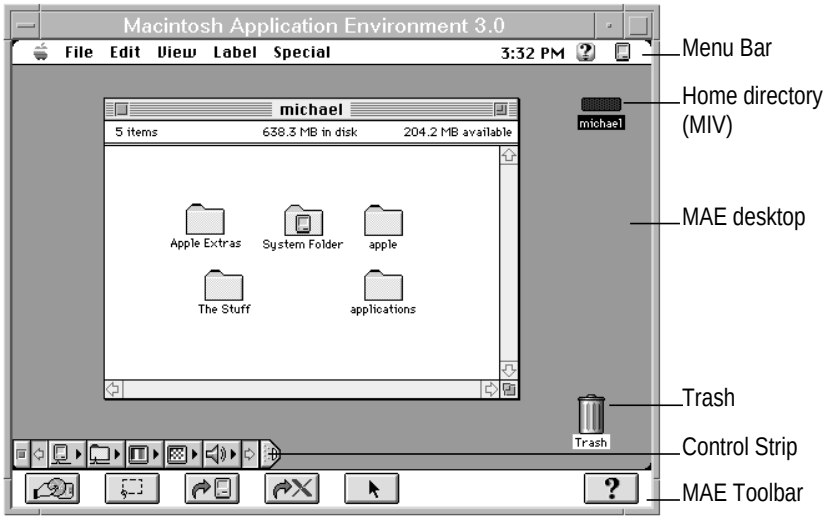
1 **Open a terminal emulator window.**

2 **Enter the pathname of the `mae` program.**

For example, if `mae` is located in the `apple/bin` subdirectory of your home directory, and you are currently in your home directory, enter `apple/bin/mae &` at the command prompt. (The ampersand causes MAE to be run as a separate process, allowing you to continue entering commands in the same terminal emulator window.)

An X window appears on your screen and displays MAE copyright information. If you are starting this copy of MAE for the first time, the MAE license agreement appears. Use the pop-up menu to choose the language you want to use, then read the license. Click the Accept button to accept the terms of the license and close the license agreement window.

After several moments, the MAE window appears.



The first time a new user launches MAE, MAE creates the following directories:

- System Folder—controls the operation of the Mac OS
- `.mac`—controls the function of MAE
- Apple Extras—contains useful Macintosh utilities and resources

MAE requires both the System Folder and `.mac` directories. By default, these are in your home directory. You can change the location of these two directories by using the `-sysfol` and `-macdir` options (see the section "Using Command Options With the `mae` Command" later in this chapter and Appendix C for more information).

IMPORTANT The files and directories in the `.mac` directory are critical to the correct operation of MAE. Do not move or modify these files (except for `.MIV_file` as described in Chapter 2 of the *MAE Administrator's Manual*).

Running MAE from a remote computer

You can run MAE remotely (use MAE from your X server workstation when the MAE process is actually running on an X client workstation connected over the network). You might run MAE this way if, for example, you want to use an AIX or IRIX workstation to run MAE.

Before you start MAE remotely, make sure of the following:

- You are authorized to run MAE on the remote computer and have the required access privileges to run MAE.
- On the remote computer, MAE is installed properly, the information in the `license.dat` file is correct, and you know the location of the MAE executable file.

Note: You do not need the `license.dat` file on your workstation to run MAE remotely.

To start MAE remotely, follow these steps:

1 **Open a terminal emulator window.**

2 **Enter the command `xhost +`*clientname*, replacing *clientname* with the name of the remote computer on which MAE will run.**

3 **Connect to the remote computer by entering the command `telnet` *clientname*, replacing *clientname* with the name of the remote computer on which MAE will run.**

The remote computer must meet the requirements described in "What You Need to Install and Run MAE," in Chapter 1 of this manual.

4 **Enter your login name (and password, if required) at the login prompts.**

5 **Enter the command `DISPLAY=`*servername*`=0; export DISPLAY`, replacing *servername* with the name of your workstation, on which MAE will be displayed.**

Be sure to enter the command exactly as described above, including uppercase and lowercase letters.

6 **Enter the pathname of the `mae` program.**

Note: Because MAE is graphic intensive, it may run significantly slower over the network.

Using options with the `mae` command

You can include options with the `mae` command. The following table lists a few of the available options. For a complete list of options, see Appendix C.

The following table lists some of the options available for the `mae` command.

Command option	Description
`-help`	Display all the available command options for MAE.
`-appledir` *directorypath*	Specify the location of the `apple` directory. The default is the directory in which the MAE package was installed.
`-display` *display*	Specify the X display server on which you want MAE to appear. The default is specified by the `DISPLAY` environment variable.
`-memory` *memorysize*	Specify the memory size for applications within MAE (in MB). The default is 16 MB.
`-noextensions`	Disable Macintosh system extensions (has the same effect as holding down the Shift key while booting a Macintosh computer).
`-macdir` *directorypath*	Specify the location of the `.mac` directory. The default is the your home directory.

See the `mae` manual page or consult your system administrator for more information.

Using manual pages

MAE provides UNIX-style manual pages (man pages) to provide reference information for the following commands:

- `mae`(1), which starts the Macintosh Application Environment
- `appletalk`(1M), which displays AppleTalk network information or starts or terminates AppleTalk networking services
- `appleping`(1M), which sends packets to a particular AppleTalk node
- `atlookup`(1), which gets information about the network visible entities registered on an AppleTalk network
- `asdtool`(1), which converts information between AppleSingle and AppleDouble formats
- if you install the License Manager, man pages for license management utilities are installed

To easily use the `man` command to display the `mae` manual pages, append the full pathname of the MAE man page directory (`/opt/apple/man`, by default) to the `MANPATH` environment variable.

If you are running Solaris, you can use the `-M` option with the `man` command to specify the MAE manual pages directory, as follows:

`man -M` *applemandirectory commandname*

Replace *applemandirectory* with the full pathname of the manual pages directory (`/opt/apple/man` by default).

Alternatively, you can move the man pages files from the `apple` directory to the `/usr/man` directory.

Quitting MAE

Quit MAE the same way you turn off a Macintosh computer:

1 **Choose Shut Down from the Special menu on the MAE desktop.**

This command quits all open Macintosh applications, puts away all mounted Macintosh volumes (including CD-ROM discs and floppy disks), and closes the MAE window. MAE performs all housekeeping tasks necessary for a clean shutdown.

> **WARNING** The system maintenance tasks performed by the normal shutdown process are essential to the successful operation of MAE. Avoid using other methods to quit MAE (for example, by using window manager capabilities available in your X environment).

2 **If you are running MAE remotely, enter the command `exit` in the terminal window in which you connected to the remote computer.**

The `exit` command terminates your telnet session, closing your connection to the remote computer.

The Shut Down command does not quit any X applications that may be running, not even those you started from the MAE desktop, and it does not shut down your workstation.

Note: You can terminate MAE by pressing Control-Shift-E. This approach does not allow MAE to perform its important normal shutdown operations, so you should use it only if MAE is frozen.

If you have problems starting MAE

This section lists error messages that might appear during the startup process and explains what to try in response to each of them.

MAE cannot open the `apple` directory

An error message similar to the following may appear when you start MAE.

Unable to locate <*apple_dir*>
Please use the `-appledir` option to give the path to the `apple` directory.

This message appears if MAE can't locate the directory that contains the startup files for MAE.

You can specify the directory where the MAE files are located by using the option `-appledir` *directory-path* with the `mae` command, replacing *directory-path* with the name of the directory that contains the MAE files. See the `mae` manual page for more information.

If you cannot locate the MAE files, you may need to reinstall MAE. See Chapter 1 of this manual.

You can't see MAE in the X display

If you can't see MAE in your X display, try the following:

If you are running MAE on the same workstation that is running the X display server, set your `DISPLAY` environment variable to

```
local:0
```

If you are running MAE on one workstation and the X display server on another, set your `DISPLAY` environment variable to the name of the workstation on which the X display server is running and append the characters

```
:0
```

For example, if you are running the X display server on a workstation named `my_machine`, set the `DISPLAY` variable to the following:

```
my_machine:0
```

If MAE cannot connect to the X display server, run the `xhost` command on the X display server workstation. For example, if MAE is running on a workstation named `my_workstation` and the X display server is on a machine named `my_terminal`, run the following command on `my_terminal`:

```
xhost +my_workstation
```

This command allows MAE on `my_workstation` to open a display on `my_terminal`.

On Solaris, the `xhost` command is located in `/usr/openwin/bin`. On HP-UX, `xhost` is located in `/usr/bin/x11`.

Handling startup problems

If you experience problems starting MAE, try the following:

- Install MAE as the superuser, but log in using an ordinary user account to start MAE.

  If you start MAE as root, MAE tries to build a System Folder in the root directory, which might not have enough free disk space. MAE must be able to create the System Folder directory in your home directory or a directory you have specified using the `-sysfol` command option. In addition, if you start MAE as root, you increase the possibility of deleting important workstation files from within MAE.

- Be sure that you have plenty of available disk space (at least 7 MB) in your home file system.

  The installer checks to be sure that there is enough free space to install MAE. However, when you start up MAE for the first time, it builds a System Folder in your home directory, which requires at least 7 MB of disk space.

- Be sure that your home directory is local to the machine in which the MAE process is running—that is, not connected through a remote mount point. Although you can run MAE with your home directory on a remote computer, it is not recommended because performance can be significantly reduced.

  The first time MAE starts, it scans the directories from the root directory to your home directory. If there are remote mount points in that path, the scan can cause delays or hang at startup.

- Check UNIX permissions on your home directory and the files and directories within the `apple` directory. Permissions should not be a problem unless you made changes while logged in with superuser privileges.

- Check the RAM and available swap space of the workstation. MAE requires a minimum of 32 MB of RAM and 16 MB of swap space; 48 MB of RAM and 64 MB of swap space are recommended.

- Ensure that you have the correct `license.dat` file and that it is in your `apple` directory (or the directory selected by your administrator). See your system administrator for more information.

- Ensure that AppleTalk is installed properly. AppleTalk installation must be done as root on each system on which you want to run MAE. You cannot simply copy your MAE binary files from machine to machine. The AppleTalk installation correctly configures your kernel and creates device files used by AppleTalk. If AppleTalk is not installed correctly, you might see the following message:

  ```
  /dev/appletalk/lap/ethertalk0/control Please be sure
  the file exists
  ```

- Ensure that you have restarted your workstation after installing kernel modules such as those in the AppleTalk package.
- Ensure that the name of your `.mac` directory is unique—no other files or directories should have the same name regardless of capitalization.
- Ensure the time zone variable, `TZ`, is set. Several routines within MAE use the value specified by the environment variable `TZ`. Failure to assign a value to this variable prior to executing MAE may result in an error. You can set this variable (in the `ksh`) with the command `export TZ=PST8PDT` if you are located in the Pacific time zone. For more information, see the appropriate man pages for your operating system.
- If MAE crashes during initial startup while MAE is creating (or updating) a new System Folder, important aliases might not be created that are created at the end of the installation process. Many aliases are put in the System Folder that point to applications in the `apple` directory, and you will experience performance problems.

  If this happens, remove the newly created System Folder and restart MAE. MAE creates a new System Folder for you. If you are updating MAE, you can use your backup System Folder.
- If you get an error message referring to the `.SMlock` file, ensure that no other users are using the System Folder and remove the lock file.

  Each time you start MAE, it looks for the `.SMlock` file in the System Folder. If the file exists, MAE refuses to start; if the file does not exist, MAE creates it. This prevents more than one MAE user from using the same System Folder at the same time. Normally, this file is deleted when you shut down MAE. If you are sure no one else is using the System Folder, remove the `.SMlock` file and MAE will start.

Problems with MAE independent volume (MIV) support

The following error messages related to independent volumes may appear when you start MAE.

- **Can't create the Mac file system structures.**
  This is a memory allocation problem.

  This message indicates that the UNIX file system was unable to allocate enough space for MAE's external file system structures. It is recommended that you increase the RAM in your workstation. For more information about memory and swap space, see Chapter 4 of the *MAE Administrator's Manual*.

- **Can't create *pathname*.**
  You need READ/WRITE access permissions.

  The value *pathname* is the full UNIX pathname to the file `.MIV_file`. These messages indicate that you do not have the required read/write privileges for this file.

- **File *pathname* has invalid information in it.**

  The value *pathname* is the full UNIX pathname to the file `.fs_info`. This message indicates that the data in the `.fs_info` file has become corrupted. Rename the file for your system administrator to use in troubleshooting. To recover your `.fs_info` file (and the associated `.fs_cache` file), consult the *MAE Administrator's Manual*.

3 Installing Macintosh Applications

This chapter describes how to install Macintosh applications into MAE on your workstation. It describes the following:

- using the application's installation utility
- using the MAE independent volume (MIV) feature
- using the temporary installer volume (TIV) feature
- transferring files from a Macintosh computer

Overview

There are several ways of installing Macintosh applications.

- You can use the installer program provided with the application.
- You can copy the files into a MAE independent volume (MIV) other than your home directory and perform the installation from that independent volume.

  IMPORTANT If you copy the files to your system, use Mac OS operations to transfer the files. If you use UNIX commands, the file modification dates may not be preserved. Some installers require these dates to be intact before they will install an application.
- You can install the application into the *temporary installer volume* (TIV), described later in this chapter.
- You can copy the files from a Macintosh computer using floppy disks or a networked file server.

IMPORTANT Check with your system administrator before installing applications or fonts. Files used by more than one MAE user on a workstation can be installed in ways that save large amounts of disk space.

Installing with an application's installer program

Install the application with its installer program as described in its documentation.

The installer usually allows you to choose the drive on which the application is installed. Choose your home directory or a folder within your home directory. If installation isn't successful (for example, a message might state that you don't have enough disk space, when, in fact, you do), you can try using a MAE independent volume (MIV) as described in the next section.

If the installer doesn't allow you to choose the drive on which to install the application, see your system administrator for help.

Note: If the installation program does not complete, copy the contents of the installation floppy disks to your hard disk and run the installation from your hard disk.

> **WARNING** The installation programs for some applications add extensions to the System Folder that might be incompatible with MAE. (For example, HyperCard 2.3 installs the Speech Manager extension.) If you experience problems after installing an application, start MAE with the `-noextensions` option and remove any incompatible extensions or control panels.

Installing with a MAE independent volume (MIV)

A MIV is a UNIX directory that is mounted in MAE and functions like a Macintosh volume. Files that are placed in a MIV can be manipulated from both MAE and UNIX. To install an application using a MIV, copy the files into the MIV and then run the copy of the installer program in the MIV or select the MIV as your installation volume and use the application's installation program.

Note that copying files in the Finder by dragging them will not copy any invisible files. Some applications cannot be installed without certain invisible files from their installation disks.

> **WARNING** If you change your MIV configuration, applications that set pathnames during installation may not work and you may have to install the application again.

Note: When you install an application, it is best to install on a defined MIV. This ensures that the files associated with the application have the correct icon. For more information about defining a MIV, see the section "MAE Independent Volumes" in Chapter 2 of the *MAE Administrator's Manual*.

Installing with the temporary installer volume (TIV)

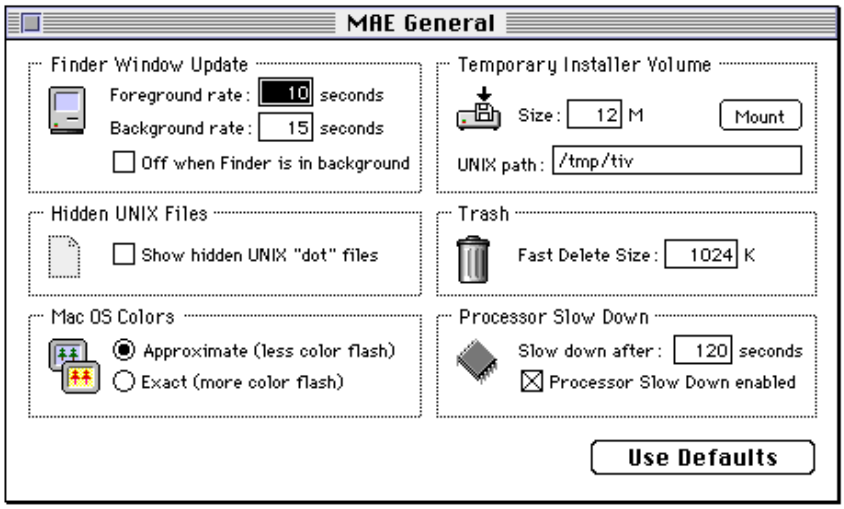
A temporary installer volume (TIV) is a virtual hard disk—a file on the UNIX file system that acts within MAE like a Macintosh hard disk.

Note: The temporary installer volume feature is supported to maintain continuity with previous versions of MAE, but its functionality has been superseded by MIVs. Before using a TIV, try copying the application files to a MAE independent volume (MIV) and running the installer from the MIV. See your system administrator for help.

To create and use a TIV, follow these steps:

1 **Choose Control Panels from the Apple (🍎) menu.**

2 **Double-click the MAE General icon to open it.**



At the upper right of the control panel window is a section labeled Temporary Installer Volume.

3 **Type a number of megabytes in the Size box. Use a size sufficient to accommodate the application you are installing (at least 10 MB).**

If you're not sure about the amount of disk space your application needs, consult its documentation.

4 **Click the Mount button.**

The TIV icon appears on your desktop.

5 **Double-click the TIV icon to open the TIV window.**

6 **Install the application according to its documentation.**

If a message indicates that the Installer cannot find your System Folder, go to the next section, "Problems With the System Folder."

IMPORTANT When you're asked to choose a destination, be sure to specify TIV (or the name of the TIV, if you have changed it).

Note: If your TIV is too small to accommodate the installation, drag it to the Trash and create a new TIV with sufficient space.

7 **Drag the newly installed files from the TIV to your home directory.**

8 **If you are able to use the newly installed application from your home directory, drag the TIV to the Trash.**

If you are not able to use the application, see your system administrator for help.

Problems with the System Folder

Some applications look for the System Folder when you install. In MAE, your System Folder is usually in your home directory. If (and *only* if) the application's installer can't find the System Folder, follow these steps:

1 **The TIV must be large enough to accommodate both the System Folder and the application (10 to 20 MB). If it isn't, drag the TIV volume to the Trash and create a larger TIV (see the previous section for instructions).**

2 **Drag the System Folder icon from your home directory to the TIV.**

This creates a copy of the System Folder in the TIV.

3 **Proceed with the installation.**

4 **Change the name of your original System Folder (for example, to System Folder.save).**

5 **When the installation is complete, drag the System Folder from the TIV to your home directory.**

> **WARNING** Do not copy the new System Folder unless you have already changed the name of your original System Folder.

6 **Drag the application files from the TIV to your home directory.**

Your home directory has its original System Folder that looks like the illustration below. The picture within the folder icon tells you that this is the active System Folder.

The new System Folder that you copied from the TIV looks like this:

7 **Restart MAE by selecting Restart in the Special menu.**

After MAE restarts, the small Macintosh icon should now be inside the icon of the System Folder you copied from the TIV. This means that the new System Folder is the active System Folder that is being used by your system.

If this is the case, drag your old System Folder.save to the Trash.

The installation is complete. The TIV will remain on your desktop until you shut down MAE.

However, if the new System Folder has *not* become the active System Folder, go to the next section.

If the new System Folder does not become active

If the new System Folder does not contain the active icon but the old System Folder.save still does, restore your original System Folder as follows:

1 **Change the name of the new System Folder (the one you dragged from the TIV volume).**

For example, you might change it to System Folder.temp.

2 **Change the name of the original System Folder (System Folder.save) back to System Folder.**

3 **Restart MAE.**

Your restored System Folder will not include any changes made during the installation of the application. You can now remove System Folder.temp.

Try to install the application by transferring its files from a Macintosh, as described in the next section.

Transferring files from a Macintosh computer

If you can install your application successfully on a Macintosh computer, you can install it in MAE by transferring all the application's files from the Macintosh computer. To do so, follow these steps:

1 **Install the application software on a Macintosh computer running system software version 7.1 or later—preferably version 7.5.3 or later.**

See the documentation that came with the application for instructions.

2 **Locate the files and folders that you just installed.**

Most or all of the files are usually in separate folders created by the applications. (See the documentation that came with the application.) Check for files related to the application in the System Folder and in the Preferences, Fonts, Control Panels, Apple Menu Items, and Extensions folders (all inside

the System Folder). If you are unable to find all the files for an application, consult the product support department of the company that published the application.

3 Transfer all the installed items from the Macintosh computer to your workstation.

Be sure to transfer all files to a place in MAE that is equivalent to their place on the Macintosh. You can transfer the files by using one of the following methods.

Using file sharing over the network: This is the easiest method; it is described in Chapter 7 of this manual.

Using an FTP utility over the network: If the Macintosh computer on which you installed the application software has File Transfer Protocol capabilities, you can use an FTP utility (such as Telnet or Fetch) to transfer files from the Macintosh computer to your workstation. The FTP utility must support AppleSingle or AppleDouble file format. See the documentation that came with the FTP utility.

Using 1.4 MB floppy disks: If your workstation has a floppy disk drive, you can copy the application software from the Macintosh computer to 1.4 MB floppy disks. You may need to use several disks. Then, at your workstation, insert each floppy disk and use the Finder in MAE to drag files from the floppy disk icon to the folder icon representing your home directory (or to a folder within your home directory). See “Mounting Floppy Disks and CD-ROM Discs With the Toolbar” in Chapter 6 of this manual.

If an application file won’t fit on a floppy disk

Some application files are larger than 1.4 MB and thus cannot fit onto a single floppy disk. You can use a Macintosh file-compression utility to compress the file before copying it to the floppy disk. The file-compression utility must be compatible with MAE so that you can expand the file once you copy it to MAE.

Opening and using Macintosh applications

Once your Macintosh application has been installed, use it just as you would on a Macintosh. See the application's documentation.

Note: On a Macintosh, double-clicking a document icon usually starts the application that created the document and opens the document. This capability is supported through a mechanism called the Desktop file or Desktop database. (This is the file being processed when you see the message "Rebuilding the desktop file" upon starting up a Mac OS computer for the first time.) In MAE, when you update the Desktop database, only the `apple` directory is updated—updating the entire UNIX disk requires too much time and is not useful. As a result, you may find that double-clicking a document doesn't launch its application, even though you're sure the application is installed. To solve the problem, open the folder enclosing the application and ensure that the application icon is visible in the window. The Desktop database will then be updated for that application, and you will be able to double-click documents to launch the application. You can also force MAE to rebuild the Desktop database for a specific directory by starting MAE and using the `-applepath` *pathname* option with the `-rebuild` command option. When you use the `-applepath` option, the directory you specify is rebuilt during startup.

Quitting Macintosh applications

You quit an application just as you do on a Macintosh. See the application's documentation.

Note: On a Macintosh computer, you can press Command-Option-Escape to terminate an application that is frozen or not running properly. This key sequence is not supported by MAE.

4 Printing in MAE

This chapter describes how to print documents in MAE. If you have AppleTalk installed and are connected to an AppleTalk printer, you can simply select a printer in the Chooser and choose Print from the File menu, as you do on a Macintosh computer. If you do not have access to an AppleTalk printer, you can print using a UNIX print command on a UNIX PostScript printer using the Macintosh interface.

This chapter discusses the following topics:

- preparing for printing
- printing through AppleTalk
- printing to a UNIX PostScript printer
- printing from Macintosh applications
- solving common printing problems

Setting up for printing

If you use a printer connected to your workstation through AppleTalk, printing from MAE is the same as printing from a Macintosh. After the printer has been connected to the network and set up properly, all you need to do is use the Chooser to select a printer, then give your application's Print command. Selecting a printer is described in "Using the Chooser to Select an Appletalk Printer" and in "Using the Chooser to Select a UNIX PostScript Printer," later in this chapter.

MAE can also be configured to use `lp`(1) or `lpr`(1), so you can send print commands from an application running in MAE to a UNIX PostScript printer.

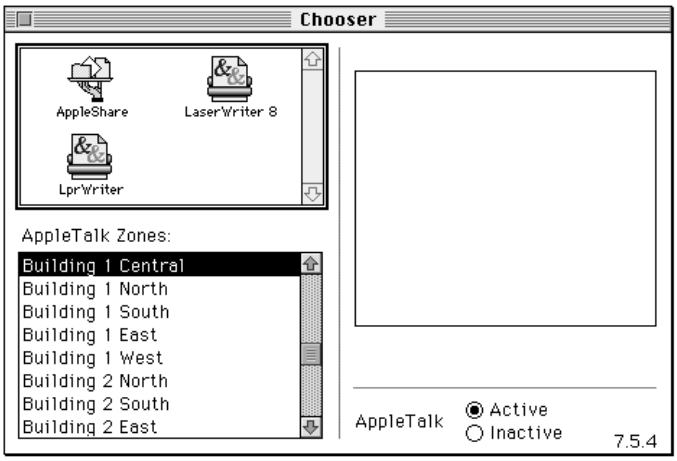
Note: MAE supports *only* PostScript printers available through either the UNIX printing mechanism or AppleTalk.

For instructions on using UNIX print commands, see "Using the Chooser to Select a UNIX PostScript Printer," later in this chapter.

The Chooser

When you select Chooser in the Apple (🍎) menu, the Chooser appears.

If you are connected through AppleTalk, and if your system administrator has divided the area into AppleTalk zones, the Chooser will look something like the following:



The icons in the box at the upper left represent the printer drivers and network software available to you.

The AppleTalk Zones box lists zones that a network administrator has established. If there are no zones, the AppleTalk Zones box does not appear.

After you select an icon (and a zone, if appropriate), the box at the right lists the devices available to you.

To set up your system to use your UNIX PostScript printer and the appropriate UNIX print command, see "Using the Chooser to Select a UNIX PostScript Printer," later in this chapter.

Using the Chooser to select an AppleTalk printer

If your workstation is connected to a printer through AppleTalk, follow these steps to select and set up the printer:

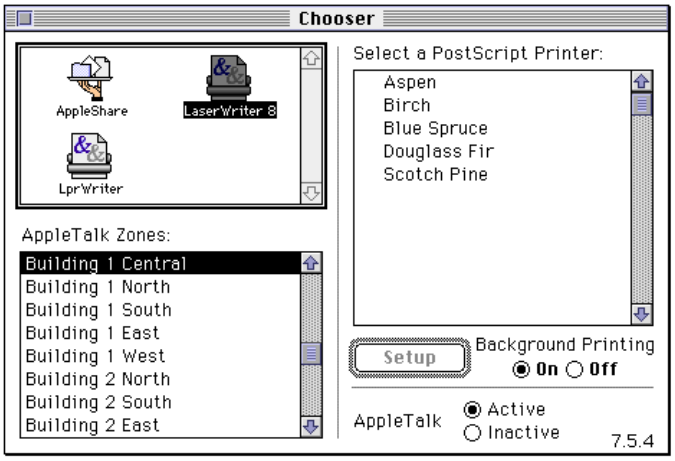
1 **Select Chooser in the Apple (🍎) menu.**

The Chooser appears on your desktop.

For a description of the Chooser, see the previous section.

2 **Select the kind of printer you plan to use.**

For example, in the illustration, LaserWriter 8 has been selected (in the box at the upper-left corner of the Chooser).



3 **Select the appropriate zone in the box at the lower-left corner of the Chooser.**

If your network does not have AppleTalk zones, the AppleTalk Zones box does not appear. Proceed to step 4.

4 **Select the appropriate printer in the box at the right.**

You must select a printer even if only one is listed.

5 **Click Setup.**

The Chooser identifies the type of printer and automatically sets up the printer software.

A small printer icon appears to the left of the printer name.

Note: If your printer has already been set up, clicking the Setup button opens a printer setup dialog box, allowing you to view information about the printer and to manually set advanced printer options. See your system administrator for information about which of these advanced options are available.

6 **Close the Chooser by clicking the close box at the upper-left corner of the Chooser window.**

You are ready to print. See "Printing From Macintosh Applications," later in this chapter, for further information.

Using the Chooser to select a UNIX PostScript printer

This section describes how to use UNIX commands to print from MAE. UNIX print commands allow you to print from Macintosh applications without an AppleTalk connection to your printer.

Note: If your workstation isn't already set up for UNIX printing, see your system administrator or the documentation that came with your workstation for information about configuring UNIX printing services.

If you have more than one printer available, it's a good idea to create a separate print command for each printer so you can switch printers using the Chooser. See "Creating a New Print Command," later in this chapter.

Setting up the default print command

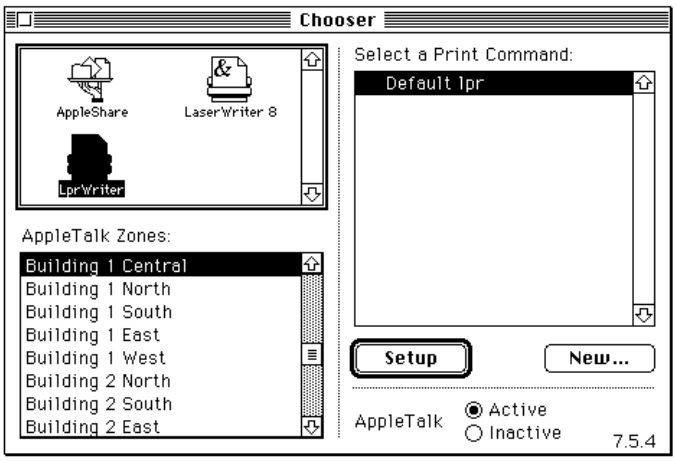
MAE provides a default print command, "Default lpr." You must select a PostScript printer description file (PPD) to be associated with the default print command before you can print from MAE. The PPD file allows the LprWriter printer driver to generate the appropriate PostScript files for your printer.

To set up the default print command, follow these instructions:

1 **Open the Chooser in the Apple (🍎) menu.**

2 Click the LprWriter icon in the upper-left box.

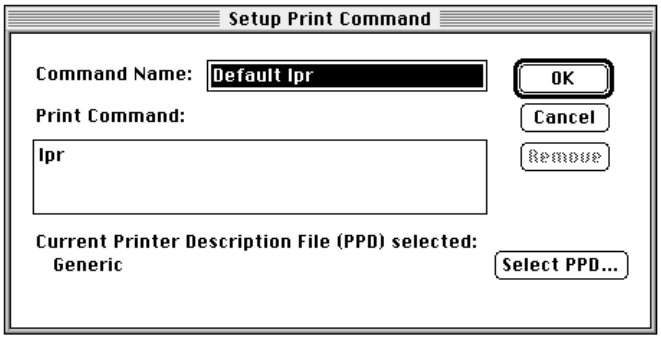
If you have previously specified print commands, a list appears in the box on the right. If you haven't, only the "Default lpr" command appears.



3 Select "Default lpr" if it isn't already highlighted.

4 Click Setup or press Return.

The Setup Print Command dialog box appears.

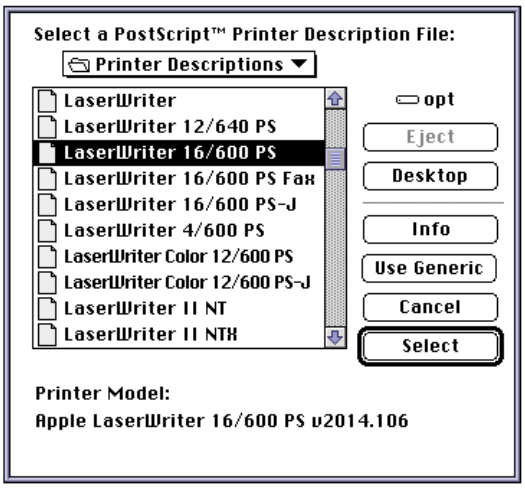


You can add options to the `lpr` command by typing them in the Print Command text box. (See the `lpr` manual page for more information.)

5 Click the Select PPD button.

A dialog box appears listing PPD files alphabetically by printer model. For some files, a PostScript version number appears after the model name.

Some PPD files also list the amount of memory that the printer needs to use the PPD file. For example, the PPD file "LaserWriter IIf v2010.113 2 MB" is for a LaserWriter IIf with PostScript version 2010.113 and 2 or more megabytes of memory.



6 Select the PPD file that best matches your printer's characteristics.

When you select a PPD file, a description of the printer model appears at the bottom of the dialog box. If more than one PPD file is available for your model, select the file that matches the printer's PostScript version and its memory capacity for efficient operation.

Note: If a PPD file is not available for your printer, click the Use Generic button in the dialog box to select a generic PPD file, which provides basic printing functions.

7 Click Select to confirm your selection of the PPD file and return to the Chooser.

You are now ready to print files in MAE. For instructions, see "Printing From Macintosh Applications" later in this chapter.

Sources for PPD files

If MAE does not include the PPD file you need, you can obtain it from the manufacturer of the printer or from Adobe™ Systems, Inc. When this manual was published, Adobe maintained archives of PPD files on their ftp server at ftp.adobe.com (130.248.1.4). The login is anonymous. Use your e-mail address as the password. The PPD files are in the /pub/adobe/printerdrivers/mac/all directory.

Add the PPD file in the Printer Descriptions folder in the `apple` directory, then select the file in the Chooser. You need root permission to add this file.

IMPORTANT Installing new PPD files may not work if you do not have write permission for your `apple` directory. Consult your system administrator to add the necessary PPD file.

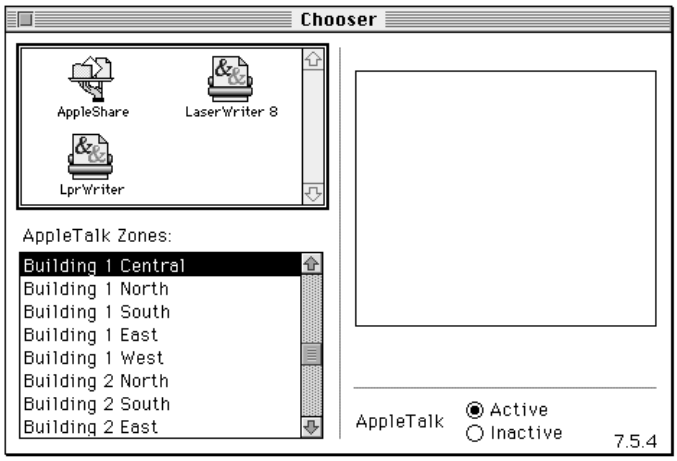
Creating a new print command

You can set up additional print commands by following the instructions in this section.

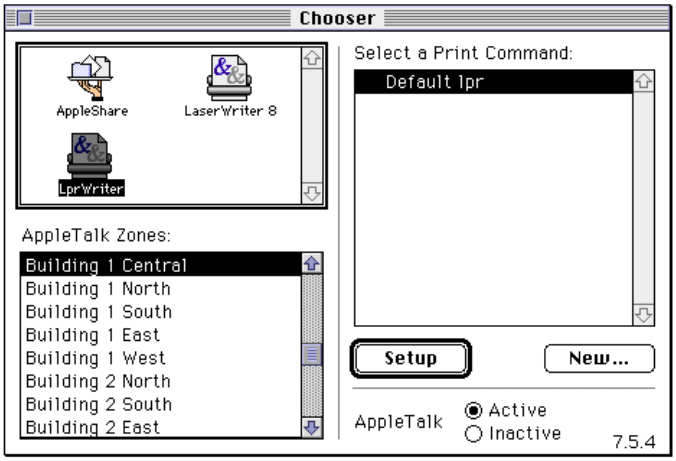
To create a new print command, follow these steps:

1 **Open the Chooser in the Apple (🍎) menu.**

The Chooser window opens.

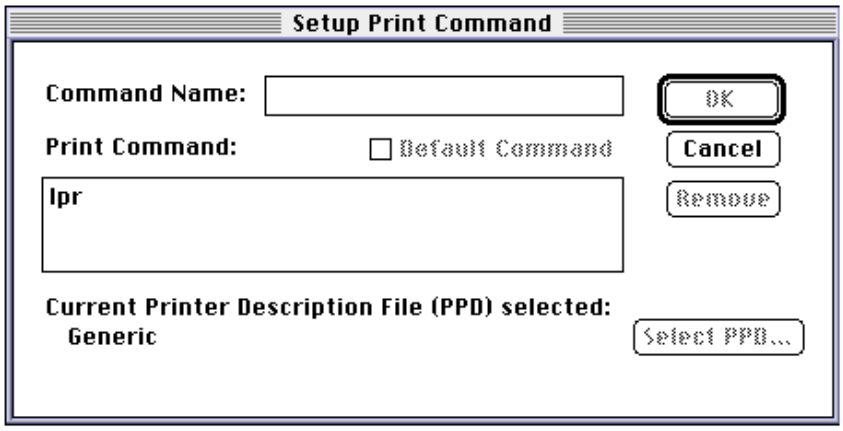


2 **Click the LprWriter icon at the left side of the dialog box.**



3 Click the New button.

The Setup Print Command dialog box appears.

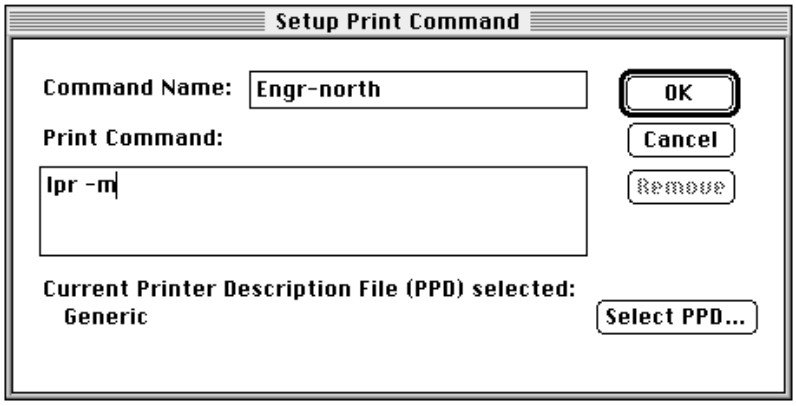


4 Type a name for the print command in the Command Name text box.

The command name you type will appear in the list of print commands in the Chooser window. Use a descriptive name that includes the name of the printer that you want to use.

5 Type a UNIX print command, such as `lp` or `lpr`, in the Print Command text box.

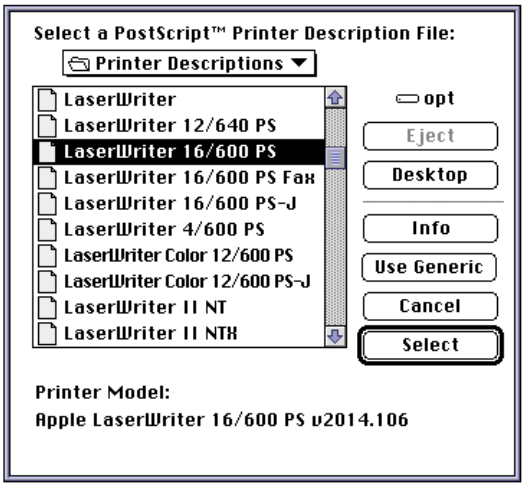
You can include any appropriate command options and arguments for the UNIX command, as long as the command specifies a printer that supports PostScript.



6 Click the Select PPD button.

A dialog box appears, listing the PPD files alphabetically by printer model. For some files, a PostScript version number appears after the model name.

Some PPD files also list the amount of memory that the printer needs in order to use the PPD file. For example, the PPD file “LaserWriter IIf v2010.113 2 MB” is for a LaserWriter IIf with PostScript version 2010.113 and 2 or more megabytes of memory.



7 Select the PPD file that best matches your printer's characteristics.

When you select a PPD file, a description of the printer model appears at the bottom of the dialog box. If more than one PPD file is available for your model, select the file that matches the printer's PostScript version and its memory capacity for efficient operation.

Note: If a PPD file is not available for your printer, click the Use Generic button in the dialog box to select a generic PPD file, which provides basic printing functions. The selection dialog box closes. Go to step 9.

8 Click Select to confirm your selection of the PPD file and return to the Setup Print Command dialog box.

9 Click OK to close the Setup Print Command dialog box and return to the Chooser.

You are now ready to print files in MAE. For instructions, see "Printing From Macintosh Applications" later in this chapter.

Sources for PPD files

If MAE does not include the PPD file you need, you can obtain it from the manufacturer of the printer or from Adobe Systems, Inc. When this manual was published, Adobe maintained archives of PPD files on their ftp server at ftp.adobe.com (130.248.1.4). The login is anonymous. Use your e-mail address as the password. The PPD files are in the /pub/adobe/printerdrivers/mac/all directory.

Add the PPD file in the Printer Descriptions folder in the `apple` directory, then select the file in the Chooser. You need root permission to add this file.

IMPORTANT Installing new PPD files may not work if you do not have write permission for your `apple` directory. Consult your system administrator to add the necessary PPD file.

Printing from Macintosh applications

In MAE, printing capabilities are controlled through the Print and Page Setup dialog boxes, which you display by choosing commands from the File menu. These dialog boxes should contain the same options as the examples in this section, but your application may add additional options at the bottom. See the documentation that came with your application for details about specific options.

IMPORTANT Before you begin printing Macintosh files, be sure that you have followed the directions in "Setting Up for Printing," earlier in this chapter.

Note: For information about setting up your workstation to print UNIX files, see the documentation that came with your workstation.

Selecting Page Setup options

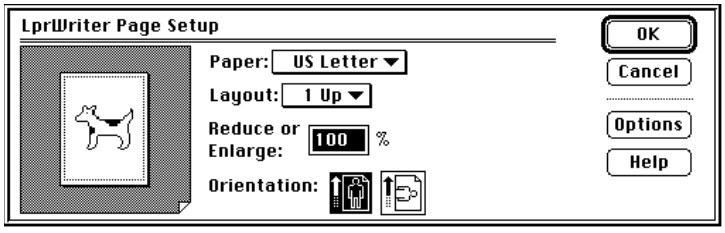
The Page Setup dialog box allows you to define certain characteristics of your document, such as its page size, format, and orientation, as well as the settings for several print effects. You can change these settings for every document you create. It is recommended that you set your page setup options when you first create a document. Then, as you view and format the document, it will closely resemble its final printed form. Whenever you change printers, you should also ensure that the Page Setup options are correct for your document.

Note: Some applications add options to the Page Setup dialog box. For information about such options, refer to the documentation that came with the application.

To select options in the Page Setup dialog box, follow these steps:

1 Choose Page Setup from the File menu.

The Page Setup dialog box appears.



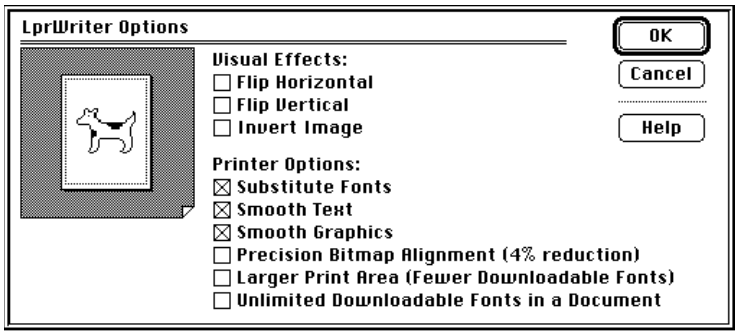
2 Select the Page Setup options you want.

When you choose a Paper, Layout, or Orientation option, the page image on the left side of the dialog box shows the result of your choice.

To see the currently selected page dimensions, click the page image. Click the page image again to close the dimensions listing.

3 **To use special effect options, click the Options button.**

The Options dialog box appears. Click the options you want to use, then click OK to return to the Page Setup dialog box.



4 **Click OK to close the Page Setup dialog box.**

You are ready to print.

Printing Macintosh files

When you print from a Macintosh application on the MAE desktop, you usually see a Print dialog box. You use this dialog box to specify print options such as the number of copies you want printed, whether to print all or part of a document, and which paper tray or cassette will be the paper source.

Note: Some applications add options to the Print dialog box. For information about such options, refer to the documentation that came with the application.

To print a file created by a Macintosh application, follow these steps:

1 **Make sure the file is open and active (the frontmost window), then choose Print from the File menu.**

The Print dialog box appears.

2 **Select the options that you want.**

3 **Click the Print button.**

The file is sent to the printer.

Troubleshooting printing

MAE's support for UNIX printers is very general; it is designed to work on a wide variety of workstations and system types. This flexibility makes it impossible for MAE to troubleshoot every possible printing configuration. This section lists some commonly encountered printing errors. If you encounter a printing problem that is not covered, consult your system administrator.

Canceling a print job

When you print a Macintosh file on MAE, a printing status dialog box appears for several seconds (depending on the size of the file). While the status dialog box is on the screen, you can cancel printing by holding down the Command key and pressing the period (.) key until the Canceling Printing dialog box appears. To cancel printing after the status dialog box has disappeared, use UNIX commands, such as `lprm`(1) or `cancel`(1). For more information, see the appropriate manual pages (man pages) that came with your workstation or consult your system administrator.

If the printer does not print anything

Check the X window in which you started MAE. MAE displays any error or status messages in this window. The error messages can provide useful information about why printing isn't working.

You should also check the following:

- Verify that the printer is turned on and properly connected to the network. (For example, check for loose connections.)
- Verify that UNIX printing has been configured correctly on your workstation.
- Verify that you have correctly set up a print command by using the Chooser (available in the Apple menu on the MAE desktop). For example, make sure that you did not accidentally type the wrong printer name in the Setup Print Command dialog box.
- Be sure you are looking for the printout at the correct printer. You may have recently changed the print command to print on a different printer, or the default UNIX printer may have changed. Some workstations use a UNIX environment variable to specify the default printer. If the environment variable has been changed, or if you are running MAE on a different workstation, you may be printing on a different printer without knowing it.
- Verify that the print queue contains your print request. Use `lpstat` or `lpq` to check status. Also make sure that the print spooling system isn't jammed.

- Verify that the print command that you specified in the Chooser actually works if you type it directly into a UNIX command window. This step lets you know whether your UNIX printing is working correctly.
- Try printing the same file on another printer. This step helps you determine whether the problem resides with the spooling system or with a particular printer.
- Try printing the file a second time, but this time click the Options button in the Print dialog box and choose “Print detailed report” in the PostScript Errors pop-up menu. This option prints any PostScript errors that may have occurred. You can also print a cover page before printing the file. (Select the Before button in the dialog box.) If the cover page prints, you know that the file is making it to the printer.

The printed page contains “%!PS-Adobe-3.0” and other miscellaneous text

Sometimes when you print a file, the page contains “%!PS-Adobe3.0” followed by other miscellaneous text. This means that the PostScript program is being printed as text, instead of being executed as code. This situation may occur if you are trying to print your file on a non-PostScript printer. (If this is the case, try printing your file on a PostScript printer.) The situation also may occur if your UNIX printing does not recognize the PostScript identifier “%!PS-Adobe-3.0,” which appears on the first line. See your system administrator for help.

Only part of your document was printed

Printing can generate large PostScript files. If you do not have enough free disk space, only a portion of your document may be printed.

5 Using the Toolbar

This chapter describes the following:

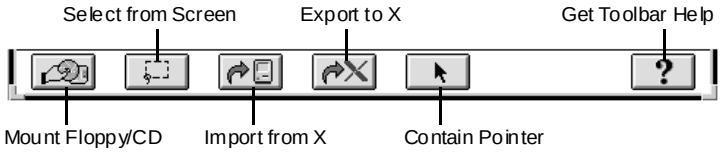
- copying text or graphics between X applications and Macintosh applications
- capturing screen images
- preventing the pointer from leaving the MAE window
- using Toolbar help
- hiding the Toolbar

These features use the MAE Toolbar, which is part of MAE, but not part of the standard Mac OS.

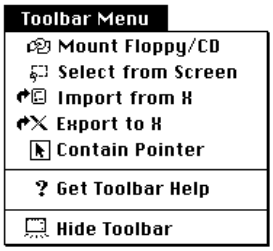
Overview

When you start MAE, the MAE Toolbar appears at the bottom of the MAE window. The Toolbar provides several buttons that let you perform the following tasks:

- mounting floppy disks and CD-ROM discs (see Chapter 6 of this guide)
- selecting images on your screen
- copying text and graphics between Macintosh applications and X applications
- confining the pointer to the MAE window
- displaying onscreen help for the Toolbar



You activate a feature by clicking its button in the Toolbar. You can also use the Toolbar pop-up menu. To display the menu, position the pointer anywhere within the Mac OS part of the MAE window and press the third (usually the rightmost) mouse button. To activate a feature, choose its name from the menu.



The Toolbar pop-up menu includes all the functionality of the Toolbar. It also contains the Hide Toolbar command, which allows you to temporarily hide (or redisplay) the Toolbar. See “Hiding the Toolbar,” later in this chapter, for more information.

Mounting CD-ROM discs and floppy disks

To mount CD-ROM discs and floppy disks, use the leftmost icon on the Toolbar or the Mount Floppy/CD command in the Toolbar Menu.

Mounting CD-ROM discs and floppy disks is discussed in detail in Chapter 6.

Capturing screen images with the Toolbar

MAE lets you select an area of your screen and capture an image of it. You can then paste the image into a Macintosh or X application document.

To capture an image on your screen, follow these steps:

1 Click the "Select from Screen" button.

The pointer becomes a crosshair.

2 Drag the crosshair to select an area of the screen.

Position the crosshair on the screen, then press and hold down the first (leftmost) mouse button while dragging so that the outline surrounds the area of the screen you want to capture. Release the mouse button after you've outlined the desired area.

This captures an image of the screen and places it on the Macintosh Clipboard. You can paste the image into any active document window created by a Macintosh application that accepts graphics in PICT format by positioning the pointer where you want the image to be, clicking to create an insertion point, and choosing Paste from the Edit menu.

You can store the image in the Scrapbook—a standard Macintosh desk accessory. Simply perform steps 1 and 2, choose Scrapbook from the Apple (🍎) menu, and then choose Paste from the Edit menu to paste the image into the Scrapbook. Later, you can copy the image from the Scrapbook and paste it into a document.

Note: You can use the "Export to X" button to paste an image captured with the "Select from Screen" button into some X applications. For more information, see the documentation that came with the application.

Importing text or graphics from an X document to a Macintosh document

To copy text or graphics from an X document into a Macintosh document, follow these steps:

1 **Open and make active the X application document that contains the text or graphics you want to import.**

2 **Select and copy the text or graphics.**

Follow the X application's procedures for copying. Some applications let you copy text simply by highlighting it. Other applications require that you select an item and then copy it by choosing a command from a menu or clicking a button.

3 **Click the "Import from X" button in the Toolbar.**

The selection is copied to the Mac OS Clipboard.

4 **Paste the text or graphics into a Macintosh document by using a standard Macintosh command.**

Exporting text or graphics from a Macintosh document to an X document

MAE allows you to export text and graphics from a Macintosh document to an X application document.

1 **Open the Macintosh document that contains the text or graphics you want to import.**

2 **Select and copy the text or graphics in the Macintosh document.**

Choose Copy from the File menu.

3 **Click the "Export to X" button in the Toolbar.**

The selection is copied to an X buffer.

4 **Follow the X application's procedure for pasting the text or graphics into an X document.**

Some applications let you paste by clicking the second (usually the middle) mouse button. Other applications provide a Paste command or onscreen button.

Containing the pointer within the MAE window

As with most X Window applications, moving the pointer outside the boundaries of the MAE window makes MAE inactive. If you do most of your work within the MAE window, you may want to keep MAE active by containing the pointer within the MAE window.

- **Click the Contain Pointer button in the Toolbar.**

The button changes to indicate that the pointer is contained, and the Contain Pointer menu item changes to Release Pointer.

To release the pointer, click the button again.

Note: If MAE stops functioning while the pointer is contained, you can't use the mouse to run X commands. You can type Shift-Control-E to force MAE to shut down. If you do this, all unsaved data in the MAE window is lost.

Displaying Toolbar Help

You can display information about the features in the Toolbar while working on the MAE desktop.

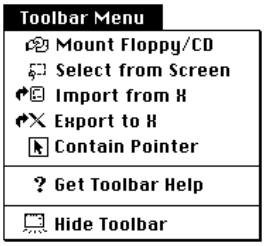
- **Click the Get Toolbar Help button at the right end of the Toolbar.**

The MAE Toolbar Help window appears on the desktop, displaying information about each feature. Click the Done button to close the Help window.

Hiding the Toolbar

When you start MAE, the Toolbar appears at the bottom of the MAE window by default. If you prefer *not* to see the Toolbar while you're working, you can hide it by using the Toolbar pop-up menu. While the Toolbar is hidden, you still have access to its features through the Toolbar menu.

- **Press the third mouse button and choose Hide Toolbar from the Toolbar pop-up menu.**



The Hide Toolbar menu item changes to Show Toolbar.

To make the Toolbar reappear, press the third mouse button (usually the rightmost) and choose Show Toolbar from the Toolbar menu.

6 Using CD-ROM Discs and Floppy Disks

This chapter supplies basic information on mounting and using CD-ROM discs and floppy disks with MAE:

- configuring your system for CD-ROM drives and floppy disk drives
- using the Toolbar to mount CD-ROM discs and floppy disks
- unmounting CD-ROM discs and floppy disks

Using CD-ROM discs and floppy disks

MAE allows you to use three types of CD-ROM disc formats:

- Macintosh (or HFS)
- High Sierra
- ISO 9660 (including single-session Photo CDs)

MAE also allows you to use floppy disks of three formats:

- Macintosh (or HFS)
- DOS
- ProDOS

To be able to use all of these types of disks or discs, you must have a properly installed and configured floppy disk drive or a CD-ROM disc drive that conforms to the Small Computer System Interface (SCSI). You must also have the appropriate control panels and extensions installed correctly in your MAE System Folder and loaded by MAE at startup. (All the necessary software is included in the MAE package and installed by default.)

You can access a UNIX floppy disk by using UNIX commands to mount the disk, and then using MAE to move to the mount point. The mounted floppy disk appears as a MIV.

Note: For simplicity, the term “removable media” will be used to refer to the supported CD-ROM discs and floppy disks.

IMPORTANT You cannot use a Mac OS hard disk drive formatted for HFS by connecting it directly to your UNIX workstation. Attempting to do so can damage data on your workstation or your hard disk.

Configuring MAE for SCSI CD-ROM disc and floppy disk drives

This section describes how to set up MAE so that you can mount removable media on the MAE desktop.

When you install MAE, the installer creates a Preferences file called `macdisks.`*OS* that contains information about your SCSI CD-ROM disc and floppy disk drives. To use removable media on the MAE desktop, you must edit the `macdisks.`*OS* file to provide MAE with information about the appropriate SCSI drive. This file is located in the Preferences folder in your System Folder (which is in your home directory).

Note: *OS* refers to the operating system you are using. For example, if you are running HP-UX, edit the `macdisks.HPUX` file. If you are running Solaris, edit the `macdisks.Solaris` file.

You can configure MAE for removable media by using the default settings provided by MAE or by customizing the settings, as described in the following section.

Specifying settings in the `macdisks.OS` file

The following sections describe how to configure the `macdisks.`*OS* file for CD-ROMs and floppy drives.

Editing the `macdisks.OS` file for CD-ROMs

To edit the `macdisks.OS` file for CD-ROMs, follow these steps:

1 **Shut down MAE by selecting Shut Down from the Special menu.**

IMPORTANT Never edit the `macdisks.OS` file while MAE is running.

2 **Find out the SCSI ID number of your CD-ROM.**

The SCSI ID number for an external drive can usually be seen on the outside (often at the back) of the drive. Information about SCSI ID numbers can also be found in certain configuration files on your workstation. See the documentation that came with your workstation for more information about such configuration files, or see your system administrator.

3 **Use UNIX commands to go to the Preferences directory inside your System Folder.**

4 **Use any editor to edit the file called `macdisks.OS`, where *OS* is the name of the operating system running on your workstation.**

The file includes the following lines:

```
scsi0:ignore
scsi1:ignore
scsi2:ignore
scsi3:ignore
scsi4:ignore
scsi5:ignore
scsi6:ignore
```

5 **Move to the line that corresponds to the SCSI ID number of your CD-ROM drive.**

6 **To specify a customized setting, skip step 6 and proceed to step 7. To use a default setting, replace the word `ignore` with the word `default`. Then proceed to step 8.**

When you start MAE, it will attempt to replace `default` with the appropriate device description for your drive.

The `macdisks.OS` file includes additional recommendations about setting up the file correctly for your workstation. For more information, see your system administrator or check the documentation that came with your workstation.

7 **To specify a customized setting, replace the word `ignore` with specific information about your CD-ROM drive.**

The general format for SCSI device descriptions is

`scsi#:removable:ro:`*device_name*

Replace # with the SCSI ID number. What you type for *device_name* depends on your workstation and the version of operating system you are using. For example, if you are running HP-UX on your workstation and you want to designate a CD-ROM drive at SCSI ID number 2, you might type the following:

`scsi2:removable:ro:/dev/dsk/c201d2s0` (For HP-UX 9.*x* systems)

`scsi2:removable:ro:/dev/dsk/c0t2d0` (For HP-UX 10.*x* systems)

The `macdisks.`*`OS`* file includes additional recommendations about setting up the file correctly for your workstation. If you need more information, see your system administrator or check the documentation that came with your workstation.

8 **Save the file with your changes.**

9 **Start up MAE.**

Proceed to mounting the CD-ROM disc by following the instructions in the section, “Mounting Floppy Disks and CD-ROM Discs With the Toolbar,” later in this chapter.

Editing the `macdisks.`*`OS`* file for floppy drives

You configure floppy devices much as you do CD-ROMs, except that floppy devices generally do not have SCSI ID numbers. With floppy drives, you only need to enable the drive by entering whether the drive is read-only or read-write and provide the device’s path name. By default, a floppy drive is enabled.

To edit the `macdisks.`*`OS`* file for floppy drives, follow these steps:

1 **Shut down MAE by selecting Shut Down from the Special menu.**

IMPORTANT Never edit the `macdisks.`*`OS`* file while running MAE.

2 **Use UNIX commands to go to the Preferences directory inside your System Folder.**

3 **Use any editor to edit the file called `macdisks.`*`OS`*, where *`OS`* is the name of the operating system running on your workstation.**

4 **Move to the lines that correspond to floppy drives.**

Floppy configuration lines have the format:

```
floppy0:default
floppy1:ignore
```

5 **To specify a customized setting, skip step 5 and proceed to step 6. To use a default setting, replace the word `ignore` with the word `default`. Then proceed to step 8.**

When you start MAE, it will attempt to replace `default` with the appropriate device description for your drive.

The `macdisks.`*`OS`* file includes additional recommendations about setting up the file correctly for your workstation. For more information, see your system administrator or check the documentation that came with your workstation.

6 **To specify a customized setting, replace the word `ignore` with specific information about your floppy drive.**

The general format for SCSI device descriptions is

`floppy#:[ro|rw]:/dev/`*`device_path`*

Replace # with the floppy drive number. In *device_path* specify the device path for the floppy drive. For example, if you are running HP-UX 10.10 on your workstation, and if you want to designate a floppy drive, you might type the following:

```
floppy0:rw:/dev/rfloppy/c0t1d0
```

or

```
floppy0:default
```

The `macdisks.`*`OS`* file includes additional recommendations about setting up the file correctly for your workstation. If you need more information, see your system administrator or check the documentation that came with your workstation.

7 **Save the file with your changes.**

8 **Starting MAE.**

Proceed to mounting the floppy disk by following the instructions in the section, “Mounting Floppy Disks and CD-ROM Discs With the Toolbar,” later in this chapter.

Loading required software

MAE requires that certain extensions and control panels be properly installed in your System Folder and loaded before you can use removable media. The MAE Easy Install process installs all the necessary extensions and control panels and turns them on so that they are loaded when MAE starts. If one or more of these extensions or control panels is moved, deleted, or turned off, MAE does not recognize the associated removable media until the required software is reinstalled and MAE is restarted.

In addition, floppy drives for Solaris systems require the Volume Manager files and Volume Management to be enabled. The MAE Easy Install process installs these by default if you install with root privileges.

The required Macintosh system components are as follows:

- Foreign File Access extension: allows the use of CD-ROM discs whose contents are in a format other than HFS
- High Sierra File Access extension: with the Foreign File Access extension, lets you use CD-ROM discs with High Sierra file systems
- ISO 9660 File Access extension: with the Foreign File Access extension, lets you use CD-ROM discs with ISO 9660 file systems (including single-session Photo CD discs)
- Apple Photo Access extension: with the Foreign File Access and ISO 9660 File Access extensions, lets you use Kodak Photo CD discs
- PC Exchange control panel: lets you mount ProDOS and DOS floppy disks and associate Mac OS application programs with types of DOS files

To install one of these components, follow these steps:

1 **Find the required extension or control panel.**

Note: Use only the versions of these components that are included with the latest version of MAE.

2 **Drag the extension or control panel to your closed System Folder.**

MAE displays a message about where the components should be installed and asks if you want them installed there.

3 **Click OK.**

The components are installed into the appropriate folder within the System Folder. However, they will not be available for use by MAE until they are turned on and MAE is restarted.

Turning on extensions and control panels

When MAE starts, it loads all extensions and control panels that are properly installed in appropriate folders in your System Folder (extensions that are in disabled folders are not turned on).

To turn on an extension or control panel, follow these steps:

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

2 **Double-click the Extensions Manager icon.**

The Extensions Manager control panel appears, listing the extensions and control panels that are installed in your System Folder.

3 **Click just to the left of the extension or control panel.**

Position the mouse pointer just to the left of the item that you want to turn on. When the mouse pointer becomes a checkmark, click the mouse button to place a checkmark next to the item. The item is now turned on and will be loaded by MAE the next time MAE restarts.

Mounting floppy disks and CD-ROM discs with the Toolbar

If your workstation has a floppy disk drive, you can mount a floppy disk, displaying the floppy disk icon on the desktop.

IMPORTANT You must use a high-density (1.4 MB) disk formatted for the Mac OS, Windows, or DOS. You cannot use disks formatted for UNIX, nor disks using nonstandard formats, unless you are willing to reformat them and lose the data on them. See “Formatting Floppy Disks for the Mac OS” and “Copying Files From 800K to 1.4 MB Floppy Disks” (later in this chapter). To use installation floppy disks with compressed formats such as DMF, install first on a Mac OS computer, then copy the files using AppleShare.

Before attempting to mount a CD-ROM disc on the MAE desktop, you must first edit the `macdisks.`*OS* file. For instructions, see “Configuring MAE for SCSI CD-ROM Disc and Floppy Disk Drives,” earlier in this chapter.

Note: MAE does not support execution of UNIX commands from Mac OS floppy disks.

Mount the floppy disk or the CD-ROM disc as follows:

1 **Insert the disk.**

2 **Click the leftmost icon in the Toolbar.**

After a pause, a disk icon appears on the desktop. You can double-click this icon to display the files or folders the disk contains.

Note: The first time you mount a Photo CD, you see the message "Creating Photo CD Color Icons." This process generates the "thumbnail sketch" icons that represent the individual photographs on the CD.

Unmounting a floppy disk or CD-ROM disc

You must unmount a floppy disk or CD-ROM disc before you can remove it from your workstation. On some workstations, the steps described in this section may unmount *and* eject a disk. Other workstations require that you manually eject a disk by pressing a button after you have unmounted the disk.

Note: If the disk is formatted for a UNIX file system, you can unmount it by using appropriate UNIX commands; for example, `umount`(1M). See the documentation that came with your workstation for information.

IMPORTANT If you are running MAE on a workstation that requires you to eject a floppy disk manually, make sure that you unmount the disk from within MAE *before* you manually eject the disk. If you do not unmount the disk first, you might lose information contained on it.

To unmount a floppy disk or CD-ROM disc, do this:

- **Select its icon and choose Put Away from the File menu.**

  Alternatively, you can drag the disk icon to the Trash. Note that, as with any Mac OS computer, dragging the disk icon to the Trash does not delete any files from the disk.

Formatting floppy disks for the Mac OS

When you insert an unformatted floppy disk into a Mac OS computer, a message asks if you want to initialize (that is, format) the floppy disk.

When you insert and mount a floppy disk in MAE, a similar message may appear if one of the following conditions exists:

- The disk is formatted for UNIX. Click Eject to avoid losing information on the disk.
- The disk might not be a high-density (1.4 MB) disk. Your workstation does not support 400K or 800K floppy disks. Click Eject and remove the disk. See "Copying Files From 800K to 1.4 MB Floppy Disks," later in this chapter.

- The disk is damaged. If you know that the disk has already been initialized for the Mac OS, eject the disk, then insert and mount it again. If the same message appears, you may want to try using a commercially available disk repair program.
- The disk has never been formatted.

If the floppy disk has not been formatted, follow these steps:

1 **Insert the disk and click the Mount Floppy/CD button.**

An alert box tells you that the disk is unreadable.

IMPORTANT On some workstations, mounting an unformatted floppy disk on the MAE desktop may take several minutes.

2 **Click Initialize to format the disk.**

An alert box tells you that the contents of the disk will be erased.

3 **Click the Erase button.**

If the disk contains information that you don't want to erase, click Cancel.

Copying files from 800K to 1.4 MB floppy disks

Your workstation supports only 1.4 MB (high-density) floppy disks. You can identify a high-density floppy disk by the words "Double-Sided High Density" or "HD" on the disk.

If you have a Mac OS computer that can accept 1.4 MB floppy disks, you can often copy the application software from the 800K disks to 1.4 MB floppy disks by using the Mac OS Finder. This will not always work (for example, if the installation disks have files that are not visible, you won't be able to copy them), but it will work in most cases. If you copy software installation disks from 800K disks to 1.4 MB disks, make sure you follow these guidelines:

- Use one 1.4 MB disk for each original 800K disk.
- Initialize each 1.4 MB floppy disk on the MAE desktop *before* copying files to it. See the previous section for instructions.
- Give each 1.4 MB disk the same name as the corresponding 800K disk.
- Copy all files from each 800K disk to the corresponding 1.4 MB disk.

To copy files from an 800K disk to a 1.4 MB disk, follow these steps:

1. **Insert the 800K floppy disk into the floppy disk drive on a Macintosh computer.**
2. **Drag the floppy disk icon to the hard disk icon on your desktop.**

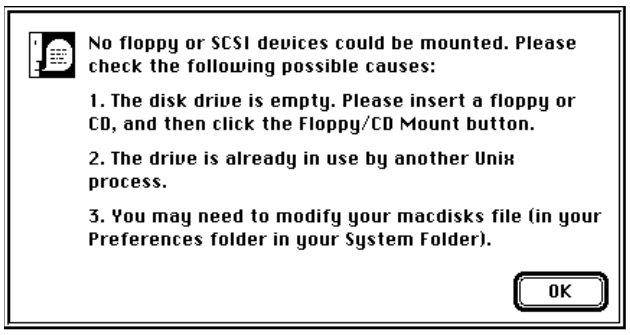
   A folder with the name and content of the floppy disk is created on the hard disk.
3. **Eject the floppy disk by highlighting its icon and choosing Put Away from the File menu or by dragging its icon to the Trash.**
4. **Insert a blank, newly initialized 1.4 MB disk into the floppy disk drive.**
5. **Give the 1.4 MB disk the same name as the original 800K disk.**
6. **Double-click the icon for the folder that you created on the desktop (and that now contains the files from the 800K disk).**
7. **Choose Select All from the Edit menu.**
8. **Drag the contents from the folder icon to the icon for the 1.4 MB disk.**
9. **Eject the disk by highlighting its icon and choosing Put Away from the File menu or by dragging its icon to the Trash.**

   Repeat these steps for each floppy disk that you will be using to install the application software on MAE.

   To lock a floppy disk (to protect its contents from being changed or erased), use your thumb or a push-pin to slide the tab on the back of the disk so that the square hole is open. To unlock the disk, slide the tab back so that it covers the square hole.

If you have problems mounting a floppy disk or CD-ROM disc

This section explains what to check if the following alert box appears when you try to mount a floppy disk or CD-ROM disc, or if you have other problems mounting disks.



- Sometimes MAE takes a few seconds to recognize a CD-ROM disc after you insert and try to mount it. Click OK in the alert box, and then click the Mount button on the Toolbar again.
- Make sure that the floppy disk or CD-ROM disc has been properly inserted into the disk drive and that the drive is turned on.
- Verify that the disk drive isn't already being used by a UNIX process, such as the `tar`(4) or `mount`(1M) command. If the disk drive is being used, you should be able to mount the disk when the UNIX process finishes running.
- Check with your system administrator to be sure that your floppy drive is configured into the UNIX kernel.

  On Solaris, verify that the Solaris File Manager is not using the disk drive. If it is, use the File Manager to unmount the disk drive.
- Check with your system administrator to be sure that the device file permissions are set correctly for the drive. You must be able to read the device file in order to read the media. If you wish to write to a floppy, then you must have permission to write to the device.
- If you are running more than one copy of MAE on your workstation, make sure that the other copy of MAE is not using the drive.
- If you are trying to mount a CD-ROM disc, make sure that you have edited the `macdisks.`*`OS`* file (in your System Folder) to include information about your CD-ROM drive. For more information, see "Configuring MAE for SCSI CD-ROM Disc and Floppy Disk Drives," earlier in this chapter.
- If you are running Solaris, be sure that you have installed the Volume Manager Extensions and that Volume Management is enabled. (See your system administrator for help.)

Troubleshooting floppy disks and CD-ROM discs

This section lists situations that you might encounter when using disks and CDs with MAE 3.0 and describes how to respond.

Problems using floppy disks remotely

Although some X terminals export floppies as NFS file systems, thus providing a convenient workaround, MAE does not in general provide remote floppy support. For example, you can start MAE on a workstation and display it remotely (using the `-display` option) on another workstation on the network. If you display MAE remotely, you can use only floppy disks that are inserted in a floppy drive attached to the workstation where you started MAE, not where you are displaying it.

Floppy disk drives and performance

Floppy disk drives are much slower than hard disks, and leaving a floppy disk in an X terminal drive can slow down MAE. Since MAE periodically scans the directories displayed in open Finder windows, leaving a floppy disk in the drive when the Finder has your home directory displayed in a window will affect performance. Solution: Don’t leave floppy disks in the X terminal’s drive.

MAE produces many dialog boxes when you press the Mount button

If you launch an application and then immediately click the Mount button on the MAE Toolbar when a valid MAE floppy disk is in the drive, various spurious dialog boxes may appear in the MAE window. If this happens, wait for the application to finish launching, then press the Mount button again. Dismiss the remaining dialog boxes.

DMF floppy disk format

A new disk format (known as DMF—Distributed Media Format) permits distribution of software on a smaller number of disks. DMF is a 1.6 MB format which cannot be used by current PC-compatible (360K/720K/1.4M) or Apple (400K/800K/1.4M) floppy disk drives unless read by the installer program. The special installer modifies the hardware floppy disk driver to support the new format. MAE does not use standard Macintosh drivers to support floppy disk drives. As a result, the installer cannot be run from disks that support DMF.

To properly install an application that uses this format, do one of the following:

- install from a CD
- install from a disk set that does not use DMF
- install using a DMF disk set onto a native Macintosh and use AppleShare to transfer the files to MAE

Sun-specific situations

The following situations are specific to Sun systems.

You cannot access the files on a MAE CD mounted remotely on a Sun workstation

You may have a problem accessing the files on a remotely mounted MAE CD-ROM disc if the disc was mounted on a Sun workstation by using the Solaris Volume Manager. There are two possible solutions to the problem:

- Quit the Solaris Volume Manager and explicitly mount the MAE CD-ROM disc by using a command such as `mount`(1). You should then be able to access the files on the CD-ROM disc in order to perform a remote installation.
- Copy the MAE files from the CD-ROM disc to a directory on the Sun workstation and then access the files by remotely mounting the directory. For more information about remotely installing MAE, see Chapter 1.

The message “fd0: read failed” appears

When you try to mount a floppy disk on MAE, you may see the message “`fd0: read failed`” on your Sun console. This message alerts you that Solaris is unable to read certain sectors on the floppy disk. Try another floppy disk, or try the same disk on a different workstation. (If the disk does not contain data that you need, you may want to reformat the disk and then try mounting it again with MAE.)

MAE displays an alert box about the Solaris Volume Manager

When you try to mount a floppy disk in MAE running on a Sun workstation, MAE may display the message: “You will not be able to use Macintosh floppies with MAE because the Solaris Volume Manager is not available now.” If this message appears, use the `ps` (1) command to see if the process `vold` (`/usr/sbin/vold`) is running on your workstation.

If `vold` IS NOT running, start the `vold` process as the root user and try mounting the floppy disk again. (You may want to edit the appropriate Solaris configuration files so that `vold` starts automatically when you start up your workstation. For instructions, see the Solaris documentation.)

If `vold` is running, and you see an error message such as “/dev/volctl: Permission denied” on your console, problem is with Solaris. As root, check the access pthe ermissions on the file named in the error message (for example, `/dev/volctl`). If necessary, change the permissions for the file by using the `chmod` (1) command and give yourself access to the file. (If the file is a symbolic link, you need to change the access permissions on the file to which the link points.) After changing the access permissions, try mounting the floppy disk on MAE again.

MAE is unable to access the floppy drive

Be certain you have read and write permissions on the floppy device file symbolically linked to `/dev/rdiskette`. In addition, software products that do not currently support the Solaris Volume Manager will conflict with MAE, which does use the Volume Manager. Until software products that are incompatible with the Volume Manager are upgraded to support it, you can work around this conflict by turning the Volume Manager on when using floppy disks or CDs in MAE and off when using other software. This workaround is only necessary when accessing a Macintosh floppy disk or CD since MAE doesn't use the Volume Manager until you try to access a Macintosh disk. Be aware, too, that some software disables Volume Manager control at the device level by changing your `/etc/vold.conf` file, rather than starting or stopping the Volume Manager’s `vold` process.

Solaris displays the “Unlabeled Floppy” dialog box on your console

When you insert and try to mount a Macintosh floppy disk on MAE, Solaris displays the “Unlabeled Floppy” dialog box if you didn’t install the Solaris Volume Manager Extensions when you installed MAE. (See Chapter 1 for more information.) Click Cancel in the dialog box (do NOT click Cancel & Eject). The floppy disk icon should appear on your MAE desktop. To avoid this problem, you should eject disks that have been mounted on the MAE desktop by using MAE capabilities only. For example, drag the disk icon to the Trash or choose Eject Disk from the Special menu.

MAE hangs when a mounted floppy disk has been ejected

If a Macintosh disk is somehow ejected without MAE being notified (for example, if you type “eject floppy” in a Solaris shell window or click Cancel & Eject in the dialog box described earlier), MAE may hang until it is able to use the disk again. Reinsert the disk and type “volcheck” in a Solaris shell window. This step should allow MAE to continue to use the floppy disk on the MAE desktop. To prevent this situation, run the MAE installer as root and install the Solaris Volume Manager Extensions package (according to the instructions in Chapter 1).

You have problems using a Solaris file system disk on MAE

If you insert a floppy disk formatted for Solaris into a Sun workstation and try to mount it in MAE by clicking the Mount Floppy/CD button, MAE displays an alert box. To use a floppy disk formatted for Solaris, follow these steps:

1. **Insert the disk that contains the files that you want to use.**
2. **In a Solaris window, type `volcheck floppy`.**

   The files on the disk will appear in the `/floppy/` directory on your UNIX file system.
3. **To access files on the floppy in MAE, open `/floppy`.**

   In order to access the `/floppy` directory, the root (`/`) MIV must be accessible on your desktop. For example, if you have a symbolic link called `Flop` in your home directory that points to `/floppy`, you can mount the “`/`” MIV by double-clicking on `Flop`. (See the section “MAE Independent Volumes” in Chapter 2 of the *MAE Administrator’s Manual*, for more information about MIV configuration.) Once the root MIV is available on your desktop, double-click the “`/`” MIV icon, then double-click the folder called `floppy`.
4. **Double-click on the folder that represents your floppy file system.**

   The floppy appears in the `/floppy` directory as a folder with the same name as the Solaris volume management label associated with that floppy. If the floppy does not have a label, it appears as `unnamed_floppy`.

   See your system documentation for more information about the Solaris Volume Manager and its treatment of floppy disks.

MAE hangs when you press the Mount button

If MAE seems to hang after you click the Mount button in the Toolbar with a valid MAE floppy in the drive, type the following in a Solaris shell window:

```
volcheck floppy ; eject ; volcheck floppy
```

This should unstick the Solaris Volume Manager and allow you to continue.

HP-specific situations

The following situations are specific to Hewlett-Packard systems.

Floppy disk drives on HP "Envizex" X terminals

Some HP "Envizex" X terminals come with floppy disk drives. MAE is not able to directly access floppy disks in these drives: the X terminal software, in cooperation with the host UNIX system, controls the hardware. MAE has no way to load executable code into the X terminal to control the device without changing the operation of the drive. Thus, only MS-DOS floppy disks are accessible through the X terminal's floppy disk drive. They are mounted by the host system software through NFS, and are accessable as `$HOME/floppy`. If you are having problems using the floppy disk drive, contact your system administrator, or consult HP's documentation (for example, Chapter 4 in "Using the X Station's Hardware Accessories" in *HP ENWARE X Station Software 5.1, Technical Reference*).

Using older (single-speed) CD-ROM drives

You may encounter a problem using older HP CD-ROM drives (single-speed Toshiba XM-3301TA) with an HP Model 715 workstation. Typically, MAE cannot mount a CD-ROM disc. There is a known SCSI timing problem when the older drives are used with a Model 715. As a workaround, HP suggests either placing another SCSI device between the 715 and the CD-ROM player or using a SCSI cable longer than one meter and shorter than six meters.

7 Networking with MAE

This chapter describes how to use Macintosh networking capabilities in MAE. It contains information on the following:

- AppleTalk
- changing the network interface
- file sharing
- program linking
- MacTCP

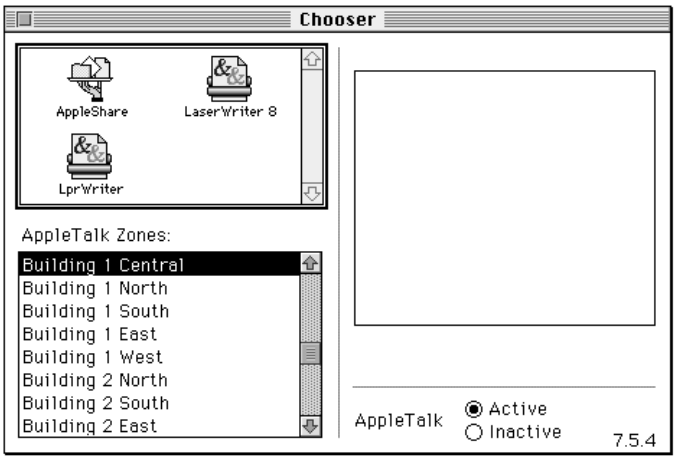
Understanding AppleTalk with MAE

AppleTalk is a network system designed and developed by Apple Computer. The AppleTalk network allows users to connect easily to AppleTalk printers and to share services with other AppleTalk devices while running concurrently with TCP.

The Chooser

The Chooser is an application that gives you access to the AppleTalk network services. To use the Chooser, select Chooser in the Apple (🍎) menu.

If you are connected to the network through AppleTalk, and if your system administrator has divided the network into AppleTalk zones, the Chooser will look something like the following:



The icons in the box at the upper left represent devices to which you can connect or network services you can use. Selections you make in this box determine the information that is displayed in the box on the right.

The AppleTalk Zones box lists zones that the system administrator has established. If there are no zones, the AppleTalk Zones box does not appear.

Note: Leaving the Chooser open as the active application with a Chooser device (such as AppleShare) selected can cause significant network traffic. If you prefer to keep the Chooser open, it is recommended that you keep it in the background when not using it.

AppleTalk commands

You can determine and control the status of AppleTalk by entering commands that invoke utility programs (located in the `apple` directory). For detailed information, see "UNIX AppleTalk Commands" in Chapter 5 of the *MAE Administrator's Manual*.

The commands are

- `appletalk -s` to determine the status of AppleTalk
- `appletalk -D` to turn AppleTalk off (requires superuser privileges)
- `atlookup` to list the network visible entities in a zone
- `appleping` to ensure that a node is alive

Sharing files through AppleTalk

Within certain limitations, MAE allows you to use the standard Mac OS file-sharing capabilities to access other computers and servers and to share files with other users. In a Mac OS file system, the person using the computer can generally control ownership and access privileges for all the files on the local file system. In a multiuser UNIX system, however, only the superuser has such broad control, for obvious reasons.

To ensure that you control your own files in MAE without compromising others' control over theirs, MAE allows the superuser to restrict your ability to use file-sharing capabilities as follows:

- You may be prevented from allowing guest access to your workstation.
- You may be prevented from sharing folders that you don't own.
- You may be prevented from starting file sharing.

See your system administrator to find out what restrictions you have on file sharing.

Note: Any computer that has AppleShare or Mac OS file sharing turned on and has made at least one volume available for sharing is considered a file server.

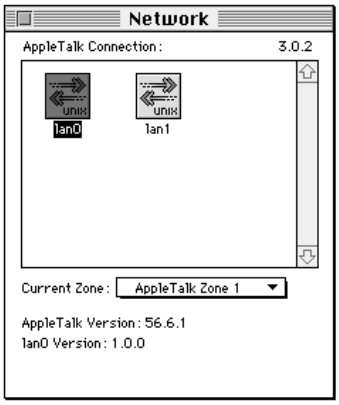
For more detailed information about Mac OS file sharing, see the *Macintosh Networking Reference* published by Apple Computer (part number 030-3936-A).

> **WARNING** In most cases, a user *should not* share the root directory *without careful configuration of access privileges*. For example, sharing the root directory with read-only permission allows remote users to view files such as `/etc/passwd`. Users should be especially cautious when sharing folders on NFS volumes via file sharing. See "Sharing UNIX Directories," in Chapter 5 of the *MAE Administrator's Manual.*

Changing the AppleTalk network interface

If you have more than one AppleTalk interface installed on your workstation, MAE will select a default interface when it is started. To switch between two or more AppleTalk network interfaces on your MAE workstation, select the interface you want in the Network control panel as follows:

1 **Choose Control Panels from the Apple (🍎) menu and double-click the Network icon to open it.**

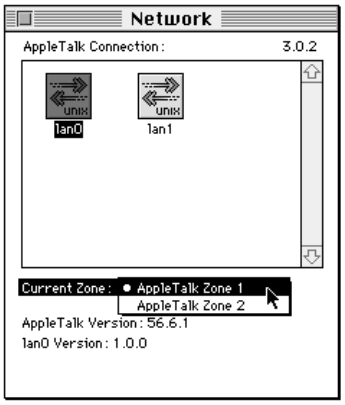


2 **Click the icon of the network connection you want to use.**

A dialog box warns you that you may be disconnected from any network services (such as printers or file servers) that you are using with your current network connection. This means that you will have to reconnect to the network services on the new network.

3 **Click OK in the dialog box.**

4 **Point to the name of the current zone displayed in the Network control panel and press the mouse button to open the pop-up menu of available zones.**



5 **Choose the zone that you want.**

6 **Click the appropriate interface icon.**

7 **Close the Network control panel.**

You can now use the network interface and zone you selected.

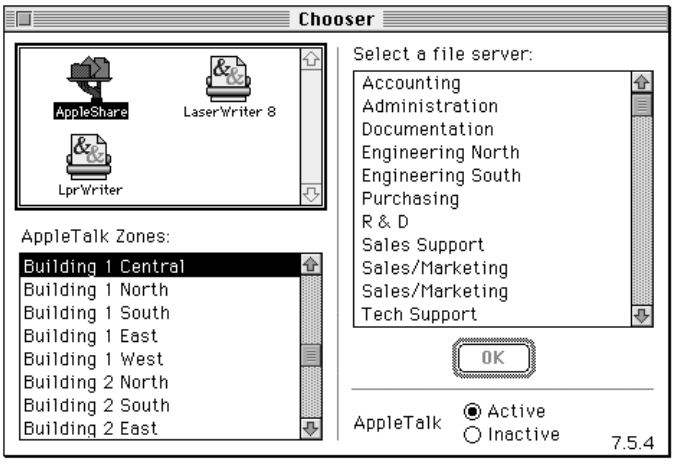
Accessing another computer with AppleShare

The AppleShare software allows you to use folders and files on a shared disk on another computer, provided that the owner of the folders and files has made them available. For information on how to make folders you own available to other users, see “Making Your MAE Files Available to Others,” later in this chapter.

To gain access to a shared disk or server, follow these steps:

1 **Open the Chooser by selecting Chooser in the Apple ( ) menu.**

2 **In the Chooser window, select the AppleShare icon at the upper left.**



3 **In the AppleTalk Zones box, select the appropriate zone.**

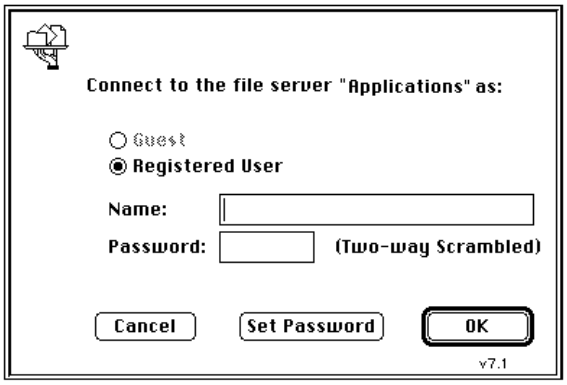
Click the zone of the server that contains the folders you want.

A list of file servers appears in the “Select a file server” list box.

4 **Locate and click the appropriate server name, then click OK.**

You can move through this list more quickly by clicking the “Select a file server” list and typing the first few letters of the name you’re looking for.

A dialog box appears that allows you to identify yourself.



5 **Click Guest or Registered User.**

If Guest is dimmed, you must be a registered user to connect to the server. Guests do not need passwords. If you clicked Guest, go to step 7.

6 **If you clicked Registered User, type your user name in the Name box and type your password in the Password box.**

Your name and password are registered on the computer you’re connecting to. See the owner of that computer if your name and password aren’t recognized.

7 **Click OK.**

An additional dialog box may appear that asks you to select a volume from a list. After you do so, a shared disk icon appears on your desktop.

8 **Double-click the icon to open it.**

The window that appears contains the icons for the folders and files on the computer or server to which you are connected. If you have the necessary access privileges, you may use these folders or files as though they were on your own computer.

Note: Some of the icons on your desktop may be for independent volumes that represent directories or volumes mounted at some point in your UNIX file system. See the *MAE Administrator's Manual* for further information.

Making your MAE files available to others

This section describes how you can make files and folders in your MAE desktop available to other Macintosh or MAE users.

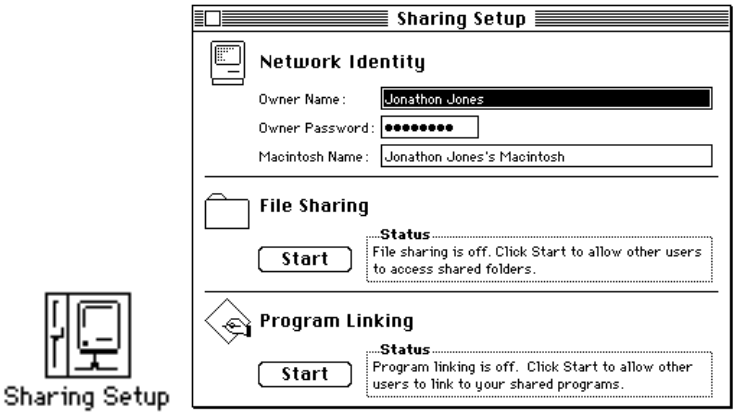
> **WARNING** In most cases, a user *should not* share the root directory *without careful configuration of access privileges*. For example, sharing the root directory with read-only permission allows remote users to view files such as `/etc/passwd`. Users should be especially cautious when sharing folders on NFS volumes via file sharing. See "Sharing UNIX Directories," in Chapter 5 of the *MAE Administrator's Manual.*

Note: You should check the File Sharing Monitor to see that no one is using a shared folder before changing its sharing status (by changing its access privileges, changing its owner, or turning off sharing for it).

To make items on your MAE desktop available to other Macintosh or MAE users, follow these steps:

1 **Select Control Panels in the Apple (🍎) menu.**

2 **Double-click the Sharing Setup icon to open it.**



3 **Type your name in the Owner Name box and press Tab.**

This is the name you use to gain access to your computer from elsewhere on the network.

4 **Type a password in the Owner Password box and press Tab.**

This is the password to use for gaining access to this computer. It is independent of your UNIX password. When you press Tab, the characters of your password are replaced by bullets.

5 **In the Macintosh Name box, type the name of your computer.**

This name appears in the "Select a file server" list in the Chooser.

6 **If the File Sharing button is labeled Start, click it to start file sharing.**

7 **Click the close box.**

Disconnecting from a shared disk

To disconnect from a shared disk, do this:

- **Select the Shared Disk icon and choose Put Away from the File menu.**

For information on setting access privileges, see the next section, "Access Privileges."

Access privileges

When you share a folder or a disk, you can set access privileges to files and folders you own to specify who can use those shared files or folders. You may also be able to allow access to guest users; see "Naming Specific Users," later in this section.

For each user or group of users, you can specify these three types of Mac OS file-sharing access privileges:

- See Folders to open the folder.
- See Files to open any file within the folder.
- Make Changes to change the contents of the folder and any file within the folder.

IMPORTANT When MAE users export part of a UNIX file system via file sharing, they can grant Mac OS file-sharing access only to the extent that the UNIX permissions allow them that access. For example, if a MAE user does not have write access to a file, the user cannot export that file with Mac OS file-sharing write access. Thus, the privileges another user has when accessing files are the most restrictive combination of the UNIX permissions and the file-sharing privileges. See Chapter 5 in the *MAE Administrator's Manual*.

Differences between UNIX and Macintosh access permissions

The differences between UNIX permissions and Macintosh file-sharing privileges can be summarized as follows:

- Macintosh file-sharing privileges affect file sharing over AppleTalk. UNIX permissions affect permissions across all UNIX networks.
- All files and folders (directories) created within UNIX are assigned default UNIX permissions automatically. Folders and their contents are assigned Macintosh file-sharing permissions only if the owner of the folder has made the folder available to others.
- UNIX permits the owner to assign different permissions to every item within a directory. Macintosh file sharing allows the owner to set privileges for the folder. These privileges are transferred to all the contents of the folder collectively.
- In most cases, a user *should not* share the root directory *without careful configuration of access privileges*. For example, sharing the root directory with read-only permission allows remote users to view files such as `/etc/passwd`. Users should be especially cautious when sharing folders on NFS volumes via file sharing. See "Sharing UNIX Directories," in Chapter 5 of the *MAE Administrator's Manual*.

The following table shows UNIX permissions compared with file-sharing privileges:

If UNIX Permissions are			then file-sharing privileges are	
Read	**Write**	**Execute**	**See Folders and See Files**	**Make Changes**
No	No	Yes	No	No
No	No	Yes	No	No
No	No	Yes	No	No
No	No	Yes	No	No
No	No	Yes	No	No
No	No	Yes	No	No
No	No	Yes	No	No
No	No	Yes	No	No

See also "Setting UNIX Permissions," in Chapter 8 of this manual.

Note: When files are shared through UNIX (not Macintosh File Sharing) by more than one MAE user, it is possible to write over the other user's changes. This is standard in a UNIX environment.

Setting file-sharing privileges

Set the access privileges to a folder or disk as follows:

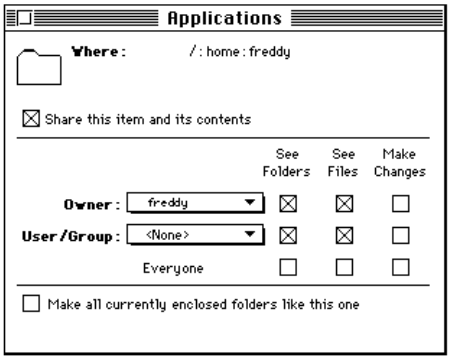
1 **Make sure file sharing is turned on in the Sharing Setup control panel.**

See "Making Your MAE Files Available to Others," earlier in this section.

2 **Select the folder or disk.**

3 **Choose Sharing from the File menu.**

The Sharing window appears.



4 **Click "Share this item and its contents" to place an X in it.**

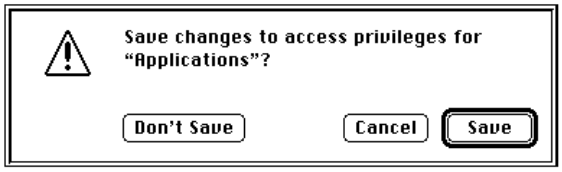
You are now able to select the See Folders, See Files, and Make Changes checkboxes.

5 **Set the appropriate privileges.**

When a box is checked, the privilege is granted. You can change the privileges for yourself (as the owner), for registered users or groups of users, or for everyone on the system. For information on specifying registered users or groups, see "Sharing with Specific Users and Groups," later in this chapter.

6 **Close the Sharing window.**

A dialog box appears that allows you to save the changes (by selecting Save), to close the Sharing dialog box without saving the changes (by selecting Don't Save), or to cancel the decision to close the Sharing dialog box (by selecting Cancel).



7 **To save the changes, select Save.**

The folder icon changes to the shared folder icon:

Sharing with specific users and groups

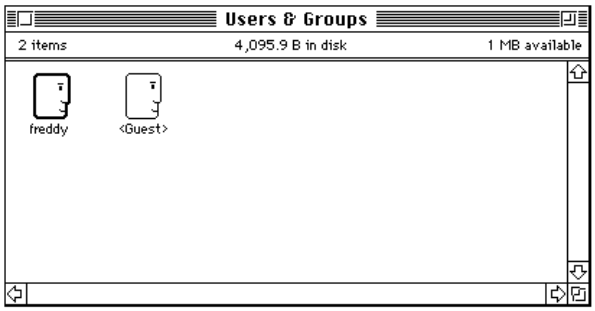
You can name specific users (who are then called *registered* users) and create groups of registered users to whom you can grant specific privileges. You can grant special privileges to a user or group in the User/Group field of the Sharing dialog box (see "Access Privileges," earlier in this chapter).

Naming specific users

Follow these steps to register users:

1 **Select Control Panels in the Apple (🍎) menu and open the Users & Groups control panel.**

The Users & Groups window appears.

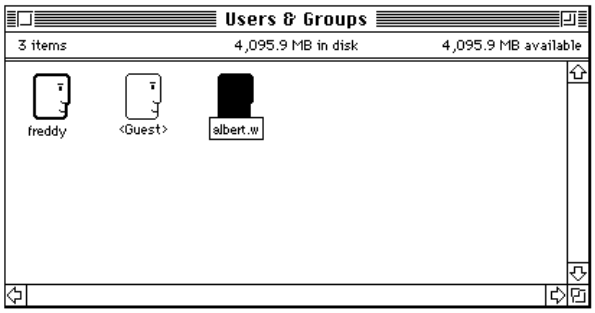


2 **Choose New User from the File menu.**

An icon appears, with the label New User.

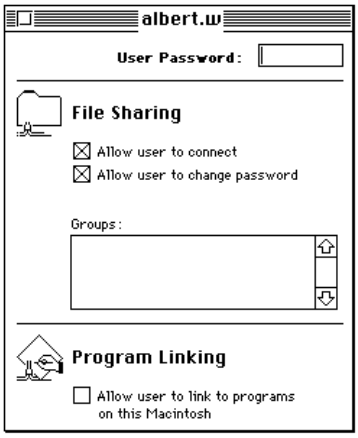
3 **Change the name to that of the new user.**

This is the name the user will type when connecting to your shared disk.



4 Double-click the new user's icon.

A window appears.



5 Assign a password by typing it into the User Password text box.

Be sure to tell the user what password you typed. Allow the user to connect to your shared disk by leaving the "Allow user to connect" checkbox checked. Allow the user to change his or her own password by leaving the "Allow user to change password" checkbox checked.

6 Close the window; then click Save in the dialog box that appears.

Note: Use the icon labeled Guest to permit or deny access to guest users who have no password. This option may be disabled for your system. See your system administrator.

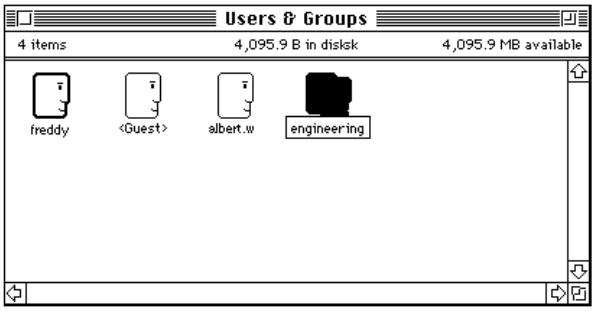
Naming specific groups

You can create a group of users (called a *registered group*) as follows:

1 Open the Users & Groups control panel; then select New Group in the File menu.

An icon appears.

2 Change the name of the new group icon to the name you want to assign to the new group.



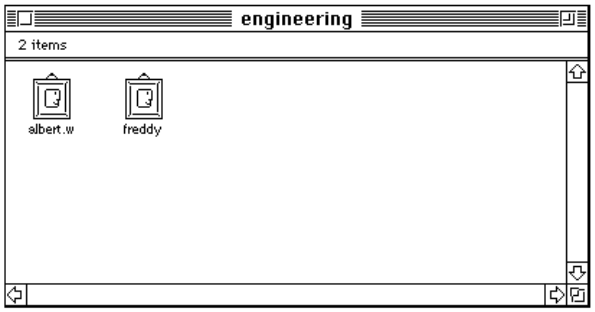
3 **Assign users to a group by dragging their icons to the group icon.**

4 **Close the Control Panel.**

Checking group membership

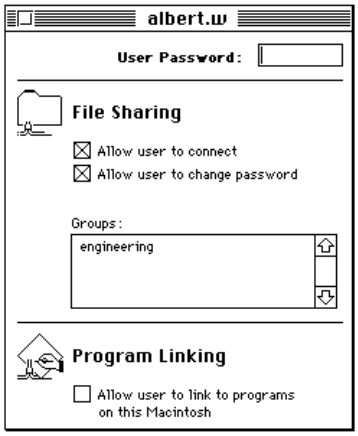
To display the names of the members of the group, do this:

- **Double-click the group icon to open it.**



To display a list of all the groups to which a user belongs, do this:

- **Double-click the user's icon.**



The Groups box lists the user's memberships.

Turning guest access on and off

You can turn off access to your folders for guests who have no password. Follow these steps:

1 **Open the Users & Groups control panel (as described earlier in this section).**

2 **If the "Allow guests to connect" checkbox is checked, click it to remove the X.**

3 **Click the close box.**

Follow these steps to turn on guest access:

1 **Open the Users & Groups control panel (as described earlier in this section).**

2 **If the "Allow guests to connect" checkbox is not checked, click it to add the X.**

3 **Click the close box.**

Program linking

Many applications support program linking, which allows programs to communicate and exchange information. You can decide whether you want to permit other users to link to your applications and whom to permit.

For more detailed information, see the *Macintosh Networking Reference* published by Apple Computer (part number 030-3936-A).

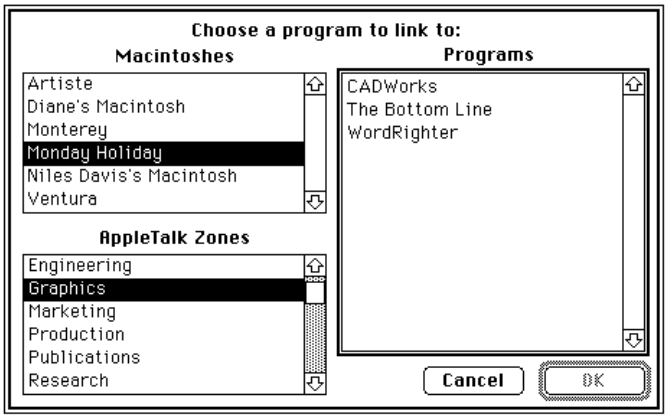
Check your application's documentation to be sure that it supports program linking and to learn how it implements program linking.

Linking to a program

To link to a program, follow these steps:

1 **Within your program, display the menu that allows you to link programs.**

See the application's documentation for details. This step normally displays a dialog box that permits you to choose a computer or server to connect to, a zone, and a program to link to—much as is done in the Chooser.



2 Select the zone, the computer or server, and the program; then click OK.

3 Proceed as though you were connecting to a server, as described in "Accessing Another Computer with AppleShare," earlier in this chapter.

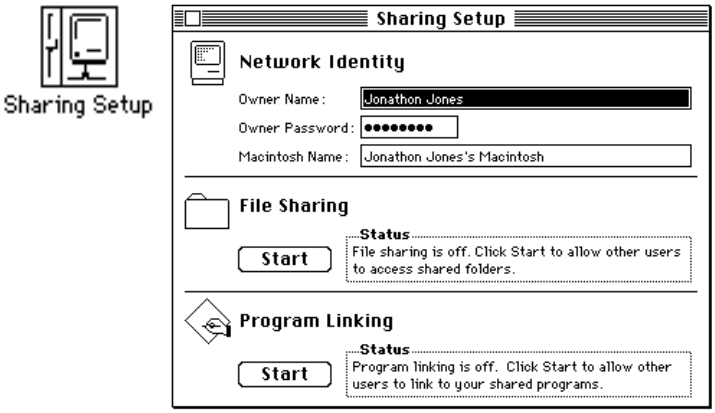
To disconnect the link, quit from the program.

Allowing others to link to your programs

When you turn program linking on, other users on the network can connect to your computer to link programs.

Turn program linking on as follows:

1 Open the Sharing Setup control panel window.



See "Making Your MAE Files Available to Others," earlier in this chapter.

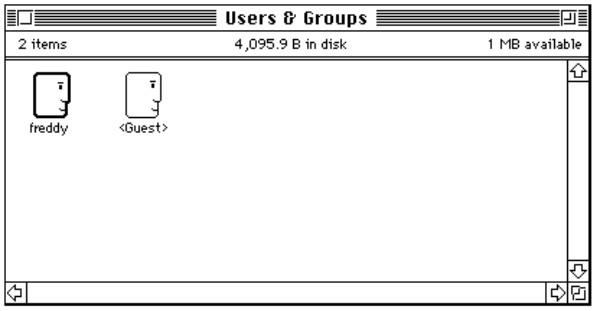
Be sure that you have filled in the boxes in the Network Identity section of the control panel.

2 Click the Start button in the Program Linking section of the control panel window.

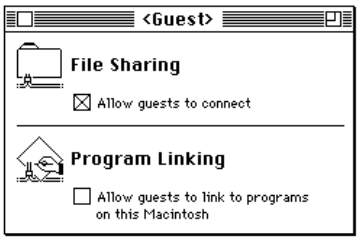
3 Click the close box.

To control guest access to program linking, follow these steps:

1 **Open the Users & Groups control panel (as described earlier in this section).**



2 **Double-click the Guest icon.**



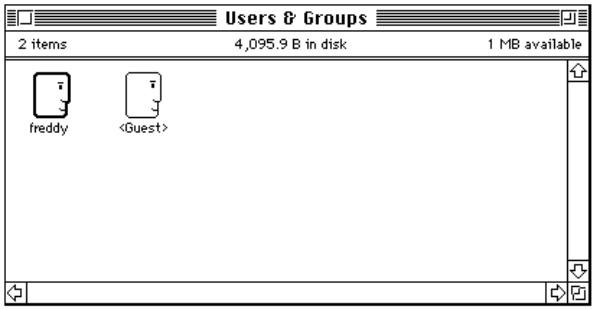
3 **If the "Allow guests to link to programs on this Macintosh" checkbox is empty, click it to permit guest access; to deny guest access, click it to remove the X.**

4 **Click the close box.**

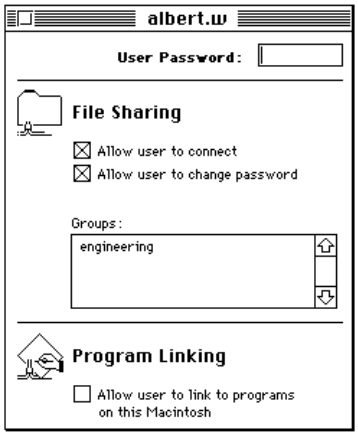
Naming specific users to link to programs

Follow these steps to name specific users who are permitted to link to your programs:

1 **Open the Users & Groups control panel, as described in "Naming Specific Users," earlier in this chapter.**



2 **If the user is already registered for file sharing, double-click the user's icon. If not, choose New User from the File menu and type the name of the user. Then double-click the icon.**



3 **Check the box labeled "Allow user to link to programs on this Macintosh" if it is not already checked.**

4 **Click the close box.**

5 **To save your changes, click Save in the dialog box that appears.**

Changing the TCP/IP network interface with MacTCP

MacTCP is a software driver that implements the TCP/IP protocols for the Mac OS. It allows you to use Macintosh TCP/IP client utilities such as Telnet or Fetch.

Note: MacTCP `ping` does not work correctly on HP-UX and Solaris systems. Instead, use the UNIX `ping` command.

In MAE, the MacTCP control panel window has two functions:

- allowing you to view the Internet Protocol (IP) addresses of your TCP/IP network interfaces
- allowing you to choose which TCP network interface will be used by MAE if more than one interface is installed

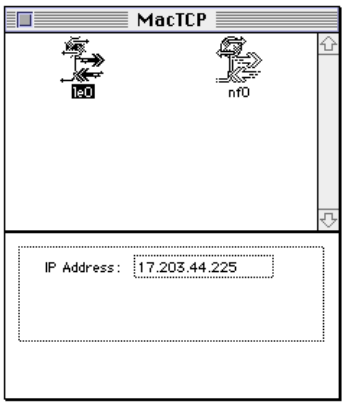
On a Macintosh computer, you can administer TCP/IP features by using the MacTCP control panel. On MAE, however, the TCP/IP protocols are implemented through the UNIX interface. You cannot use MacTCP to change your IP address or change the network interface used by your workstation—you can only change the network interface used by MAE.

Note: You cannot use Macintosh programs that allow your workstation to act as a TCP server.

To choose the TCP/IP network interface that MAE will use, follow these steps:

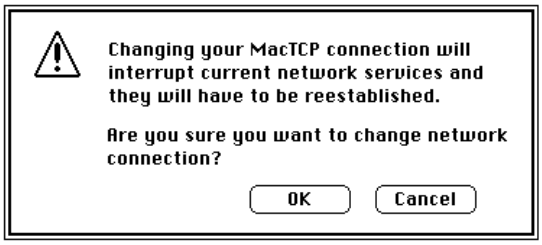
1 **Choose Control Panels from the Apple (🍎) menu and double-click the MacTCP icon to open it.**

The MacTCP control panel window opens, showing an icon for each TCP/IP network interface. The IP address of the selected interface is displayed in the bottom portion of the window.



2 **Click the icon for the TCP/IP interface you want MAE to use.**

If you have selected a new interface, the following message appears:



Ensure that you have made the correct choice and click OK.

3 **Close the MacTCP control panel by clicking the close box.**

8 Managing UNIX Files and Directories in MAE

This chapter describes how to manage UNIX files and X applications on your MAE desktop. It explains how to perform the following tasks:

- opening UNIX files on the MAE desktop
- adding command options when running a UNIX command
- changing UNIX access permissions
- automatically executing a UNIX command when opening specified files
- using mounted directories as independent volumes
- using UNIX file formats and AppleSingle and AppleDouble file formats

Opening UNIX files on the MAE desktop

You can use MAE to open UNIX documents, run UNIX commands, and launch X applications as follows:

- **Locate and double-click an icon representing a UNIX file.**

  A separate X terminal window appears. The contents of the window may vary in appearance, depending on the nature of the file:

  - If you double-click an icon for a UNIX document, the contents of the document appear in the terminal window in the default text editor.

    MAE specifies `vi` as the default text editor. For information about changing the default text editor, see "Changing the Default Editor" in Chapter 9.

  - If you double-click an icon for a UNIX command, the results of the command appear in the terminal window.

    If the terminal window is blank, you may need to add options or arguments to the command. See the next section, "Adding Command Options When Running a UNIX Command File."

    Note: You cannot run a UNIX command from a Mac OS floppy disk.

  - If you double-click an icon for an X application, several application windows may appear in addition to the terminal window.

    If you prefer not to see the terminal window, you can use the X Client Setup control panel to specify that certain applications open without terminal windows. See "Customizing X Application Startup" in Chapter 9.

  When you are finished with the terminal window, close it.

  Note: If you use the MAE Get Info command to discover features of either a text file or a binary file, the file is listed as a MAE Helper Document. This file type supports file launching.

  If a MAE filename contains a slash (/) character, the slash is translated to a colon (:) on the UNIX side because the slash has special meaning in the UNIX file system. Conversely, a UNIX filename containing a colon (:) will have the colon replaced by a slash in the MAE filename, because the colon has special meaning in the Macintosh file system.

Adding command options when running a UNIX command file

To run a UNIX command, double-click the icon of the UNIX command.

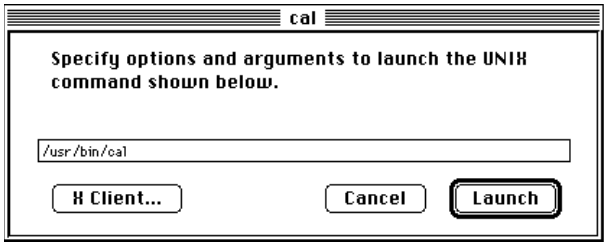
By default, double-clicking an icon for a UNIX command on the MAE desktop runs the command without letting you specify options or arguments to the command. However, you can use the launch dialog box to run UNIX commands with options and arguments.

To run a UNIX command with options and arguments, follow these steps:

1 **Press the Control key while double-clicking the UNIX file icon.**

The launch dialog box appears. The contents of the box depend on the type of file you double-clicked.

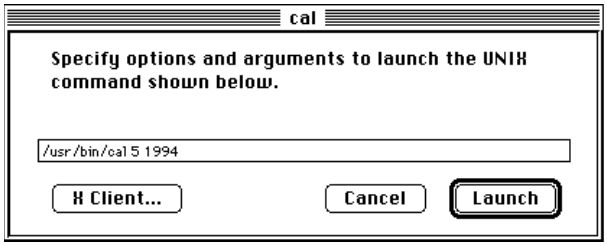
For example, if you press Control and double-click the `cal` command icon, a dialog box like this one appears.



2 **Add any appropriate options and arguments to the text box.**

Do not include special symbols (such as a tilde ~) or environment variables (such as `$HOME`). MAE does not interpret these special symbols in the same manner as a UNIX environment.

For example, to display the calendar for May 1994, your dialog box might look like this one.



3 **Click Launch.**

MAE runs the command and displays the results in a window on your screen.

Note: The X Client button opens a dialog box that allows you to add the command to the list in the control panel, if it isn't already in the list. See "Customizing X Application Startup" in Chapter 9.

Setting UNIX permissions

UNIX allows you to set file-access permissions and directory-access permissions.

File-access permissions

File-access permissions determine who (that is, which user accounts) can use a particular file and what they can do with it. You can set permissions for each file that you own. Three types of permissions exist:

- **Read permission:** You can open the file and read it.
- **Write permission:** You can change the file.
- **Execute permission:** You can run an executable file, such as an application or a script.

Directory-access permissions

The same three kinds of permission exist for directory access as for file access (described above), but read, write, and execute have different meanings when they refer to a directory.

- **Read permission:** You can list the contents of the directory, but you cannot go into the directory to add, rename, or remove items unless you also have write and execute permissions.
- **Write permission:** You can add, remove, or rename the items in the directory if you already know their names, but you cannot go into the directory nor list its contents unless you also have read and execute permissions.
- **Execute permission:** You can go into the directory, but you can neither list, add, remove, nor rename its contents unless you also have read and write permissions. You can access items in the directory only if you know their names.

Note: If you change permissions on an AppleDouble file format from the UNIX side, the Finder will not recognize the permission changes unless you change the permissions on both the file and the resource file (%*file*).

Categories of users

Every file's permissions grant or deny access according to the user's access class; that is, his or her membership in three categories. A description of these three categories follows:

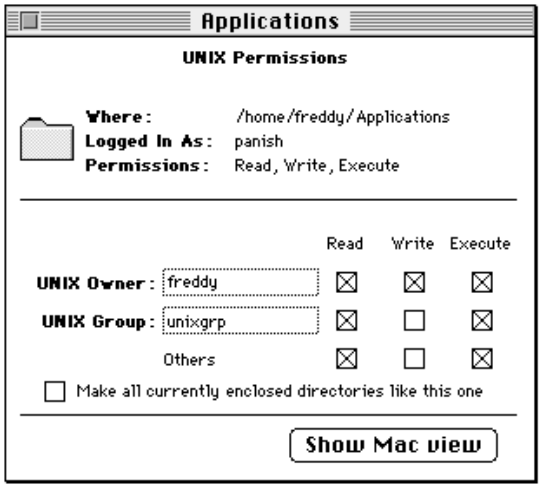
- **Owner (sometimes called user) permission** applies to the user name that owns the file. Owner permissions apply only to the user logged in as the owner of the file. The owner of a file or folder is the user who created it or to whom ownership has been granted.
- **Group permission** applies to a specifically named group of users. A file's group permissions apply only to those who are assigned to this group.
- **Others (sometimes called world) permission** applies to all other users. If the file has others permission, everyone logged in has those permissions.

MAE provides a menu item that lets you set access permissions for your UNIX files and folders. To set the permissions for a particular file or folder:

1 **Select a file or folder by clicking its icon once.**

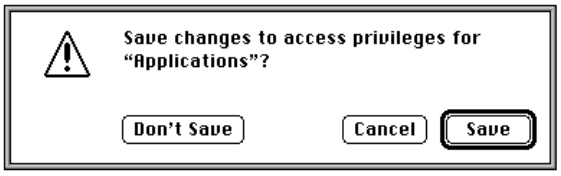
2 **Choose UNIX Permissions from the File menu.**

A UNIX permissions dialog box appears. The dialog box illustrated here is for a folder.



3 Make any changes you want in the dialog box and then close the dialog box.

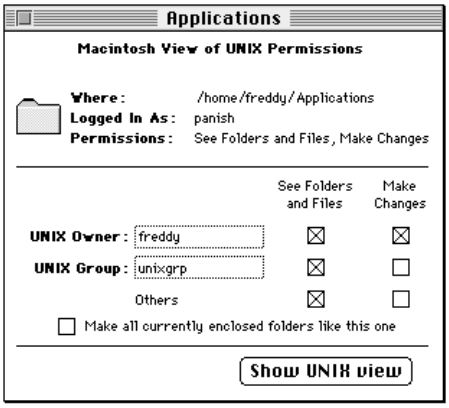
An alert box appears, asking you whether you want to save your changes.



4 Click the Save button to save your changes.

To close the dialog box without saving your changes, click Don't Save. You can also click the Cancel button, which will leave the dialog box open without saving your changes.

Note: When you display the UNIX Permissions dialog box for a folder, a button labeled "Show Mac view" appears at the bottom of the dialog box. If you click this button, the dialog box displays the folder permissions in Macintosh terminology rather than UNIX terminology. In Macintosh terminology, "See Folders and Files" is equivalent to UNIX "read" permissions, and "Make Changes" is equivalent to UNIX "write" permissions. To return to the UNIX view of file permissions, click the "Show UNIX view" button.



See also "Differences Between UNIX and Macintosh Access Permissions" in Chapter 7.

Launching commands

You can launch a UNIX command by the drag-and-drop method as follows, with or without adding options. To launch without adding options, follow these steps:

- **Drag the icon of a file or directory to the icon of the UNIX command.**

  The UNIX command will execute with the file or directory as its argument. For example, if you drag the icon of a directory to the `ls` icon, a new X window displays a listing of the files in that directory.

  To use options, follow these steps:

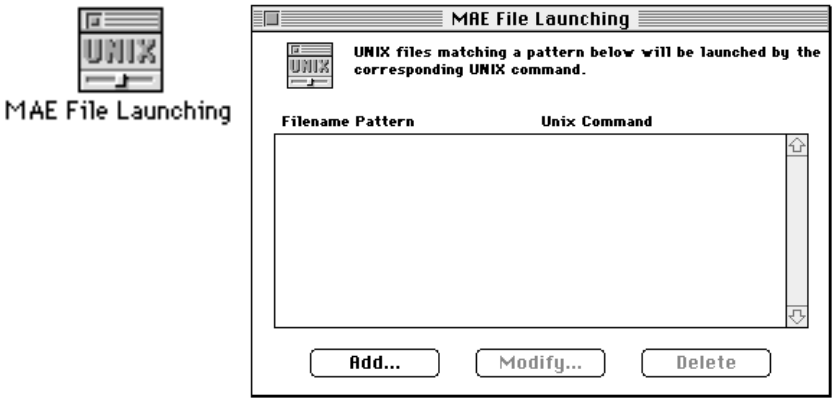
- **Hold down the Control key while dragging the file or directory to the UNIX executable's icon.**

  The launch dialog box appears. Follow the directions in "Adding Command Options When Running a UNIX Command File," earlier in this chapter.

Automating command execution for specified files

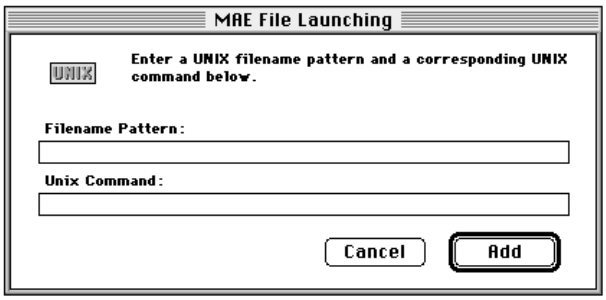
You can specify that opening any file (or any member of a group of files) will automatically launch a specified UNIX command and that the file (or group of files) will be the argument of the command.

1 **Choose Control Panels from the Apple menu and open the MAE File Launching control panel.**



2 Click Add.

A dialog box appears. To return to the control panel *without* typing a pattern or command, click Cancel in the dialog box.



3 In the Filename Pattern box, type a filename pattern that identifies a file or group of files. Then press Tab.

You can include wildcard characters, such as an asterisk (*), where appropriate. For example, to identify all files ending with `.tar.Z` you would type `*.tar.Z` in the Filename Pattern box.

IMPORTANT Keep the following in mind when using the MAE File Launching window.

- If the specified filename is not preceded by *, you must type its full pathname. If you type the filename alone, without the wildcard or without its full path, the system will be unable to find the file.
- If the filename contains spaces (as is the case with many Macintosh files), enclose the full pathname in quotes or precede each blank space with a backslash. This causes the system to view the space as an ordinary character.

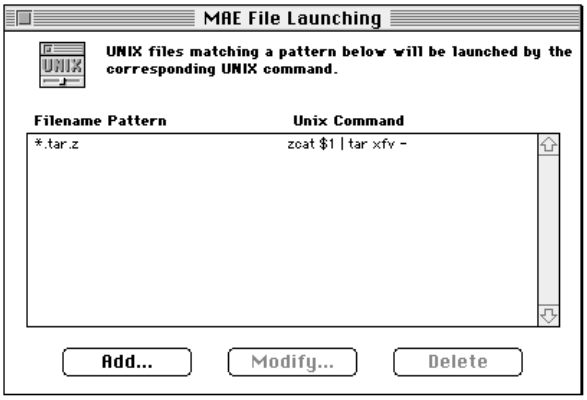
4 In the UNIX Command box, type the command you want MAE to launch when you open files specified in the Filename Pattern box.

To pass a filename to the command, include the substitution symbol `$1` as a place holder for the filename. You can also include command options, pipes, subshells, and shell variables.

For example, to decompress and extract the image of any file ending in `.tar.Z` automatically when you double-click the file's icon on the MAE desktop, you would type `zcat $1 | tar xfv -` in the UNIX Command box.

5 **Click Add or press Return.**

The pattern and command you entered appear in the control panel window.



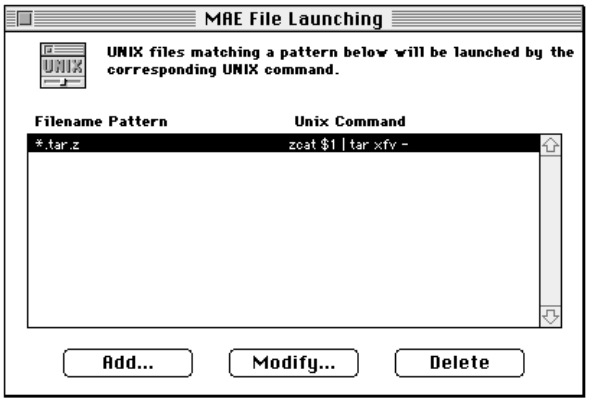
When you double-click an icon to open a file, MAE searches the list of filename patterns from the top down to determine the command to use. Because a file can match more than one filename pattern in the list, the order of the patterns in the list is **IMPORTANT**. You can change the order of the items by dragging an item to a different location in the list.

Modifying a pattern or a command in the list

To change a filename pattern or UNIX command in the list, follow these steps:

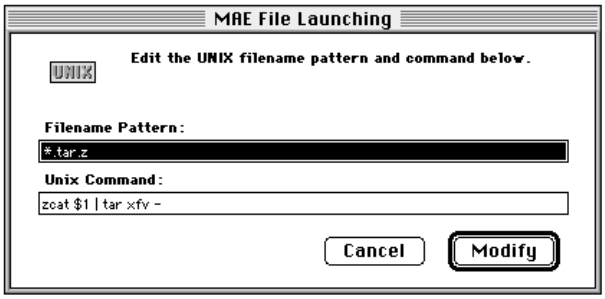
1 **Choose Control Panels from the Apple menu and open the MAE File Launching control panel.**

2 **Click the item in the list that you want to change.**



3 **Click Modify.**

A dialog box appears.



4 **Enter new information in the boxes, then click Modify.**

The changed item appears in the control panel window.

Deleting a pattern and command from the list

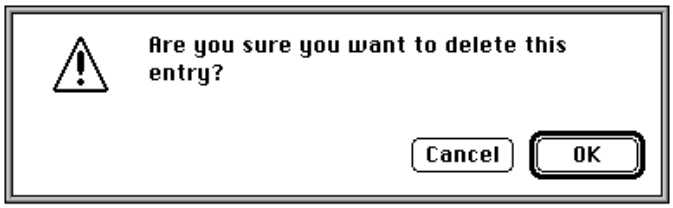
To remove a filename pattern and UNIX command from the list, follow these steps:

1 **Choose Control Panels from the Apple menu and open the MAE File Launching control panel.**

2 **In the list, click the item that you want to remove.**

3 **Click Delete.**

An alert box appears.



4 **Click the OK button to remove the item.**

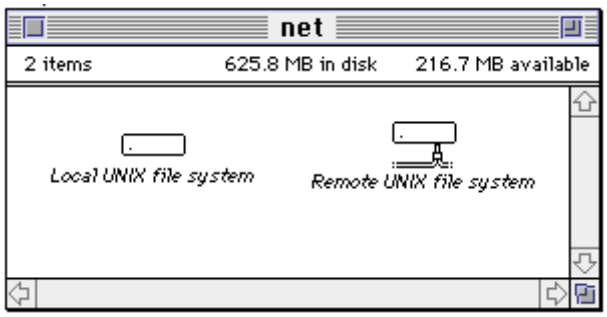
If you want to leave the item in the list, click Cancel.

Using mounted UNIX directories as independent volumes

In the Mac OS, all volumes, such as local hard disks, hard disk partitions, CD-ROM discs, and floppy disks, including volumes mounted over a network, are represented by icons on the desktop. In UNIX, additional file systems are mounted as directories somewhere below the root directory. MAE accommodates both behaviors by representing mounted UNIX file systems as Mac OS–style multiple independent volumes (MIVs). A Macintosh alias to a Macintosh volume is used at the UNIX file system mount point.

Note: You can pick any UNIX directory that you want to represent as the root of a MAE independent volume (a MIV) by modifying the file `.MIV_file`. For more information, see the section “MAE Independent Volumes” in Chapter 2 of the *MAE Administrator’s Manual.*

If you use MAE to look at a folder in which a UNIX file system is mounted, you will notice that the mount point is represented by a Mac OS–style alias to a volume icon as shown in the following figure.



When you double-click an icon to open the directory, you see the directory window open, as you would expect, but you also see an icon appear on the desktop to represent the directory as an independent volume. You can then use the independent volume as you would any Mac OS volume until you unmount the directory by dragging its icon to the trash.

Note: An alias representing an independent volume is considered to be *locked*; that is, you cannot change its name or move it from its folder until the directory is unmounted.

For more information about using MIVs, see Chapter 2, “Customizing MAE and Your Workstation,” in the *MAE Administrator’s Manual*.

AppleSingle and AppleDouble file formats

Files in the Macintosh hierarchical file system (HFS) can consist of two parts: a data fork and a resource fork. The data fork typically contains just text or data. The optional resource fork typically contains file attributes such as Finder information (document type, creator application, icon, and so forth), formatting information, and message strings. Other file systems usually don't support such attributes, and therefore usually don't recognize resource forks. To preserve all attributes supported by the Macintosh hierarchical file system (HFS) on such systems, Apple supports two file formats: AppleSingle and AppleDouble format. MAE can read and write both formats.

Note: This difference in file systems is the reason that MAE and UNIX often report different sizes for the same file.

By default, MAE stores files (except text files) in AppleSingle format. AppleSingle format provides a structure for storing all contents and attributes of a file in a single file. This structure minimizes the potential for file corruption (in particular, the loss of the resource fork information) when the file is stored by a foreign file system.

AppleDouble format preserves the separation of the data and resource forks by storing each in its own file. The two files share the same name except that the name of the resource fork begins with a `%` sign. For example, a file named `file1` would appear as `file1`, the data fork file, and `%file1`, the resource fork file.

Macintosh applications are likely to have a resource fork. Document files often don't have a resource fork; those that do have one often use it to store only icons and formatting information. For such files it is sometimes possible to use the information in the data fork by itself. MAE takes advantage of this fact by storing text files in AppleDouble format. Mac OS applications can use both forks of the files as they normally would, and UNIX applications can use just the data fork file and ignore the resource fork file.

Generally, the use of the two file formats is transparent. For example, if you copy UNIX files between two copies of MAE, each MAE handles the files appropriately. However, if you were to copy UNIX files to a Macintosh computer, those files would be given a resource fork. Then those same files, subsequently copied to MAE, would be treated as Macintosh files in AppleSingle format and likely be unusable by UNIX.

If you encounter problems with a particular application being unable to open any files, use the AppleDouble control panel to specify that the application should save documents in AppleDouble format. Alternatively, you can use the utility `asdtool` (installed in the `apple/bin` directory by default) to convert between the two formats.

You can instruct MAE to save files as AppleDouble by default by adding the `-filedouble` option to the MAE command line. This forces MAE to keep Mac OS files as separate data and resource forks. From MAE, it appears as one file, but within UNIX, you see a file '*name'* (data fork) and '%*name'* (resource fork). The file '*name'* is the same size in UNIX as the Finder reports.

Using FTP utilities such as Fetch from MAE can also be problematic. When "getting" a file, Fetch passes the file to MAE to be written to disk. This works fine for Macintosh files since they are written as AppleSingle files. However, when "getting" a UNIX file, MAE will likewise write this file as an AppleSingle file, which can make it unusable by UNIX applications.

9 Customizing Your MAE Environment

This chapter explains how to customize the way MAE operates. It includes the following:

- using control panels
- specifying startup items
- resizing the MAE window
- changing the default editor
- changing keyboard mapping
- customizing X application startup
- moving items into and out of your System Folder

See also Appendix A of this manual for a summary of basic Macintosh skills, and Appendix B of this manual for features that are new in Version 3.0 of MAE.

Using control panel features specific to MAE

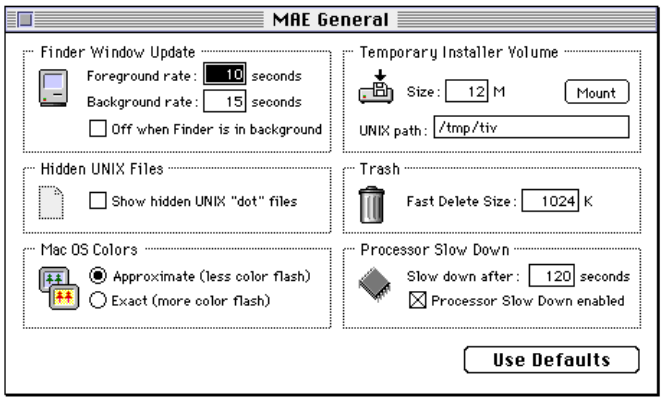
This section explains how to use the control panels that are specific to MAE. It also includes control panels that work differently in MAE than on a Mac OS computer. For general instructions on using control panels, and for information on control panels that are standard with System 7.5.3, see Appendix A.

Using the MAE General control panel

The MAE General control panel allows you to perform the following tasks:

- Specify how often the Finder checks for changes to the file system (using the Finder Window Update section)
- Create a temporary installer volume (see Chapter 3 of this manual)
- Control color flashing when moving between MAE and other X windows (using the Mac OS Colors section)
- Show hidden UNIX dot files when viewing a folder's contents by name.
- Set the minimum file size for the fast-delete feature
- Reduce MAE's use of system resources when MAE has been idle for a specified period of time (using the Processor Slow Down section)

To use the MAE General control panel, choose Control Panels from the Apple (🍎) menu; then double-click the MAE General icon in the Control Panels window.



Finder window update

The Finder window update determines how often the Finder checks for new files that were created outside MAE. For example, if you created a text file in your home directory (using a utility such as `vi`), and your home directory was open in MAE, you wouldn't see that file until the next Finder update occurred. If you do not need frequent Finder window updates, you can improve performance by setting this number to a high value (such as 120 seconds) and turning off Finder window update when the Finder is not the active (that is, the frontmost) Macintosh application. See Chapter 7 of the *MAE Administrator's Manual*.

Displaying UNIX "dot" files on the desktop

Files whose names begin with a dot (`.`) are displayed if you have checked the "Show hidden UNIX 'dot' files" checkbox. If you don't want to display these files, remove the check from the checkbox.

Mac OS colors (reducing color flash)

The term "color flash" refers to a display of unexpected colors and a screen flash that occurs when you move the pointer among applications with different color tables. (A *color table* is an indexed lookup table used to display colors on a computer screen.) Color flash occurs when the hardware cannot support the number of colors that must be displayed concurrently. This sometimes happens when you run an X application that uses its own color table.

The Mac OS Colors section allows you to trade off exactly matching the colors used by the Mac OS against reducing the amount of color flash you might experience.

When you choose the "Exact (more color flash)" option, the default colors used by MAE are the same as those on a Macintosh. You should choose this option when you use color-intensive applications that work best when MAE is using the Macintosh colors.

When you choose the "Approximate (less color flash)" option, MAE attempts to keep the color definitions of its own color table in synchronization with the *default color table*, a color table that is shared by many standard X clients. This approach minimizes any color flash you might experience. This option is the default, and you should choose it unless you use applications that require exact Mac OS colors.

Note: Changes to the Mac OS Colors section do not take effect until you restart MAE.

For details, see "Color Flash," in Chapter 3 of the *MAE Administrator's Manual*.

Installing with the temporary installer volume (TIV)

A temporary installer volume (TIV) is a virtual hard disk—a file on the UNIX file system that acts within MAE like a Macintosh hard disk.

To use this section of the MAE control panel, follow these steps:

1 **Type a number of megabytes in the Size box. Use a size sufficient to accommodate the application you are installing (at least 10 MB).**

If you're not sure about the amount of disk space your application needs, consult its documentation.

2 **Click the Mount button.**

The TIV icon appears on your desktop.

3 **Double-click the TIV icon to open the TIV window.**

4 **Install the application according to its documentation.**

IMPORTANT When you're asked to choose a destination, be sure to specify TIV (or the name of the TIV, if you have changed it).

Note: If your TIV is too small to accommodate the installation, drag it to the Trash and create a new TIV with sufficient space.

5 **Drag the newly installed files from the TIV to your home directory.**

6 **If you are able to use the newly installed application from your home directory, drag the TIV to the Trash.**

If you are not able to use the application, see your system administrator for help.

Setting the minimum file size used for the Fast Delete feature

When you drag a file to the Trash from a file system other than the one containing your home directory, MAE copies the file to the Trash and deletes it from its original location. Depending on the size of the file, this copy operation can take a significant amount of time. You can eliminate this time-consuming operation by using a feature called Fast Delete.

The Fast Delete feature allows you to set a minimum file size. When the file you're throwing away is larger, MAE offers you the option of deleting the file immediately, without copying it to the Trash. You cannot retrieve the file once it has been deleted.

To set the Fast Delete size, do this:

- **Type a new minimum file size in the Fast Delete Size box next to the Trash icon on the right side of the control panel window.**

Slowing MAE's use of the processor

In order to prevent MAE from using the workstation's processor unnecessarily when MAE is not in use, the Processor Slow Down setting instructs MAE to look for inactivity. After the specified number of seconds of inactivity have elapsed, MAE slows the processor. The default is 120 seconds.

Note: If processor slow down is on, iconifying the MAE window is an additional way to tell MAE to slow its use of the processor.

If you wish to change the default, type the number of seconds you want to elapse. To turn off the Processor Slow Down feature, click the "Processor Slow Down enabled" checkbox to remove the X.

Setting the date and time

You can use the Date & Time control panel in MAE to view the date and time and to change the way they are displayed within MAE. You use UNIX date and time controls to modify the date and time.

Using MacTCP

You can view your TCP/IP network settings in the MacTCP control panel window, but you can change only the TCP/IP network interface to be used by MAE. You operate TCP/IP settings through UNIX commands. See Chapter 7 of this manual for more information on MacTCP.

MAE File Launching

For information about using this control panel, see "Automating Command Execution for Specified Files" in Chapter 8 of this manual.

Changing the way the contents of a window appear

You can change the way the contents of Finder windows are displayed. You make these changes in the Views control panel.

Use the Views control panel to change the font and font size used in the Finder.

Adjusting the amount of memory

The Memory control panel allows you to adjust the amount of memory available to MAE.

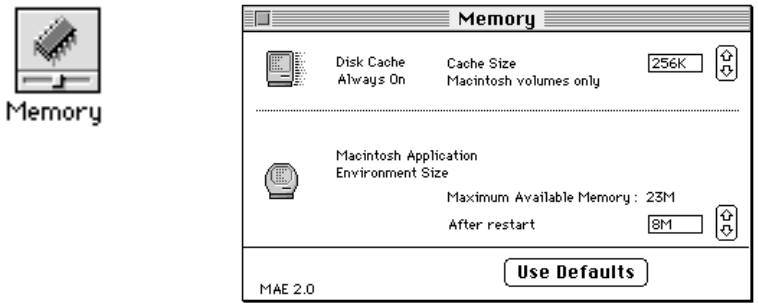
Note: This control panel affects *only* the MAE memory. You cannot use it to control memory features of the rest of your system.

Adjusting the memory size of MAE

You may want to increase the amount of memory allotted to MAE if, for example, you want to run a number of applications simultaneously. MAE can be set to use up to a *maximum* of 70 percent of the physical memory on your UNIX workstation.

To adjust the memory size of MAE, follow these steps:

1 Choose Control Panels from the Apple (🍎) menu and open the Memory control panel.



2 To adjust the memory size, click the up or down arrow in the Macintosh Application Environment Size section.

The amount of memory allocated to MAE is preset to 16 MB.

To reset the memory size to 16 MB, click the Use Defaults button.

3 Choose Restart from the Special menu.

After you restart MAE, you can choose About This Macintosh from the Apple (🍎) menu to see the new amount of memory available to MAE.

X Client Setup

For information about using this control panel, see "Customizing X Application Startup," later in this chapter.

Using the Network control panel

If more than one network interface exists on the workstation, MAE will select a default interface when it is launched. To switch between two or more network interfaces on your MAE workstation, select the interface you want in the Network control panel. For details, see "Changing the AppleTalk Network Interface" and "Changing the TCP/IP Network Interface With MacTCP," in Chapter 7 of this manual.

Specifying items to open at startup

To have a file open automatically when you start MAE, drag the file's icon or its alias to the Startup Items folder, which is inside the System Folder in your home directory. Any programs or documents (or their aliases) that you put in the Startup Items folder are opened when you start MAE.

If you no longer want a file to open automatically when you start MAE, remove the file's icon or alias from the Startup Items folder.

Resizing the MAE window

When you start MAE, its window appears on your screen. By default, MAE sets the window size to 640 x 480 pixels, which is equivalent to a Macintosh 14-inch screen. You can resize the window in one of three ways:

- by using the standard window controls (determined by your workstation environment)
- by using the Monitors control panel
- by specifying the `-pixelscale` option with the `mae` command

Note: When you resize the MAE window, MAE adjusts the placement of icons to maintain their alignment along the right edge of the desktop. To avoid the movement of icons you have placed on the desktop, you may want to minimize the MAE window instead of using window controls to resize the MAE window to save screen space.

Using window controls to resize the MAE window

To resize the MAE window by using window controls, do this:

- **Use your window manager to resize the X window that contains MAE.**

  The appearance and position of the control depends on your workstation. See the documentation that came with your workstation.

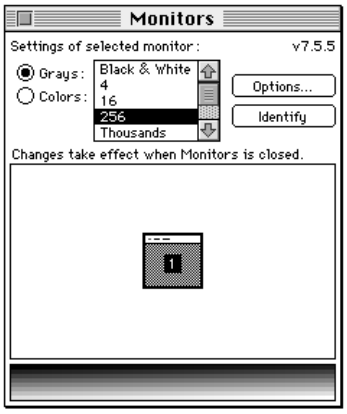
  Note: Certain window resizing tools might not scale to the exact size you specify. This is because the MAE window resizes to a multiple of 32. If you use window zoom features, the MAE window may not unzoom to the previous size. The best way to resize a window is from the Monitors control panel.

Using the Monitors control panel to resize the MAE window

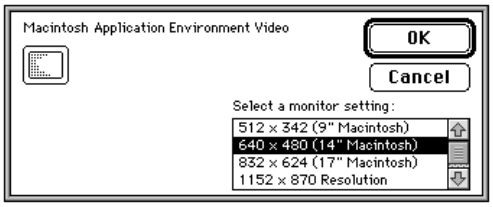
The Monitors control panel lets you choose from several standard window sizes for MAE. To resize the window to a custom size, use standard X window manager controls as described in the previous section, “Using Window Controls to Resize the MAE Window.”

To resize the MAE window by using the Monitors control panel, follow these steps:

1 **Choose Control Panels from the Apple (🍎) menu and open the Monitors control panel.**



2 **Click the Options button.**



3 **Select the screen size you want and click OK.**

The new size takes effect immediately.

4 **Close the Monitors control panel by clicking the close box.**

Magnifying the MAE window

To magnify the MAE window when you start MAE, you can use the `-pixelscale` option with the `mae` command. This option doubles the size of the MAE window in both the vertical and horizontal axes. You can use the `-nocursorscale` option with the `-pixelscale` option to retain the original size of the mouse pointer. See Appendix C for more information.

Note: Using this option to resize the MAE window can significantly increase the shared memory requirements.

Changing the default terminal

When you launch a UNIX command or open an X application, MAE displays a terminal window. You can specify a different default terminal or add command options to the current default terminal using the X Client Setup control panel.

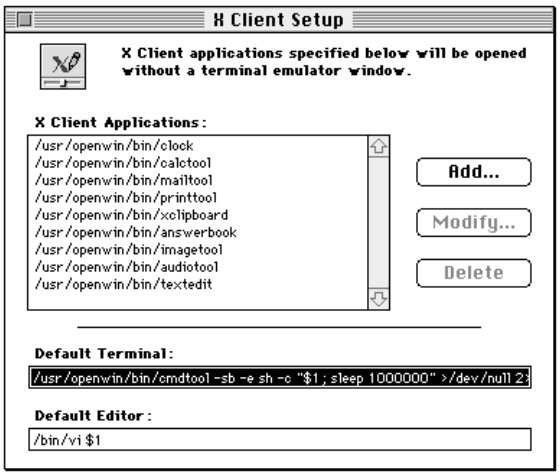
The type of terminal window is determined by the workstation on which you are running MAE. The default terminals are

Workstation	Terminal window
Hewlett-Packard	`hpterm`
Sun	cmdtool

WARNING Do not change the default terminal unless you are an experienced UNIX user. The use of quoting, subshells, and `sleep` is critical and risky. Consult with your system administrator for more information.

To change the default terminal, follow these steps:

1 **Choose Control Panels from the Apple (apple) menu and open the X Client Setup control panel.**



2 **Select the text in the Default Terminal box.**

You can select the text by pressing the Tab key or by dragging across the text.

3 **Type a command that will launch the new default terminal.**

You can include any options you want. The changes take effect after you close the control panel.

Changing the default editor

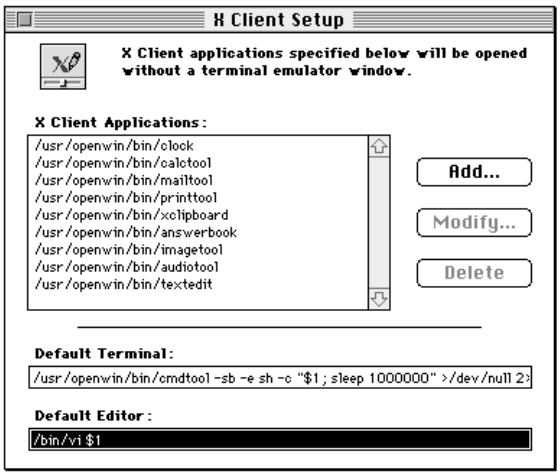
MAE provides a default text editor that opens when you double-click the icon for a UNIX text file or document. You can change the default editor by using the X Client Setup control panel.

To change the default editor, follow these steps:

1 **Choose Control Panels from the Apple (🍎) menu and open the X Client Setup control panel.**

2 **Select the text in the Default Editor box.**

You can select the text by pressing the Tab key or by dragging across the text.



3 **Type a command to open a UNIX text editor.**

You must use `$1` as a substitution symbol for the filename.

For example, if you wanted the default editor to be Emacs, you would type `emacs $1` in the Default Editor text box.

IMPORTANT If the editor's filename contains spaces, enclose the full pathname in quotes or precede each blank space with a backslash.

The settings take effect after you close the control panel and remain in effect until you change them.

Changing the keyboard mapping

Keyboard mapping determines the relationship between the keys on your keyboard and their functions in MAE. A keymap tells MAE what character to produce when you press a key on your keyboard. MAE provides a number of keymaps that follow Macintosh conventions for entering characters.

Pressing a key usually generates the character marked on that key. However, to generate certain characters, you may have to press multiple keys in sequence. For example, to generate the character “é”, you first press Option-E. Because nothing is displayed at this time, the Option-E combination is known as a “dead-key” combination. Then you press E again and the entire “é” character is displayed. The Mac OS uses dead-key sequences to generate many non-US characters. On some non-US keyboard layouts, dead-key combinations are assigned to a key on the workstation keyboard that would normally generate a character. You can use the Key Caps application in the Apple (**)** menu to determine the combination of keys that generates a particular character.

You cannot edit the MAE keymaps, but you can change the modifier keys. See “Reassigning Modifier Keys,” later in this section.

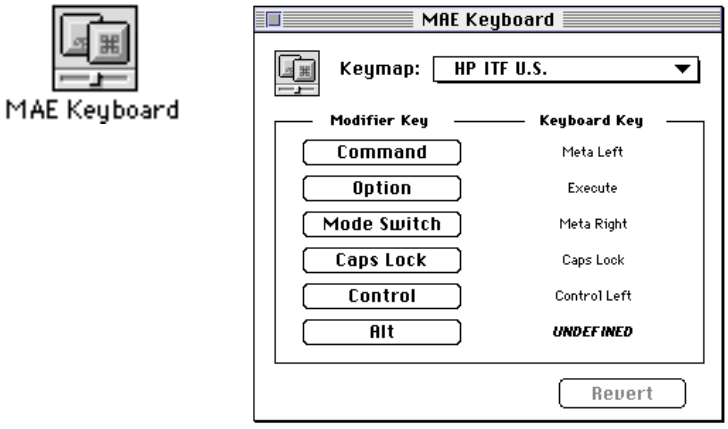
When you start MAE, it tries to determine the type of keyboard you have and then selects the keymap most appropriate for that keyboard. If you change keyboards at your workstation or display MAE on a remote workstation that has a different keyboard, you should verify that a new keymap that corresponds to the new keyboard has been selected. See “Choosing a New Keymap,” later in this section, for instructions.

IMPORTANT The keymaps supplied by MAE assume certain default keyboard mappings on the workstation on which you display MAE. If you change the keyboard mapping of the X display server on that workstation while MAE is running, unexpected behavior may result in MAE when you press a key on the keyboard. In the MAE Keyboard control panel, select the Generic keymap and then the previously selected keymap to restore the MAE keyboard mapping.

Choosing a new keymap

MAE provides keymaps for a variety of keyboards, including foreign-language keyboards. To choose a new keymap, follow these steps:

1 **Choose Control Panels from the Apple (🍎) menu and open the MAE Keyboard control panel.**



IMPORTANT Make sure you open the MAE Keyboard control panel, not the Keyboard control panel.

2 **Choose a keymap from the Keymap pop-up menu.**

Choose a keymap that corresponds to your keyboard. If there is no selection that corresponds to your keyboard, select generic layout and set the modifier keys as desired for your keyboard. The setting in the Keyboard control panel determines the generic menu title.

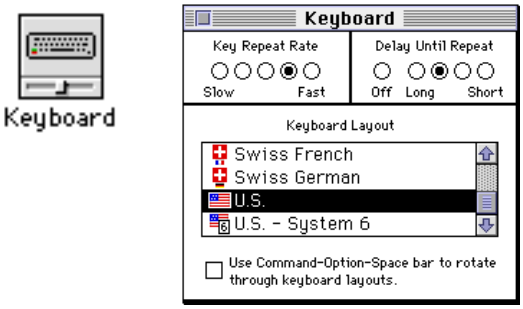
3 **Close the control panel.**

The new setting takes effect immediately.

Choosing a keyboard layout for a different language

If your keyboard uses a language not supported in the MAE Keyboard control panel list, you can choose an appropriate keyboard layout, as follows:

1 **Choose Control Panels from the Apple menu and open the Keyboard control panel.**



2 **Choose a keyboard layout from the Keyboard Layout menu.**

Choose a keyboard layout that corresponds to your keyboard.

3 **Close the control panel.**

The new setting takes effect immediately.

4 **Open the MAE Keyboard control panel and verify that generic layout is selected.**

Change the modifier keys as desired.

Reassigning modifier keys

MAE maps Macintosh modifier keys and X Window System modifier keys to keys on your keyboard. The MAE Keyboard control panel displays the mappings.

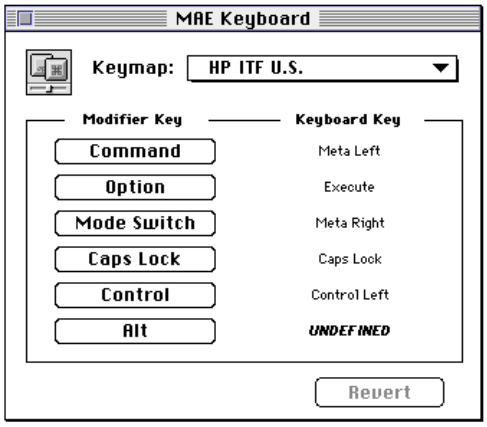
To help you determine the keys on your keyboard that correspond to the names in the Keyboard Key column of the control panel, the following table lists the aliases of some commonly used modifier key equivalents for Sun and Hewlett-Packard standard keyboards.

Note: The table lists only a few of the possible keyboards that you can use.

Keyboard	Physical key	Equivalent modifier key in MAE	Key name as it appears in the control panel
Sun	Control	Control	Control Left
	Alt	Alt	Alt Left
	key left of the Space bar	Command (x)	Meta Left
	key right of the Space bar	Option	Meta Right
Hewlett-Packard	Ctrl	Control	Control Left
	Print/Action	Option	Execute
	Extend Char (left of the Space bar)	Command (x)	Meta Left
	Extend Char (right of the Space bar)	Alt	Meta Right

To reassign individual modifier keys, follow these steps:

1 **Choose Control Panels from the Apple (apple) menu and open the MAE Keyboard control panel.**



2 **In the left column, click the button for the MAE modifier key whose mapping you want to change.**

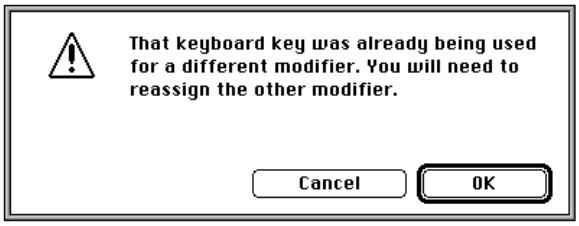
A message similar to the following appears.

3 **Press the key on the keyboard that you want to map to the MAE modifier.**

For example, to assign the Command modifier key function to the key labeled "Alt" on your keyboard, click the Command button in the left column of the control panel and then press the Alt key on your keyboard.

If you don't want to change the mapping, press Cancel.

If you press a key that is already mapped to another MAE modifier, a message appears.



Click the OK button in the dialog box if you want to assign the new modifier function to the key. Click Cancel if you want to leave the key assigned to the old modifier function.

The message disappears and the name of the key you've pressed appears in the right column in the control panel. The name of the pop-up menu changes to Custom followed by the name of the previous layout to indicate that the modifier keys have been changed.

After you change modifiers, but before you close the control panel, you can reset the modifiers to their previous settings by clicking Revert in the control panel. You can undo any single change with the Undo command in the Edit menu.

4 Close the control panel.

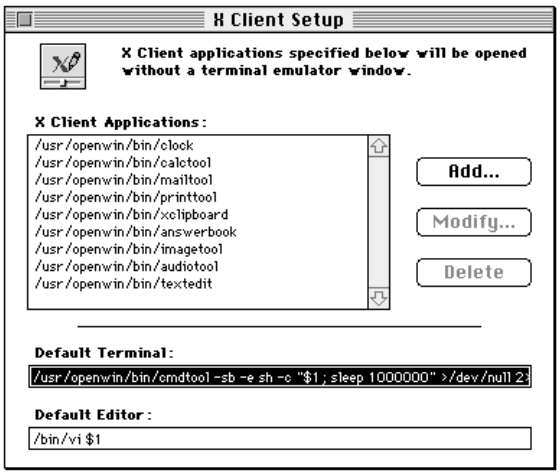
Your modifier key settings take effect. You can restore the original settings by choosing the original keyboard from the pop-up menu.

Customizing X application startup

When you open a UNIX file on the MAE desktop, a terminal window appears. (See “Opening UNIX Files on the MAE Desktop,” in Chapter 8 of this manual, for more information.) If you prefer, you can customize MAE so that it doesn’t display a terminal window in situations where an X application opens its own windows. You use the X Client Setup control panel to specify applications that should open *without* displaying a terminal window.

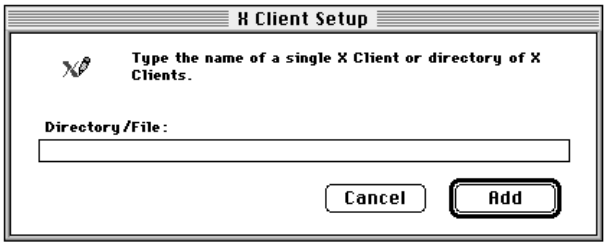
To specify X applications to open without a terminal window, follow these steps:

1 Choose Control Panels from the Apple ( ) menu and open the X Client Setup control panel.



2 Click Add to specify a new application.

A dialog box appears.



3 **In the Directory/File box, type the pathname of the application.**

For example, to specify that the `xcalc` application should open without a terminal window, you would type */directory-path/*`xcalc` in the box, where *directory-path* is the pathname of the directory in which `xcalc` is located.

IMPORTANT Keep the following in mind when using the X Client Setup window.

- Use the full pathname of the file or the directory.
- If the X client's filename contains spaces, enclose the full pathname in quotes or precede each space with a backslash.

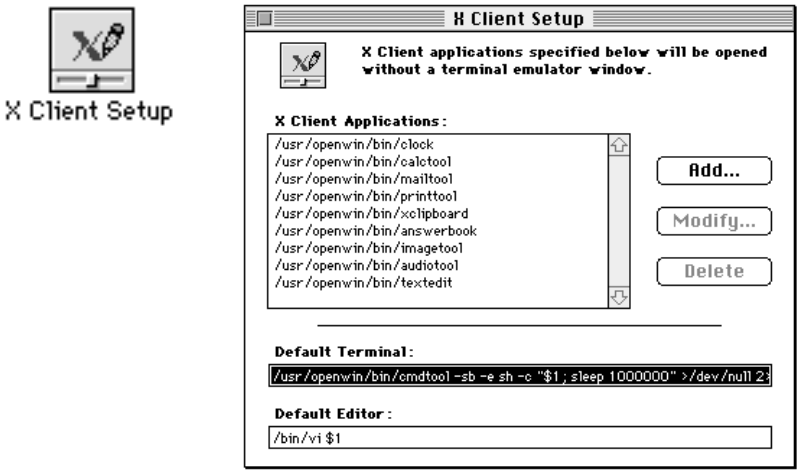
You can specify an entire directory of applications that should open without terminal windows. (Any subdirectory within this directory will *not* be affected.) To do so, you would type */directory-path* in the Directory/File text box, replacing *directory-path* with the full pathname of the appropriate directory. This specifies that an application located in */directory-path* will *not* display a terminal window when you open the application on the MAE desktop.

4 **Click Add to put the new pathname in the X Client Applications list.**

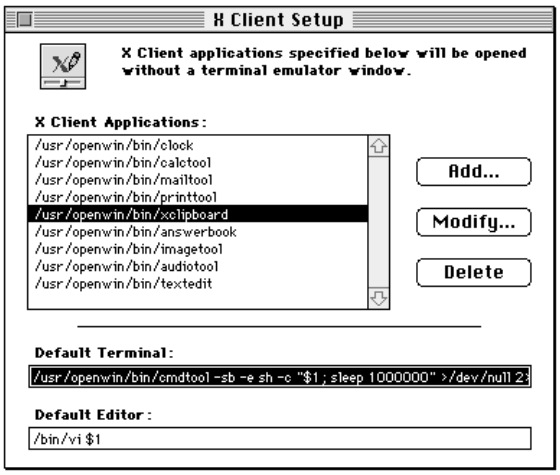
Modifying the pathname for an X application

To change the name or the pathname of an X application that appears in the X Client Applications list in the X Client Setup control panel, follow these steps:

1 **Choose Control Panels from the Apple (🍎) menu and open the X Client Setup control panel.**



2 **In the control panel, select the pathname or the name that you want to modify.**



3 **Click Modify.**

A dialog box appears.

4 **Type your changes in the Directory/File box.**

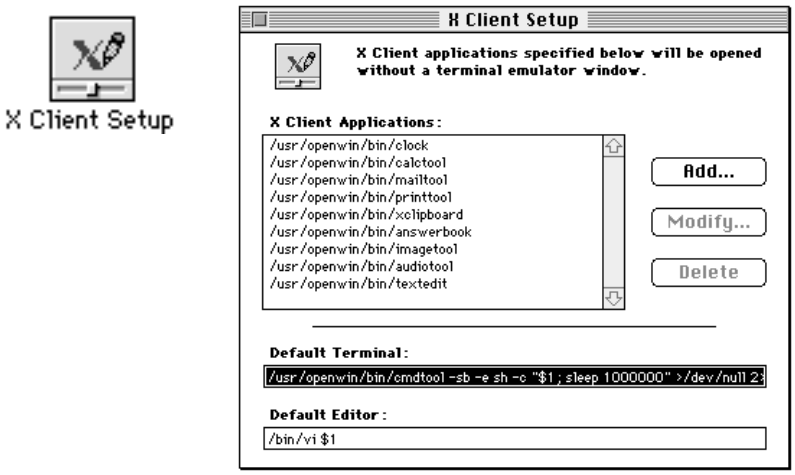
5 **Click Modify, or press Return.**

The revised pathname appears in the X Client Applications list in the control panel.

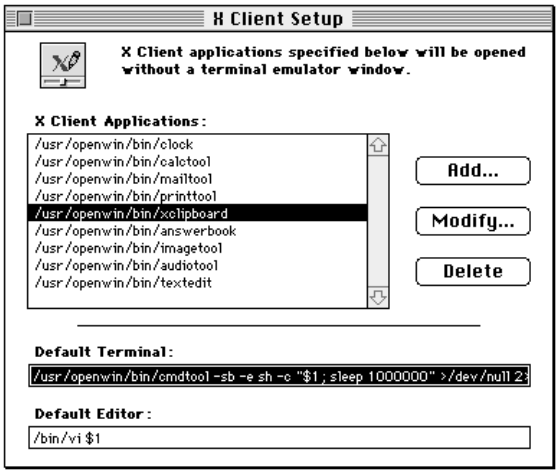
Deleting the pathname for an X application

To remove a pathname from the X Client Applications list in the X Client Setup control panel, follow these steps:

1 Choose Control Panels from the Apple (🍎) menu and open the X Client Setup control panel.

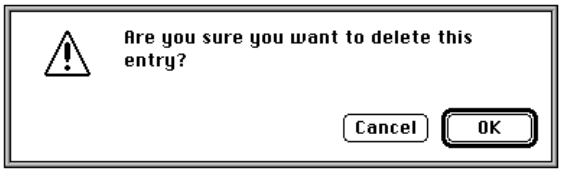


2 In the control panel, select the application you want to remove.



3 **Click Delete.**

A message appears.



4 **Click OK to delete the pathname.**

To leave the item unchanged, click Cancel.

Installing files in your System Folder

You can customize your MAE environment by installing programs and files in the System Folder in your home directory. You install the following types of files in your System Folder by dragging their icons onto the System Folder icon (*not* into the open System Folder window) in your home directory:

- system extensions and control panels (also called *INITs* and *cdevs*)
- preference files for application programs
- fonts

These files are stored in specific folders inside your System Folder. When you drag a file's icon to the System Folder icon, the Finder recognizes which type of file it is and stores it in the appropriate folder. If you drag one of these files to the open System Folder window, the file is not stored in the appropriate folder automatically.

Sometimes these files are installed by means of an installer program that comes with the files. Check the instructions that came with the files for any specific installation procedures.

IMPORTANT MAE supports many, but not all, of the system extensions that run with the Mac OS. In particular, you should not replace any of the System Folder components included with MAE. If you want to use other extensions, control panels, and so forth, try adding them one at a time. If one causes any problems, you can then start MAE with the `-noextensions` option and remove the software causing the problem.

Other items that you want to put in the System Folder need to be dragged to a specific folder. Such items include the following:

- items you want to have appear in the Apple (apple) menu
- applications or scripts you want to have run when MAE starts
- applications or scripts you want to have run just before MAE shuts down

Installing an item in the Apple (apple) menu

To have a program, document, or other item appear in the Apple menu, drag the item's icon or its alias to the Apple Menu Items folder, which is in the System Folder in your home directory.

Note: If the Apple (apple) menu does not contain the items it should, make sure that the Apple Menu Items folder is in the System Folder in your home directory, and that you have read permissions for the Apple Menu Item folder. See "Setting UNIX Permissions" in Chapter 8 of this manual.

Remove an item from the Apple (apple) menu by opening the Apple Menu Items folder and dragging the item's icon (or its alias) out of the folder.

Removing files from your System Folder

You remove a file from your System Folder by dragging its icon out of the System Folder in your home directory. To activate the change, restart MAE.

In general, you can remove Apple menu items that you don't need. For example, you may not need the Calculator or Puzzle control panels.

It is advisable to keep backup copies of the files.

IMPORTANT MAE relies on the presence of several modified Macintosh extensions and control panels. These extensions are different from those of the Mac OS system releases and MAE installs them differently to minimize disk space usage. These extensions should not be replaced, modified, or upgraded except by the MAE installer. If these files are corrupted, they can be recreated by removing the System Folder and restarting MAE.

Appendix A Summary of Basic Macintosh Skills

This Appendix provides information about working on the MAE desktop for those who are unaccustomed to using the Macintosh. It tells you how to perform the following tasks:

- using control panels to customize MAE
- working with floppy disks
- creating aliases
- searching for files
- installing fonts

For more extensive information about basic features of the Macintosh, see the online MAE Guide or the *Macintosh User's Manual*.

See also Chapter 9 for ways of customizing MAE and Appendix B for features that are new or changed in version 3.0 of MAE.

Using control panels

This section explains how to use the System 7.5 control panels that come with MAE. For descriptions of control panels that are specific to MAE or that work differently in MAE and the Mac OS, see Chapters 8 and 9 of this manual. Control panels that are enhancements not normally included with System 7.5 are described in Appendix B of this manual.

To open a control panel, follow these steps:

1 **Choose Control Panels from the Apple (🍎) menu.**

The Control Panels window appears.

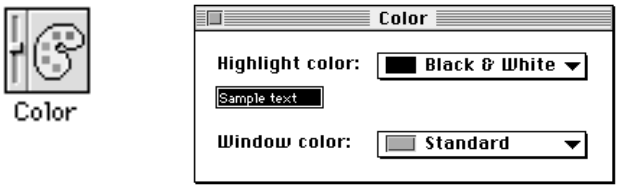
2 **Double-click the icon of the control panel that you want to open.**

Alternatively, if you have submenus turned on in the Apple Menu Options control panel, you can use the submenu to open the control panel directly. Open the Apple (🍎) menu and drag to the Control Panels item, still holding the mouse button down. A submenu listing all of the active control panels appears. Drag to the right, until the mouse pointer is in the submenu, then drag to the control panel that you want and release the mouse button.

The following sections contain information about some of the more frequently used control panels.

Selecting colors

The Color control panel lets you change the highlight color (the color of selected text on the desktop) as well as the color of the window borders.



Changing the highlight color

1 **In the Color control panel, choose a color (or Other) from the "Highlight color" pop-up menu.**

The color appears in the "Sample text" box.

If you choose Other, the color wheel dialog box appears. Drag the scroll box up or down to change the brightness of the color wheel. Then click a color on the color wheel to select it.

The new color is displayed in the upper half of the color square if your monitor is set to display 16 or more colors or shades of gray.

The current color remains in the lower half of the square for comparison; you can click there to go back to it.

2 **When you have selected the color you want, click OK.**

The new color appears in the "Sample text" box. The change takes effect immediately.

Changing the color of windows

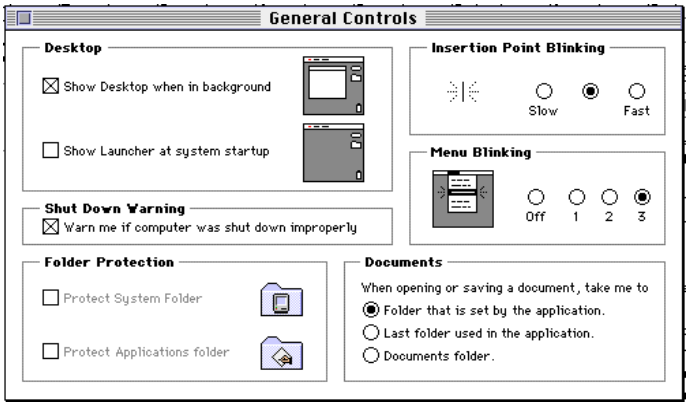
- **In the Color control panel, choose a new color from the "Window color" pop-up menu.**

The change takes effect immediately.

Customizing the desktop with General Controls

You can customize the appearance of the desktop within the MAE window by adjusting the blinking of menu items and the insertion point. To change the desktop pattern, use the Desktop Patterns control panel, described later in this Appendix.

IMPORTANT The settings you specify in the General Controls panel affect *only* the environment inside the MAE window. To change aspects of your X environment, you use standard X commands.



Adjusting the blinking of menu items and the insertion point

You can adjust the number of times a menu item blinks when it's chosen and the blinking rate of the insertion point.

- **In the General Controls panel, click the button for the number of times you want menu items to blink when they are chosen. (Or click the Off button to prevent menu items from blinking.)**

To adjust the blinking of the insertion point, do this:

- **Click the button for the blinking rate you want.**

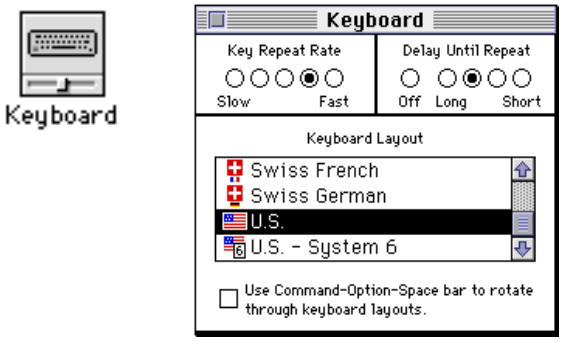
The insertion point in the control panel shows the rate of blinking you selected.

Note: To change the date and time, see Chapter 9.

Selecting a keyboard layout

You use the Keyboard control panel to select different keyboard layouts for different languages, adjust the rate at which a character repeats when its key is held down, and adjust the delay before the character begins repeating.

Note: When MAE starts, it tries to determine the type of keyboard you have. Based on that determination, it selects a keyboard layout (also called a keymap). If an appropriate keyboard layout is not available, it selects the U.S layout. You should not change the keyboard layout unless your language is not supported in the MAE Keyboard control panel. Choosing the wrong layout can make it very difficult to work in MAE.



To select a different keyboard layout, do this:

- **Scroll through the Keyboard Layout list until you see name of the layout (keymap) you want; then click that layout.**

To adjust the rate at which a key repeats when it is held down, do this:

- **Click the button for the rate you want (or click Off if you don't want keys to repeat).**

To adjust the delay before keys repeat, do this:

- **Click the button for the delay you want.**

  If the keys repeat when you don't want them to, set a longer delay before a character begins repeating.

  For more information about keyboards, see "Changing the Keyboard Mapping" in Chapter 9. That section explains how the keys on your physical keyboard are mapped to specific functions within MAE.

Using the Labels control panel

The Labels control panel allows you to change the labels (and colors, if your monitor displays colors or shades of gray) that are available in the Label menu.

To change a label, do this:

- **Drag across the label name to select it; then type your new label.**

To change the color of a label, follow these steps:

1. **Click the color (in the control panel) that you want to change.**

   The color wheel dialog box appears.

2. **In the color wheel dialog box, click a color on the color wheel.**

   The new color is displayed in the upper half of the color square. The current color remains in the lower half of the square for comparison.

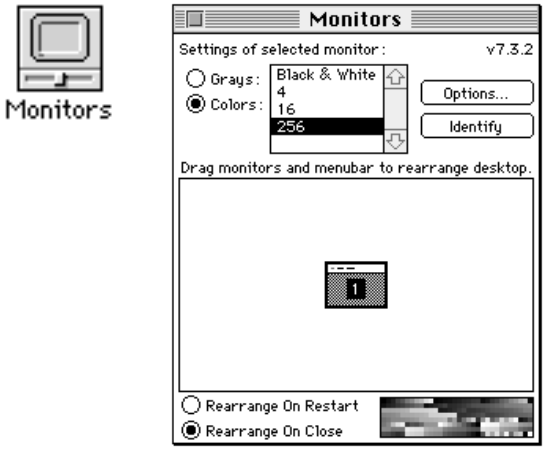
3. **When you have selected the color you want, click OK.**

   The labels and colors you choose remain in effect until you change them.

Changing monitor characteristics

If your monitor displays colors or shades of gray, you can use the Monitors control panel to designate the number of colors or shades of gray that you want displayed on the MAE desktop.

1 Choose Control Panels in the Apple (🍎) menu; then choose Monitors.



2 Select Grays or Colors.

3 Choose the number of shades desired (or Black & White).

The new color choice takes effect immediately.

4 Close the control panel.

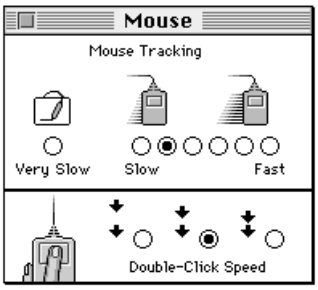
The Monitors control panel also allows you to change the size of the MAE window. See “Resizing the MAE Window,” in Chapter 9 of this manual.

Adjusting mouse preferences

You can use the Mouse control panel to adjust two aspects of how your mouse (or other input device, such as a trackball) operates:

- tracking (the relation between the movement of the mouse on your desk and the movement of the pointer on the screen)
- double-clicking speed

IMPORTANT Changing the tracking speed in the Mouse control panel changes the tracking speed for your X server as well, but the changes may be lost the next time you restart your X server. For instructions on permanently setting the mouse tracking speed for your X server, see the documentation that came with your X server.



To change the double-clicking speed, do this:

- **Click the speed you want.**

  The double-clicking speed affects only the MAE window.

To change the tracking speed, do this:

- **Click the speed you want.**

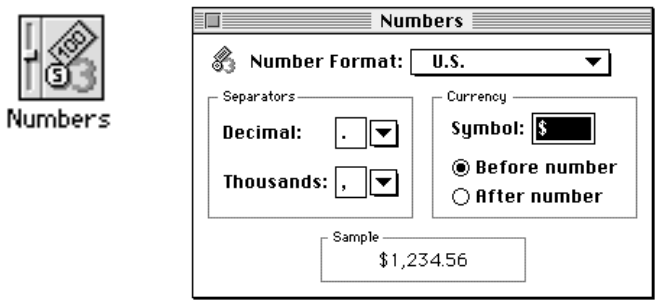
  If you click Fast, the pointer moves more than twice as fast as you move the mouse. The Very Slow option is useful for drawing with a mouse or a graphics tablet.

  Your choice remains in effect until you choose a different tracking option or restart your X server.

  You can use the X command `xset` to fine-tune mouse action. With the `xset` command, you can get the mouse pointer to move more smoothly by setting the mouse acceleration anywhere from 15 to 20 (by default, the acceleration is 4). See the `xset` man page for more information about the command.

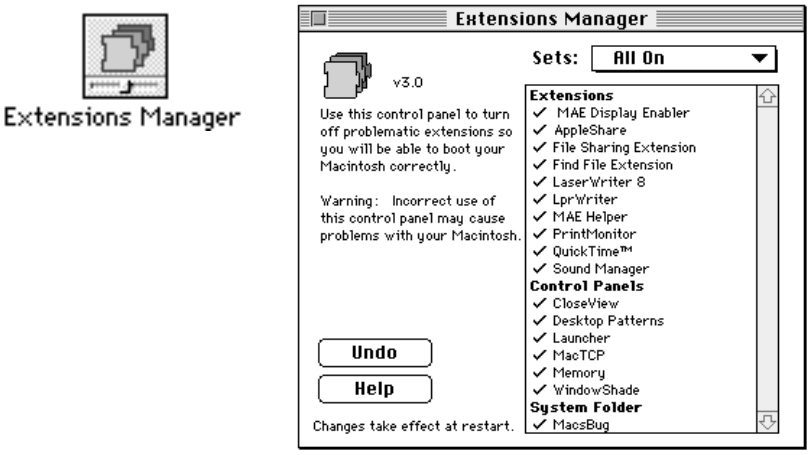
Selecting number displays

You can use the Numbers control panel to choose from several different formats for displaying numbers and currency.



Selecting extensions

Use the Extensions Manager control panel to specify which extensions are on or off when the computer starts up. You can establish sets of related extensions and switch them on or off as necessary.



Click a checked item in the list of extensions to turn it off. (Items with checkmarks are on.) Shift-click to turn off two or more checked items.

If you want to turn all extensions off or on, choose All Off or All On from the Sets pop-up menu.

To undo changes you've made, click Undo.

To create a set of extensions, follow these steps:

1 **Turn on the extensions you want to include.**

2 **Open the Sets pop-up menu and choose Save Set.**

3 **Type a name for the extension set and click OK.**

To remove a set of extensions, follow these steps:

1 **Open the Sets pop-up menu and choose Delete Set.**

2 **Click the name of the set you want to delete from the list; then click Delete.**

Note: You can't delete certain sets of extensions.

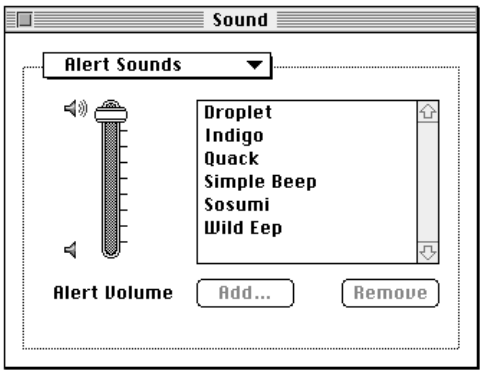
Your changes take effect the next time the computer starts up.

Selecting sound

You can use the Sound control panel to change your sound volume, alert sound, and playback device.

Adjust the use of sound in MAE as follows:

- **Choose Control Panels in the Apple (🍎) menu and open the Sound control panel.**



Adjusting the alert sound

To change the alert sound and adjust its volume, follow these steps:

1 **Click the desired alert sound in the list on the right.**

The sound plays when you click it.

2 **Adjust the volume by dragging the slider on the left.**

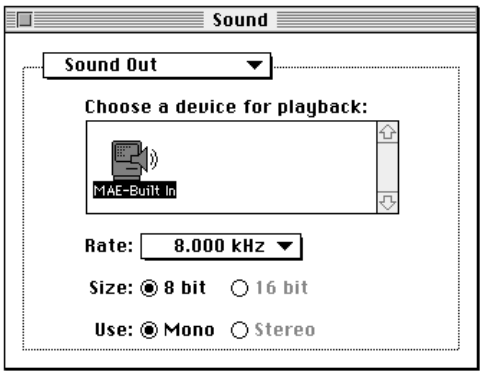
3 **Open the Alert Sounds pop-up menu for other choices.**

The menu offers the options Sound Out and Volumes. The Sound Out option allows you to set the audio output resolution to whatever the hardware allows. The Volumes option adjusts the volume of your system's sound.

Note: The Sound In option is not currently supported by MAE.

Setting the audio output resolution

Choose Sound Out in the Sound control panel's pop-up menu to display the following dialog box:



Choose a sampling rate in the Rate pop-up menu.

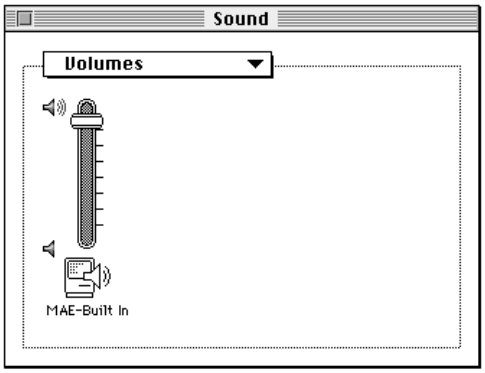
Changing the sampling rate affects the performance and the sound quality. See Chapter 6 in the *MAE Administration Manual*.

Adjusting the sound volume

To adjust the volume of sounds produced by your applications, do the following:

1 **Choose Volumes in the Sound control panel's pop-up menu.**

A dialog box with a slider appears. This dialog box sets the system volume on your workstation.



2 **Drag the slider to select the appropriate volume.**

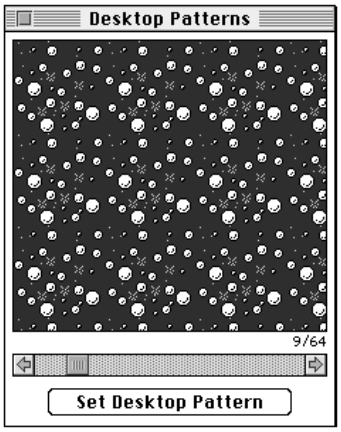
3 **Click the close box.**

Issues and concerns with setting up sound

Although sound on MAE acts much as it does on the Macintosh, there are some setup issues that you should be aware of, especially concerning software patches for specific workstations. These are discussed in Chapter 6 of the *MAE Administrator's Manual*. Consult the Read Me file (`README.TXT`) for information on software patches.

Choosing a desktop pattern

The Desktop Patterns control panel now provides a wider array of colorful and interestingly textured desktop patterns.



You can now add your own designs by copying and pasting graphics or photos (stored as PICT files) into the control panel. These new images become a new desktop pattern.

To choose a desktop pattern, follow these steps:

1. **Use the scroll bar at the bottom of the control panel to display the patterns.**
2. **When you find a pattern you want to use, click Set Desktop Pattern.**

To add a pattern of your own, follow these steps:

1. **Create the image you want with a graphics program, a scanner, or another source of images.**
2. **Select the image and copy it by choosing Copy from the Edit menu.**
3. **Click the open Desktop Patterns window to make it active; then paste the pattern in by choosing Paste in the Edit menu.**

Launching programs easily

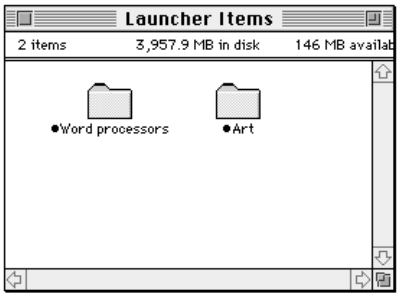
You can add buttons to a window that appears in the Launcher control panel that allow you to launch frequently used programs with one click.

Add items to the Launcher as follows:

1 **Open the Launcher Items folder (in the System Folder).**

2 **With the Launcher Items window open, choose New Folder from the File menu to create a new folder for the application you want to add to the Launcher.**

3 **Press Option-8 to place a bullet (■) as the first letter of the new folder's name, then rename the new folder with the name of the application or group of applications.**



4 **Place aliases for the relevant applications into the folder.**

5 **Close the Launcher Items window.**

6 **Choose Control Panels in the Apple (🍎) menu and open the Launcher control panel.**

To open one of the applications, follow these steps:

1 **Click the button with the name of the folder you want.**

2 **Click the button for the application you want.**

Creating Sticky Notes

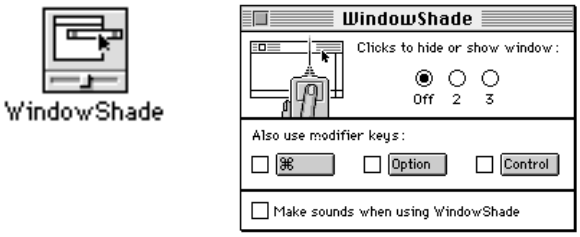
You can create notes that will remain on your screen by selecting Stickies in the Apple (🍎) menu. Select New Note in the File menu to create a note.

Sticky Notes are windows, but they have no scroll bars. To scroll through a sticky, use the Up and Down Arrow keys.

Saving screen space with WindowShade

The WindowShade control panel allows you to customize the command used to reduce screen clutter by shrinking windows. With two or three clicks on the title bar of the window you shrink windows so that only their title bars show.

1 Choose Control Panels in the Apple (🍎) menu and open the WindowShade control panel.



The WindowShade control panel allows you to set the number of clicks it takes to roll up the window and leave only the title bar showing.

2 Click 2 or 3 to turn WindowShade on and to have a window roll up by either double-clicking or triple-clicking the window's title bar.

Click Off to turn WindowShade off.

3 Click the checkbox next to one of the modifier key buttons if you want to add a modifier key to the command.

4 Click the "Make sounds when using WindowShade" checkbox to have your computer produce a "zip" sound when you use WindowShade.

You click the title bar again to expand the window to full size.

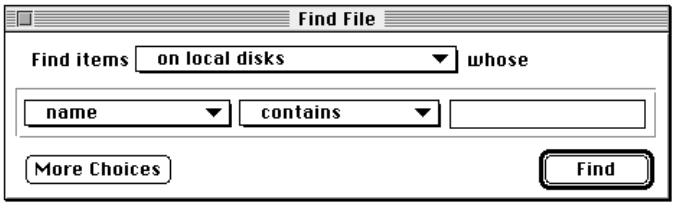
Finding a file or a folder

When the Macintosh Finder is the active program, you can use the Find command in the File menu to find a file or folder on any disk whose icon is on the desktop.

You can locate items by opening the Apple (🍎) menu and choosing Find File or by choosing Find from the File menu.

Note: You should not use the Find command to locate items on remote volumes. It searches the entire volume, and searching large volumes, especially those with multiple mount points, can take a long time, causing the search to appear to have frozen.

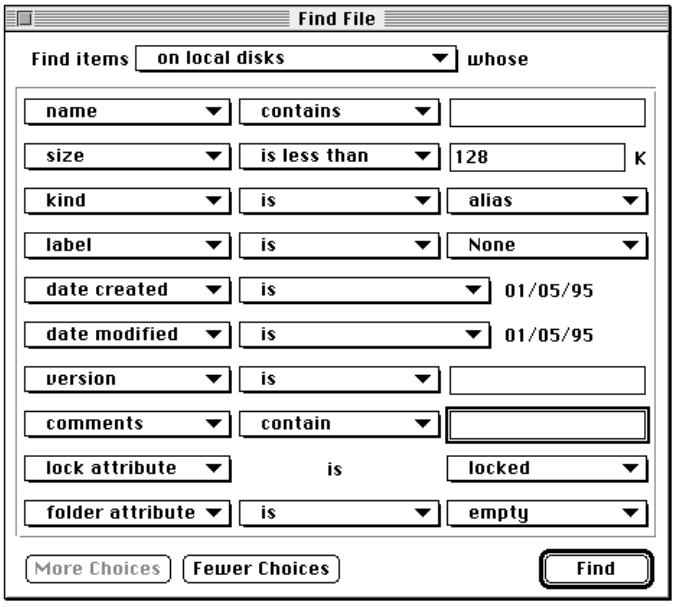
1 Use the pop-up menu labeled "Find items" to specify where you want to search.



You can search on all disks connected to your computer, on shared disks (servers) only, on all disks except shared disks (local disks), or on an individual disk. When you search for items, you can specify criteria for the computer to use in the search.

2 Click the More Choices or the Fewer Choices button until the number of rows is the same as the number of search criteria you want to use.

You can specify as many as 10 criteria in the search window.



3 **Starting with the leftmost pop-up menu, describe the items you want to find.**

As appropriate, type text to search for, or click a number and then use the Up or Down Arrow to change it.

If you need to add more search criteria, use the pop-up menus to identify the new criteria. (If necessary, expand the window by clicking the More Choices button to add criteria.)

4 **Click Find when you have completed your search criteria.**

Only the items that meet all criteria are displayed in the search results window. If no matching items are found, you hear a beep or see a message.

5 **Click an item in the list to see its location.**

The location of the item selected is displayed in the bottom section of the search results window.

You can double-click the item to open it.

You can also choose commands from the File, Edit, and View menus to work with the items located in the search.

Note: You can't use the Find command to locate items inside the System file (which is inside the System Folder). You need to open the System file to see its contents.

If you're using the Launcher, the Find command locates items or aliases for items inside the Launcher Items folder.

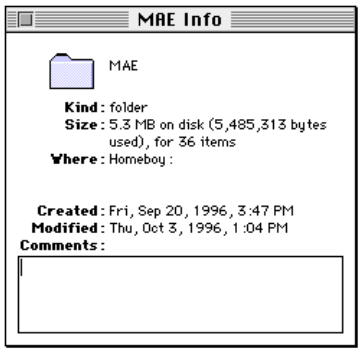
Getting information about your files

When the MAE Finder is the active program, you can obtain information about your files and directories with the Get Info command. To use the command:

1 **Select an item.**

2 **Choose Get Info from the File menu.**

The Info window appears.



The Info window provides information about the item such as size, kind, location, and modification dates. You can also use this window to lock a file (so it can't be changed), turn a document into a stationery pad, change the amount of memory a program uses, and change a file's icon.

Note: The Info window for MAE differs slightly from that of the standard Mac OS. In the Mac OS, when you get information for a folder, it shows the number of files contained; however, it does not count invisible files. In MAE, the Info window includes invisible files in the total file count for a directory.

Working with floppy disks

This section tells you how to copy files to and from floppy disks and how to lock a disk.

Copying files to a floppy disk

To copy a file to a floppy disk, follow these steps:

1 **Insert and mount a floppy disk formatted for the Macintosh file system.**

See "Mounting Floppy Disks and CD-ROM Discs With the Toolbar" in Chapter 6 of this manual.

2 **Drag the icons of the files or folders that you want to copy to the floppy disk icon on the MAE desktop. Release the mouse button when the disk icon is highlighted.**

The original files remain where they were.

Copying files from a floppy disk

To copy a file from a floppy disk to your system, follow these steps:

1 **Insert and mount the floppy disk containing the Macintosh files you want to copy to your system.**

See "Mounting Floppy Disks and CD-ROM Discs With the Toolbar" in Chapter 6 of this manual.

2 **Double-click the disk icon to display a window that shows the contents of the disk.**

3 **Select the icons of the files or folders that you want to copy and drag them to the folder on the hard disk where you want to store them.**

If you have problems copying files to a floppy disk

If you can't save files on a floppy disk, there are several possible causes: the disk may be damaged or locked, the disk may be too full to store more information, or the disk drive may not be working properly. To help identify the problem, follow these steps:

- Make sure you're using a high-density (1.4 MB) floppy disk formatted for the Mac OS.
- Make sure that the tab on the back of the disk is in the unlocked position (that is, make sure that the square hole is closed). If a disk is locked, its window on the MAE desktop shows a "locked" icon in the upper-left corner.
- If a message reports that the disk is full, either throw away unnecessary files on the disk or unmount and eject that disk; then insert and mount another disk that has adequate space.
- Check the disk for obvious damage to the plastic case or the sliding metal shutter.
- Insert a different disk and try saving again. If you can't save your files on the second disk, the problem may be with the disk drive.

Locking a floppy disk

You can protect the contents of a floppy disk by locking it. When a floppy disk is locked, you can examine its contents but cannot initialize the disk or change any of the information on it. To lock a floppy disk, use your thumb or a push-pin to slide the tab on the back of the disk so that the square hole is open. To unlock the disk, slide the tab back so that it covers the square hole.

Creating an alias

An alias serves as a substitute for a file, a folder, a disk, or another item that the alias represents. You can make as many aliases for an item as you want.

Note: When you drag an item from a Finder window to the MAE desktop, MAE automatically creates an alias for the item, instead of moving the item to the desktop. To create a copy of the file rather than an alias, hold down the Option key while dragging the icon.

To create an alias, follow these steps:

1 **Click to select the item for which you want to make an alias.**

2 **Choose Make Alias from the File menu.**

The alias appears on top of the original. Its name is in italics and ends with "alias." The name is selected for editing.

3 **If you wish, change the name of the alias; then move it to wherever you want it to reside.**

Note: If you try to open an alias and nothing happens, or if a message reports that the original file isn't available, then the alias may be damaged, the original may have been deleted, or the original may have been moved or renamed from *outside* the Macintosh environment (in other words, in the UNIX environment). Throw away the alias and create a new one.

If you create an alias to a path that is also a UNIX mount point, when you open the alias, MAE mounts the MIV (if is not already mounted).

Locating the original of an alias

To locate the original item to which an alias points, follow these steps:

1 **Select the icon of the alias whose original you want to find.**

2 **Choose Get Info from the File menu.**

The Info window for the alias opens.

3 **Click the Find Original button in the Info window.**

The window containing the original item opens, and the item's icon is highlighted.

If you deleted the original, a message will report that the original can't be found. Aliases are not deleted when the original files are deleted.

If you move the original of an alias to a different file system, you break the link between the alias and the original.

Using fonts

MAE provides a number of fonts; moreover, you can install additional Macintosh-compatible fonts.

IMPORTANT MAE does not support X Window System fonts.

MAE uses two types of fonts: outline and bitmapped. With an outline font (also called a *TrueType*, *scalable*, or *variable-size* font), you can print or display typefaces of different sizes from a single font file.

In the case of a bitmapped font, you must have a separate font file for each size of typeface.

Both types of fonts are installed in the Fonts folder in your System Folder.

Note: Check with your system administrator before installing fonts. Fonts can be installed in such a way as to make a single copy of the font available to all MAE users on a workstation, yielding significant disk space savings.

Installing fonts

To install fonts in your System Folder, follow these steps:

1. **Quit all open applications in MAE.**
2. **Locate the icon of the font that you want to install and drag it to the System Folder icon (not the open System Folder window) in your home directory folder.**

   A message asks if you want to install the font in the appropriate folder.
3. **Click OK in the dialog box.**

Removing fonts

To remove fonts from your System Folder, follow these steps:

1. **Quit all open applications in MAE.**
2. **Open the System Folder in your home directory folder.**
3. **Locate the Fonts folder and open it.**
4. **Locate the icon of the font that you want to remove. Drag it out of the Fonts window and out of the System Folder window. (Shift-click to select more than one icon.)**

   Some fonts are in suitcases. Open the suitcase to see the individual font files.
5. **Close the Fonts window and the System Folder window.**

Appendix B New Features in MAE Version 3.0

MAE version 3.0 contains many new features that considerably expand its usefulness. Some of the new features are from the Mac OS 7.5 and some are specifically developed for MAE. This chapter describes

- support for Mac OS System 7.5.3
- features unique to MAE 3.0

See also Chapter 9 of this manual for ways of customizing MAE and Appendix A for a summary of basic Macintosh skills.

New System 7.5 features

MAE 3.0 incorporates the improvements of the Mac OS System 7.5.3. This section describes the new features for MAE derived from this release of the Mac OS. The features include

- PC Exchange
- Macintosh Easy Open
- Macintosh drag-and-drop capability
- Script Editor and AppleScript
- CloseView
- Scriptable Finder and automated tasks
- Enhanced Apple Guide
- Control Strip

PC Exchange: compatibility with DOS and Windows files

MAE can open disks and files that are formatted for IBM-compatible personal computers. You can exchange disks and documents with DOS and Windows computers. You can also use MAE to initialize disks for DOS and Windows computers.

Floppy disks formatted for IBM-compatible personal computers have this icon:

You can open the DOS disk just as you would open a Macintosh disk and open files on the disk just as you open Macintosh files. MAE uses “translators” and your application programs to open documents created in DOS applications.

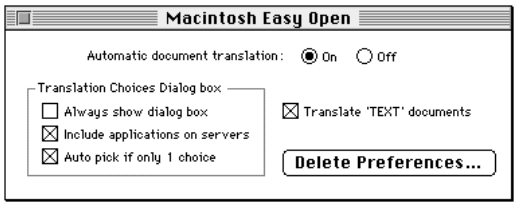
To assign a Macintosh program to open each type of DOS file, open the Apple (🍎) menu and choose Control Panels. Then open the PC Exchange control panel.

Note: An application’s icon must appear in the Finder before it can be associated with a DOS file type.

Macintosh Easy Open: improved file opening

With Macintosh Easy Open, you can open most Macintosh, DOS, and Windows files even if you don't have the program that created the document. MAE uses "translators" (not manufactured by Apple) and your programs to open documents created with programs you do not have.

To set Easy Open options, open the Apple (🍎) menu and choose Control Panels. Then open the Macintosh Easy Open Setup control panel.



Macintosh drag-and-drop capability

You can move text, graphics, sounds, and QuickTime movies without using the Copy and Paste commands. With programs that support the Macintosh drag-and-drop feature, you can drag an item within a document or between two open documents.

You can also drag an item from a document onto the desktop to create a "clipping." A clipping is a file that can be dragged into another document later. For example, you may save your business address as a clipping and drop it into letters and other documents.

To use the drag-and-drop feature, select the item, then drag it to a new location. You can practice using this feature with the Note Pad, SimpleText, Scrapbook, and Stickies.

Script Editor and AppleScript

The ability to automate tasks built into the Mac OS is now available in MAE. You can use the Script Editor application program to automate tasks in the Finder and in application programs that support AppleScript.

Using the Script Editor

The Script Editor is a program that lets you write scripts that automate a series of actions. Using the Script Editor's "Watch Me" feature, you can create a script by recording actions.

To create your own scripts, use the Script Editor located in the AppleScript folder (inside the Apple Extras folder) on your hard disk. For instructions, see the user's guide located in the AppleScript folder.

Magnifying the screen image with CloseView

The CloseView control panel lets you magnify the image on your Macintosh screen up to 16 times.

To use CloseView, open the control panel. Use this control panel to turn on magnification, invert the screen image, and customize CloseView.

When CloseView is on and magnification is off, a rectangle on the screen indicates which area will be magnified. You can move the rectangle by moving the pointer.

Note: Some keyboard shortcuts might not work with CloseView, depending on your type of keyboard. Use the control panel instead.

The Scriptable Finder and Automated Tasks

MAE includes sample scripts that automate Finder tasks, such as raising and lowering the speaker volume. You can find the sample scripts in the Apple Extras folder on your hard disk.

To try out one of the scripts, open the Apple (🍎) menu and choose Automated Tasks.

Apple Guide for SimpleText

SimpleText is a word processor that supports new Macintosh features such as Macintosh drag-and-drop capability, fonts, and text styling. SimpleText also opens TeachText documents. You can open several SimpleText documents at once. You can also play QuickTime movies.

Now MAE includes the SimpleText Guide, providing help for using SimpleText.

Control Strip

You can use the Control Strip to specify a variety of settings from your desktop. In MAE, the Control Strip is in the bottom left corner, just above the MAE Toolbar.

The Control Strip contains icons that let you turn on or off AppleTalk, set up and monitor file sharing, set your display, specify your monitor resolution, and change your speaker volume.

To close the Control Strip, click the tab at the right end.

MAE 3.0 Enhancements

The following sections describe the new features for MAE 3.0, including

- Enhanced installer
- Floating licenses
- Additional CD-ROM formats
- Support for multiple TCP/IP interfaces
- Improved Find File utility
- Improved performance for remote X display servers
- X Window pixel scaling
- Independent volume support
- Symbolic links as Mac OS aliases
- Smaller System Folders
- AppleDouble control panel
- More concurrently open files
- Improved keyboard support
- Improved file-sharing security
- Native floating-point optimizations
- Software FPU integration

Enhanced installer

The MAE installer provides several options to improve the installation process when it is run from the command line and provides an automatic system reboot after kernel modules are installed. See Appendix C for details.

Floating licenses

MAE uses the popular UNIX-based FLEXlm license manager software to simplify the use of MAE in a networked environment by allowing users to share licensed copies of MAE more efficiently. See the *MAE Administrator's Manual* for details.

Support for additional CD-ROM formats

MAE supports the use of CD-ROM discs in the standard ISO 9660 format as well as the single-session Photo CD format. See Chapter 6 for information on setting up and using CD-ROM drives.

Support for multiple LAN interfaces

MAE provides support for multiple LAN interface cards in your workstation and allows you to specify which one MAE will use for MacTCP services. See Chapter 9 for details.

Improved Find File utility

The new version of Find File is faster and allows you to differentiate between AppleShare and NFS servers in your searches.

Improved performance for remote X display servers

Improvements in client/server communications greatly improve the performance of MAE when it is displayed by a remote X server. See Chapters 1 and 2 for installation and startup instructions.

X Window pixel scaling option

This command-line option allows you to easily magnify your MAE window at startup to twice the standard size for easier viewing.

Independent volume support

All UNIX mount points are automatically represented as Macintosh volumes. You can also specify UNIX directories that you want mounted on the MAE desktop much like Macintosh volumes.

Symbolic links as Mac OS aliases

All UNIX symbolic links are automatically represented as Macintosh aliases.

Smaller System Folders

A distributed approach to system resources reduces the disk space required by additional System Folders on a workstation.

AppleDouble control panel

The AppleDouble control panel allows you to specify applications that should use the AppleDouble format for file operations, preserving the separation of the resource and data forks of Macintosh files and allowing you a greater flexibility in using non-Macintosh files.

More simultaneously open files

MAE now allows up to 1024 files to be open simultaneously.

Improved keyboard support

MAE provides easy-to-recognize keyboard maps and automatically determines which one to use. You can also use the standard Mac OS Keyboard control panel to change keyboard maps.

Improved file-sharing security

MAE increases the administrator's options to restrict the user's ability to share files and folders.

Native floating-point optimizations

One of the components of the Macintosh Toolbox is the Standard Apple Numeric Environment (SANE), which provides a uniform mechanism for applications to perform floating-point computations. Most Macintosh applications that require floating-point computation use the SANE mechanism. (Some applications use their own custom floating-point software instead.) SANE provides several fixed and floating-point data types, but the default for most SANE operations is the 80-bit extended precision real data type.

MAE attempts to use native floating-point instructions on the host RISC processor to implement the most frequently used SANE operations. This approach can result in a performance improvement of up to 300 percent for applications that use SANE extensively, but it has no benefit for applications that use their own custom floating-point software.

Because no RISC processor supports the 80-bit extended-precision real data type, to implement native floating point, MAE must convert to and from the 64-bit double-precision real data type present on all RISC processors. This conversion occasionally results in a very small loss of precision beyond the fifteenth decimal place. It is rare that any application will depend on this degree of precision, but for some sophisticated scientific or mathematical applications there may be a variation in behavior. The `-sane` MAE command-line option can be used to disable the use of native floating-point operations for those applications that depend on extended precision.

Software FPU integration

Some Macintosh applications require the use of floating-point instructions based on the Motorola 6888x FPU in order to run. On Macintosh computers that don't have the capability to execute these instructions, the shareware Software FPU Control Panel can be used to emulate the behavior of a floating-point unit, allowing most applications that use floating-point instructions to run normally.

MAE now includes Software FPU MAE 3.0, a licensed version of Software FPU, as a standard part of the System Folder; no shareware fee is required. The interaction between Software FPU MAE 3.0 and MAE has been optimized for approximately 50 percent better performance than with the shareware Macintosh version.

The Software FPU MAE 3.0 Control Panel is disabled by default. To enable it, open the control panel and click the On button.

Note: The Software FPU MAE 3.0 Control Panel will not function properly on any Macintosh system other than MAE 3.0.

Appendix C Command Options and X Resources

This appendix lists the command options and the X resources that can be used to configure MAE at startup. For more information on the command options, see the `mae` manual page.

For more information on X resources and their uses, see Chapter 2 of the *MAE Administrator's Manual*.

Command options

The following table describes the options available for MAE.

Command option	Description
`-appledir` *directorypath*	Specify the location of the `apple` directory. The default is the directory in which the MAE package was installed.
`-applepath` *directorypath*	Sets the MAE environment variable `APPLEPATH` to specify a directory to be searched for application information when the Desktop database is rebuilt. Similar to the UNIX `$PATH` variable, this variable is a number of colon-separated pathnames.
`-display` *display*	Specify the X display server on which you want MAE to appear. The default is specified by the `DISPLAY` environment variable.
`-filedouble`	Force MAE to use AppleDouble format for files. Creates a separate file for the resource fork, indicated by a filename starting with %.
`-fstimeout` *seconds*	Specify the time in seconds that MAE will wait for a response from an NSF-mounted file system.
`-geometry` *width* `x`*height+X+Y*	Set the size and position of the MAE window (excluding the Toolbar) to *width* pixels wide by *height* pixels high (default is 640 x 480 pixels), with the top left corner at *X* pixels to the right and *Y* pixels down from the upper-left corner of the screen.
`-help`	Display all the MAE command options.
`-iconic`	Start MAE minimized (as an icon). The default is for MAE to start up in an open window.
`-installcmap`	Specify that MAE should force the installation of its X colormap.

Command option	Description
`-macdir` *directorypath*	Specify the location of the `.mac` directory. The default is the user's home directory. If the `-sysfol` option is used, the default of `-macdir` changes from the user's home directory to the location specified by `-sysfol`. The `.mac` directory needs to be at the root of a MIV (/*MIV*/`.mac`).
`-maxdepth` *bitdepth*	Specify the maximum frame-buffer bit depth. The default is dynamically set to the maximum supported by the X server. Valid *bitdepth* values are 1, 2, 4, 8, 16, and 24. (Note: This option specifies the maximum depth MAE can use; it does not mean that MAE will use this depth.)
`-memory` *memorysize*	Specify the memory size for applications within MAE (in MB). The default is 16 MB.
`-noextensions`	Disable Macintosh system extensions (has the same effect as holding down the Shift key while booting a Macintosh computer).
`-nocursorscale`	Defeats scaling of the mouse pointer if specified with the `-pixelscale` option.
`-nosound`	Disable MAE sound support.
`-pixelscale`	Magnify display by doubling the number of pixels in both the X and Y axes.
`-rebuild`	Rebuild the desktop when MAE is started.
`-sane`	Prevent MAE from using native RISC floating-point instructions. Provides greater compatibility with SANE at the expense of runtime performance.
`-sysfol` *system-folder*	Specify the directory *system-folder* to use as the System Folder. The default is `$HOME/System\ Folder`. If you specify `-sysfol` but not `-macdir`, MAE looks in the same location of your system folder for your `.mac` directory.
`-title` *string*	Specify the title to appear in the MAE window's title bar. The default is Macintosh Application Environment [*version*].
`-version`	Print the MAE version information.
`-zappram`	Specify that the virtual PRAM be reset when MAE is started.

X resources

X resources have been defined for several of the `mae` command arguments as follows:

`-appledir`

X resource	`Mae.appleDirectory`
Description	Pathname of apple directory to use
Example	`Mae.appleDirectory: /u/benjamin/apple`

`-filedouble`

X resource	`Mae.fileDouble`
Description	Cause MAE to use AppleDouble file format
Example	`Mae.fileDouble: True`

`-fstimeout`

X resource	`Mae.fsTimeout`
Description	Set the time MAE waits for a response from an NFS-mounted file system
Example	`Mae.fsTimeout: 15`
Default	10 seconds

`-geometry`

X resource	`Mae.geometry`
Description	Geometry string of the following form: <*width*>x<*height*>{±}<*xoffset*>{±} <*yoffset*>
Example	`Mae.geometry: 640x480+0+0`

`-iconic`

X resource	`Mae.iconic`
Description	Starts MAE up in an iconified state
Example	`Mae.iconic: True`

`-installcmap`

X resource `Mae.installColormap`

Description Forces MAE to install its own colormap

Example `Mae.installColormap: True`

`-macdir`

X resource `Mae.macDirectory`

Description Pathname of the `.mac` directory to use

Example `Mae.macDirectory: /u/benjamin/mac.dir`

`-maxdepth`

X resource `Mae.maximumDepth`

Description Maximum bit depth for MAE

Example `Mae.maximumDepth: 8`

`-nosound`

X resource `Mae.noSound`

Description Disable sound support

Example `Mae.noSound: True`

`-nocursorscale`

X resource `Mae.noCursorScale`

Description If pixelscale is specified, do not scale cursor

Example `Mae.noCursorScale`

`-pixelscale`

X resource `Mae.pixelScale`

Description Magnify display by two in X and Y axes

Example `Mae.pixelScale: True`

`-title`

X resource `Mae.title`

Description String to use as title of MAE window

Example `Mae.title: MAE-1`

`-sysfol`

X resource `Mae.systemFolder`

Description Pathname of System Folder to use

Example `Mae.systemFolder: /u/benjamin/System Folder`

Note: X resources are not available for the `applepath`, `help`, `memory`, `noextensions`, `rebuild`, `sane`, `version`, or `zappram` options.

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