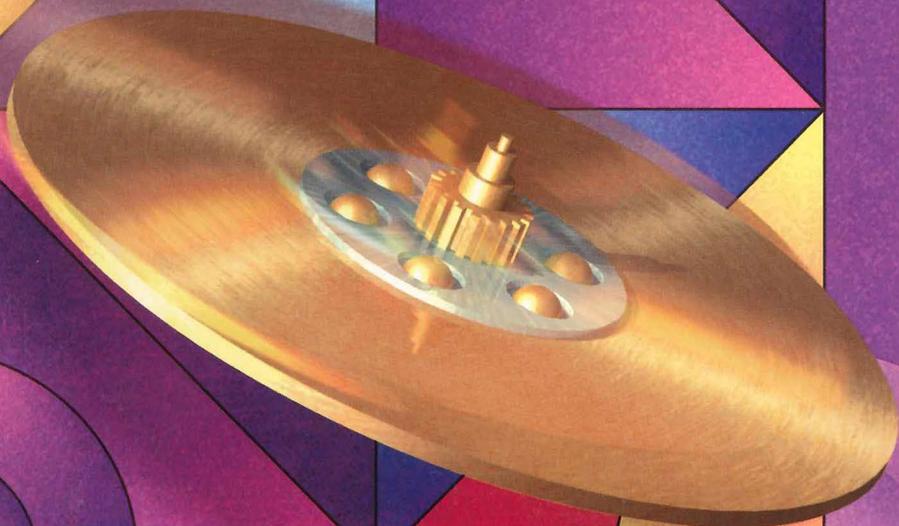# CONNECTIX

Turn Your Memory Into An Accelerator

MAXIMA

MAXIMA

*Turn Your Memory
Into An Accelerator*

CONNECTIX

TABLE OF CONTENTS

SYSTEM REQUIREMENTS

Maxima 3.0 works on nearly every Macintosh currently being produced (including the Power Macs) and most older Macintosh computers. If you have a Power Macintosh, Maxima takes advantage of the superior processing speed of that computer.

To run Maxima, you need the following:

- Macintosh with a 68030, 68040 or PowerPC microprocessor. (An accelerated Mac Plus, SE or Classic will not run Maxima.)
- System 6.0.5 or later.
- 4 MBs required, 8 MBs recommended if the machine supports Apple's built-in RAM disk.
- More than 8 MBs is required if the machine does not support Apple's built-in RAM disk.
- A hard disk with sufficient space to save the contents of the RAM disk.

Further details on system requirements can be found in "Frequently Asked Questions" section at the end of this manual.

WHAT DOES MAXIMA DO?

CREATES A PERMANENT, DOUBLE-CAPACITY RAM DISK

Maxima creates a RAM disk from your Macintosh computer's memory. A RAM disk is a portion of physical memory devoted to look like a storage device, such as a hard disk or a floppy disk. RAM disk space is not available to applications. Instead, you store data and programs on a RAM disk and access them just like you would any information on a disk. The main difference between a RAM disk and a hard disk or floppy disk is that data on a RAM disk is stored in the computer's main memory (RAM) instead of on a disk platter, which results in faster access to its contents.

❖ **NOTE:** A RAM disk is just like any other disk. You can drag and drop files to and from it, you can drag files on it to the trash can, and you can select Finder options for it like View by Name. From a user's viewpoint, there is no difference between a RAM disk and a hard disk, except that the RAM disk is much faster.

The RAM disk Maxima creates is permanent. This means the contents of the RAM disk are preserved and protected during restarts, shutdowns, and system crashes, as long as power to your Macintosh is not interrupted. Maxima backs up the RAM disk to your hard disk when your Macintosh is shut down and restores it the next time your Macintosh is turned on. Experienced users can select a write-through mode that insures all data is preserved as it is changed. Maxima's high level of security means you can safely use the RAM disk to store shared files on a file server.

The RAM disk Maxima creates is double capacity. Maxima automatically doubles the amount of physical RAM you set aside for a RAM disk. For example, to create an 8 MB RAM disk, you only need to set aside 4 MB of RAM. This feature lets you create a large RAM disk and still leave plenty of RAM available to run your applications. Unlike disk doubling software, Maxima only compresses data on the RAM disk as necessary. By minimizing the amount of data compression, the RAM disk's speed benefit is preserved. Even compressed information on the RAM disk is accessed faster than typical hard disks.

EXTENDS 24-BIT MEMORY ADDRESSING

Most Macintosh computers that use System 7 support a feature called 32-bit addressing. This is what lets you use more than 8 MB of RAM in your computer. Some older applications, system extensions and hard disk drivers, however, are not compatible with 32-bit addressing and require you to use 24-bit addressing. Unfortunately, 24-bit addressing normally means that you can only use 8MBs of RAM in your computer (that is, if you've installed more it will not be used).

Maxima extends the 24-bit memory addressing capabilities of the Macintosh up to 14 MB. This allows your Macintosh to use more than the normal maximum of 8 MB of physical RAM for opening applications.

Use the Memory control panel under System 7 to select 24-bit or 32-bit addressing. See "Extending 24-Bit Application Memory" later in this manual or refer to your Macintosh User's Guide for more information.

QUICK START FOR MAXIMA 2.0 USERS

If you have an earlier version of Maxima installed on your Macintosh, follow the instructions below to get started with Maxima 3.0. See the "Getting Started" section if you need detailed installation instructions.

To quickly get started using Maxima:

1. Double-click the Maxima Installer on the Maxima floppy disk. The EasySetup dialog box appears.

2. Choose which volume to install a RAM disk on via the pop-up menu at the top of the dialog box.

3. Select the Install option. Besides installing the new software, Install will copy your 2.0 preferences and save your current RAM disk's contents.

4. Restart your Macintosh.

5. The RAM disk appears as an icon on the desktop. The new RAM disk should contain the contents of your previous one.*

---

* If you used the Image backup option with Maxima 2.0 *and* the size of your RAM disk changed when installing Maxima 3.0, you may find that the Installer switched your preferences to the File-by-File option in order to preserve your contents. (Image files are a specific size, and cannot be changed on the fly.) Simply open the Maxima Control Panel and re-select the Image Backup option, if desired.

If you are an experienced Macintosh user but not currently using Maxima 2.0, follow the instructions below to get up and running with Maxima. See the "Getting Started" section if you need detailed installation instructions.

To quickly get started using Maxima:

1. Double-click the Maxima Installer on the Maxima floppy disk. The Installer's initial dialog box appears.

2. Choose which volume to install Maxima on via the pop-up menu at the top of the dialog box.

3. Install the RAM disk by picking one of two options:

    • Choose the EasySetup button if you want to put applications and/or a System Folder on the RAM disk. EasySetup guides you through the remaining steps.
    • Choose the Install button to create a new, empty RAM disk.

4. Restart your Macintosh. You'll see messages from Maxima as it creates and loads your RAM disk.

5. The RAM disk appears as a disk icon on the desktop. Use the RAM disk as you would any other hard disk or floppy disk. If EasySetup was able to fit the System Folder on the RAM disk, your RAM disk automatically becomes the startup disk.

6. Open the Maxima Control Panel if you'd like to make any changes to the default options.

This section provides detailed instruction on how to install Maxima.

Maxima has two basic installation methods:

- Use EasySetup to install Maxima, create a RAM disk, and automatically copy application and System files to the RAM disk.

- Or, use the Install option to install Maxima and create an empty RAM disk; after restarting your Macintosh, manually add files to the RAM disk.

New Macintosh users should use the EasySetup option to easily create a RAM disk that optimizes the performance of their Macintosh. Experienced users should select EasySetup as a convenient way to quickly create a RAM disk with a System and their favorite application programs.

On the other hand, experienced users might prefer to use the Install option to obtain more control over what goes on their RAM disk. For example, Maxima will create a minimal System Folder using its best judgement as to what to leave out and what to alias, but experienced users may have a better idea of what they need and don't need. For maximum control over what is put on the RAM disk, select the Install option and then use the drag and drop method to move the files you want to put on the RAM disk.

Finally, if you are going to use the RAM disk for documents instead of applications or a System Folder, select the Install option to create an empty RAM disk, then manually drag your document files to it.

TO INSTALL MAXIMA

1. Turn on your Macintosh.

2. If you have virus software installed (such as SAM), disable it before you install Maxima.

3. Insert the Maxima floppy disk and double-click the Maxima installer icon. You'll see the dialog box shown below.

```
┌─────────────────────────────────────────────────────────┐
│                 CONNECTIX MAXIMA                         │
├─────────────────────────────────────────────────────────┤
│  Uolume to install onto:  │ IIuⅨ          ▼ │           │
│                                                          │
│  You are about to install (or remoue) Maⅹima into the    │
│  System Folder on the selected uolume.                   │
│                                                          │
│  Click 'EasySetup' to install this uersion and           │
│  automatically place items on the RAM disk. This option  │
│  is recommended for first-time users.                    │
│                                                          │
│  Click on 'Install' to use this uersion, 'Remoue' to     │
│  remoue any uersion, or 'Quit' to return to the Finder.  │
│                                                          │
│  ▨   ([EasySetup]) [Install] [Remoue]    [ Quit ]        │
└─────────────────────────────────────────────────────────┘
```

4. Use the pop-up menu at the top of the dialog box to select the disk on which you want to install Maxima (the default selection is the drive you started up from).

You must now pick one of two installation options:

*   Choose the Install button to create a new, empty RAM disk.

*   Choose the EasySetup button to create a new RAM disk and place applications and/or a System Folder on the RAM disk.

The next section describes how to install Maxima using the Install option. See the section, "Using EasySetup to Install Maxima" for instructions on how to use the EasySetup option.

USING THE INSTALL OPTION

For the creation of an empty RAM disk or installation over an existing RAM disk, use the Install option (note: steps 1 through 4 were done in the section, "To Install Maxima"):

5. Click the Install button. A personalization dialog box appears.

6. Enter your name and your Company's name into the dialog box. Click the OK button. A dialog box appears. The dialog box tells you Maxima has been installed and asks you to restart your Mac. Click the OK button.

7. The beginning installation dialog reappears. Click Quit to continue. If you want to install Maxima on more than one drive, change the drive in the pop-up at the top of the dialog and repeat steps 5 and 6 for each drive.

8. Choose Restart from the Special menu. A RAM disk appears on your desktop.

9. You can now copy the files you want to the RAM disk. See the section "What to Copy to Your RAM Disk" for some ideas of how to populate your RAM disk. See the section, "Using Expert Settings," for information on setting up preferences for how Maxima maintains your RAM disk. To optimize performance, try to install a System Folder on the RAM disk. If your System Folder does not fit on the RAM disk, refer to the "Tips" section for information on resizing your System Folder to make it fit.

   During installation, two were added to your System Folder: the Maxima control panel in the Control Panels folder and the Maxima Preferences file in the Preferences folder.

   ❖ **NOTE:** After installation, a folder named RAM Disk Backup is created on your hard disk. This is the default folder where the contents of your RAM disk are copied for backup (see the section "Backing Up the RAM Disk" for information about backups). If you had a folder with this name, it will be renamed "RAM Disk Backup (Old)."

   ❖ **NOTE:** Maxima uses data compression to increase the size of the RAM disk (you can turn this off if you'd like; see the section "Using Expert Settings" for additional information). RAM disk compression occurs dynamically (and only when it's needed). Data compression slows down performance of the RAM disk somewhat. To fully maximize disk speed, don't completely fill the RAM disk; compression begins to occur when the RAM disk is half full. Maxima tries to keep the information it most often needs uncompressed, but if you jam the RAM disk full of files, it cannot always do this.
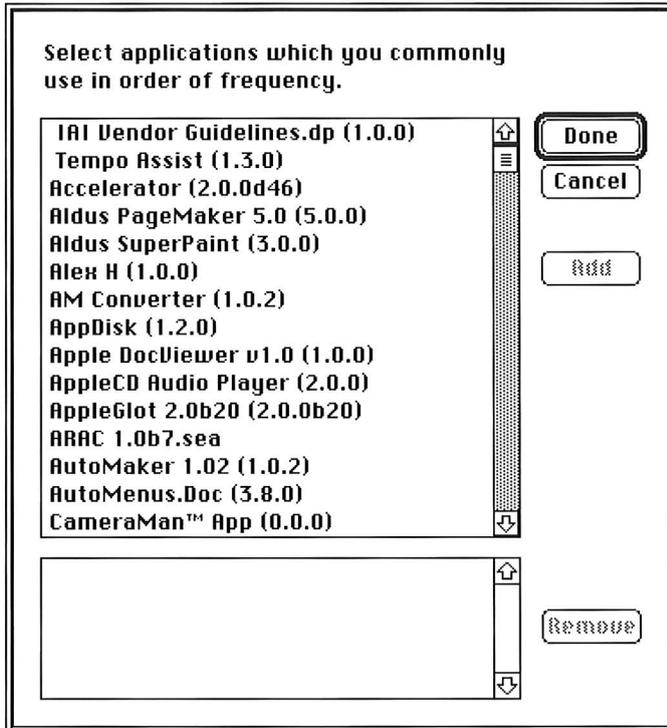
USING EASYSETUP TO INSTALL MAXIMA

To create and automatically configure the contents of a new RAM disk using EasySetup (note: steps 1 through 4 were done in the previous section, "To Install Maxima"):

5. Click the EasySetup button in the Maxima dialog box. Messages appear on the screen to tell you Maxima is checking the information in your

System Folder and building a list of the applications on your hard disk or disks. An alphabetical list of all the applications appears.

This may take a few moments, depending on how many applications you have.

```
┌──────────────────────────────────────────────────────┐
│                                                      │
│  Select applications which you commonly              │
│  use in order of frequency.                          │
│  ┌──────────────────────────────────┬─┐  ┌────────┐ │
│  │ IAI Vendor Guidelines.dp (1.0.0) │⇧│  │  Done  │ │
│  │ Tempo Assist (1.3.0)             │≡│  └────────┘ │
│  │ Accelerator (2.0.0d46)           │ │  ┌────────┐ │
│  │ Aldus PageMaker 5.0 (5.0.0)      │ │  │ Cancel │ │
│  │ Aldus SuperPaint (3.0.0)         │ │  └────────┘ │
│  │ Alex H (1.0.0)                   │ │             │
│  │ AM Converter (1.0.2)             │ │  ┌────────┐ │
│  │ AppDisk (1.2.0)                  │ │  │  Add   │ │
│  │ Apple DocViewer v1.0 (1.0.0)     │ │  └────────┘ │
│  │ AppleCD Audio Player (2.0.0)     │ │             │
│  │ AppleGlot 2.0b20 (2.0.0b20)      │ │             │
│  │ ARAC 1.0b7.sea                   │ │             │
│  │ AutoMaker 1.02 (1.0.2)           │ │             │
│  │ AutoMenus.Doc (3.8.0)            │ │             │
│  │ CameraMan™ App (0.0.0)           │⇩│             │
│  └──────────────────────────────────┴─┘             │
│  ┌──────────────────────────────────┬─┐             │
│  │                                  │⇧│             │
│  │                                  │ │  ┌────────┐ │
│  │                                  │ │  │ Remove │ │
│  │                                  │ │  └────────┘ │
│  │                                  │⇩│             │
│  └──────────────────────────────────┴─┘             │
│                                                      │
└──────────────────────────────────────────────────────┘
```

6.   Select the applications you use most frequently. To select an application, click its name in the list, then click the Add button (or double-click the application's name). The selected application appears in the list at the bottom of the dialog box. To remove an application from the selection list, click the application's name to select it and then click the Remove button (or double-click the application's name).
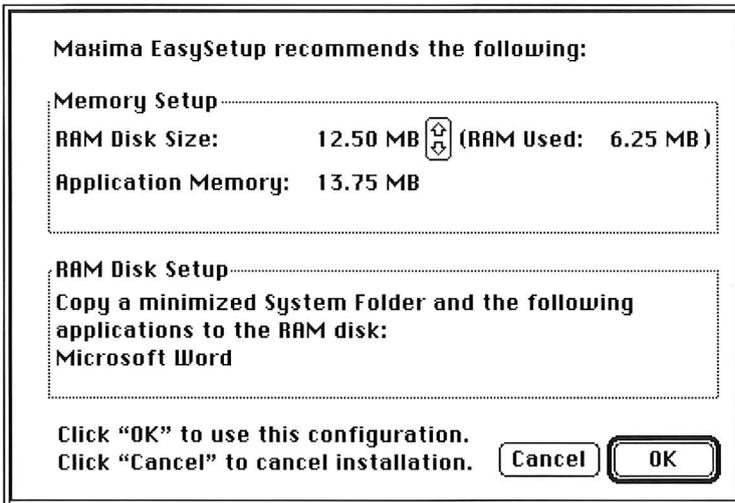
❖   **NOTE:** Make sure that you choose all the applications you would normally use *together or at the same time*. EasySetup calculates how much application memory to leave by checking the sizes of these applications.

☛   **TIP:** Prioritize your selections. Select the application you use the

most first, the next one you commonly use second, and so on. If all the selected applications won't fit, Maxima uses the selection order to choose which programs to place on the RAM disk.

7. Click the Done button when you are finished selecting applications. A dialog box appears.

The Installer now shows a recommended RAM disk size, as well as other information about the RAM disk.

```
Maxima EasySetup recommends the following:

 Memory Setup
 RAM Disk Size:        12.50 MB [⇕] (RAM Used:   6.25 MB)
 Application Memory:   13.75 MB

 RAM Disk Setup
 Copy a minimized System Folder and the following
 applications to the RAM disk:
 Microsoft Word

 Click "OK" to use this configuration.
 Click "Cancel" to cancel installation.  [ Cancel ]  [ OK ]
```

Important items to note in this box are:

RAM Disk Size:

This shows the recommended RAM disk size and the amount of physical RAM required for the RAM disk. The recommended size is twice the size of the RAM used because Maxima uses a RAM doubling technique to double the size of your RAM disk (see the section, "Doubling RAM Disk Capacity," for more information). You can adjust the size of the RAM disk using the arrows. When you do, the recommended configuration in the "RAM disk Setup" box changes.

Application Memory:

This shows the amount of physical RAM remaining after creating the RAM disk. The Application Memory is used for running applications. If you

increase the RAM disk size, you reduce the amount of application memory; if you decrease the RAM disk size, the application memory increases.

RAM Disk Setup

This displays messages that tell you what the RAM disk will hold. The contents of the RAM disk depends on the RAM disk size you specify in the dialog box. For example, suppose the RAM disk can only hold a minimal System Folder based on the recommended RAM disk size. If you increase the RAM disk size, the messages will tell you if you have added enough room for some or all of the applications you selected. (See the section "What EasySetup Copies to Your RAM Disk," below.)

The recommended size of the RAM disk is based on the amount of space the Installer calculated was necessary to hold a System Folder (if possible) and the applications you selected. The Installer also determines the amount of application memory needed to be left available for good system performance. Use this dialog box to modify the size of the RAM disk. Click the up and down arrows to increase or decrease the size of the RAM disk.

❖ **NOTE:** The memory you set aside for a RAM disk is reserved exclusively for RAM disk storage. The memory that is not assigned to the RAM disk is used for running applications. If you place an application on the RAM disk, you still need application memory to run it. Make sure you leave enough application memory to run your largest application. Connectix RAM Doubler can help provide extra memory if you need it.

❖ **NOTE:** It is possible that you do not have enough memory to create a RAM disk that will hold your System Folder and/or applications. Also, if you decrease the size of the recommended RAM disk, the Installer may no longer be able to copy your System Folder and applications to the RAM disk. In this case, Maxima will create an empty RAM disk the size you specified. (See the section "What to Put On the Maxima RAM Disk.")

8. Click on the OK button when you have selected the RAM disk size you want. A personalization dialog box appears.

```
┌──────────────────────────────────────────────────┐
│  Please personalize your copy of Maxima          │
│  ............................................... │
│                                                  │
│  Your Name:   ┌────────────────────────────┐     │
│               └────────────────────────────┘     │
│                                                  │
│  Company:     ┌────────────────────────────┐     │
│               └────────────────────────────┘     │
│                                                  │
│                    (  Cancel  )  (   OK   )      │
│                                                  │
└──────────────────────────────────────────────────┘
```

9. Enter your name and your Company's name into the dialog box. Click the
    OK button.

    Messages appear on the screen to tell you what Maxima is copying to the
    RAM disk. After the files have been copied to the RAM disk, a dialog box
    appears. The dialog box tells you details of the installation. Click the OK
    button.

10. The beginning installation dialog box reappears. Click Quit to continue. If
    you want to install Maxima on more than one drive, change the drive in
    the pop-up at the top of the dialog and repeat steps 5 through 7 for each
    drive.

11. Choose Restart from the Special menu. After your system restarts, a RAM
    disk should appear on your desktop. This RAM disk automatically
    contains the System Folder and selected applications you specified in Step
    6, assuming the RAM disk is large enough to hold them.

If there is a System Folder on the RAM disk, your RAM disk automatically
becomes the startup disk. You're now all set to enjoy the benefits of running
applications from the RAM disk. See the section, "Using Expert Settings," for
additional information about using the RAM disk.

During the installation two files were added to your System Folder: the
Maxima control panel in the Control Panels folder and the Maxima
Preferences file in the Preferences folder.

❖ **NOTE:** If your System Folder did not fit on the RAM disk, refer to the
    "What Should I Put On My New RAM Disk?" section for information on
    resizing your System Folder to make it fit.

❖ **NOTE:** Maxima uses data compression to increase the size of the RAM disk (you can turn this off if you'd like; see the section "Using Expert Settings" for additional information). RAM disk compression occurs dynamically (and only when it's needed). Data compression slows down performance of the RAM disk. To maximize disk speed, don't completely fill the RAM disk; compression occurs when the RAM disk is half full.

❖ **NOTE:** After installation, a folder named RAM Disk Backup is created on your hard disk. This is the default folder in which the contents of your RAM disk are copied for backup (see the section, "Backing Up the RAM Disk," for information about backups).

WHAT EASYSETUP COPIES TO THE RAM DISK

Besides installing the RAM disk software, EasySetup may also populate the newly created RAM disk with a System Folder and applications. If Maxima does copy files to the RAM disk, it will leave exactly half of the RAM disk empty so that it does not slow performance due to compression. Maxima always creates a RAM disk with maximum performance.

EasySetup always tries to copy a System Folder to your new RAM disk. Unfortunately, System Folders can be quite large. Depending on the size of the RAM disk you create and the size of your System Folder's contents, Maxima might not be able to load an exact copy of your System Folder onto the RAM disk. Here are the steps EasySetup goes through in attempting to create a startup System Folder on the RAM disk:

- If the RAM disk is large enough to hold your System Folder, the entire System Folder is copied to the new RAM disk.
- If the entire System Folder will not fit, Maxima tries to use aliases from certain System files in order to cut down the folder's size.
- If using aliases doesn't allow the System Folder to fit, Maxima next tries to load a minimized version of the System Folder. The minimized version contains all the files necessary to run your Macintosh, but excludes non-essential files (such as temporary files).
- If these methods don't work, the RAM disk will not have a System Folder.

EasySetup also lets you select applications you want to load onto the RAM disk. EasySetup makes a quick scan of your hard disk to find all available applications and lets you pick from this list.

▲ **WARNING:** Some programs require files other than the application itself to be on the disk you start it from. Examples include any Aldus or Claris product. See "What Should I Put On My New RAM Disk?" section for more details. Maxima's installer copies only the application file to the RAM disk. If you double-click on an application icon on the RAM disk and get an error message, consult that application's manual to see what other files it might be looking for. Drag those files to the RAM disk and try again.

❖ **NOTE:** Remember, a RAM disk is just like any other disk, so if you want to change its contents, just drag and drop files to and from it until it has the files on it you want there. And, of course, you can always empty the RAM disk to start over by dragging its contents to the Trash Can.
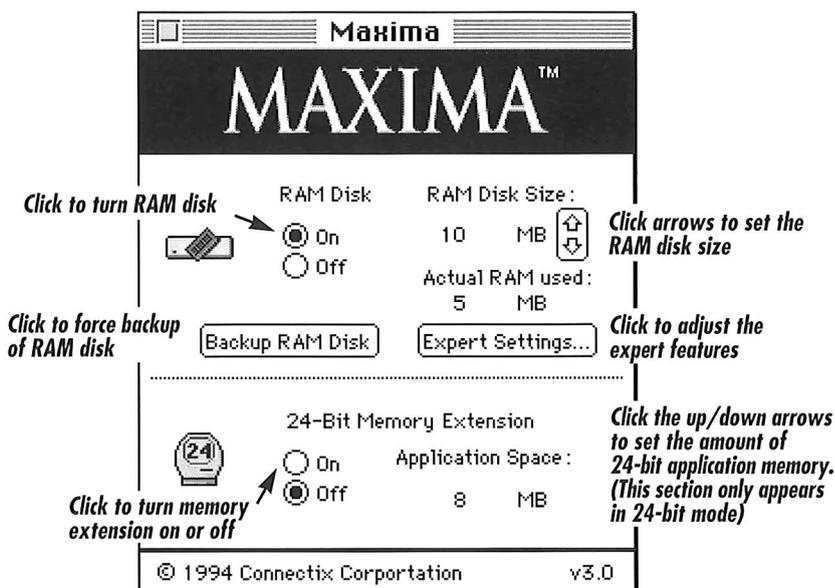
REMOVING MAXIMA

To remove Maxima:

1. Open the Maxima Installer on the Maxima floppy disk.

2. Use the directory pop-up menu at the top of the dialog box to select the drive that contains the copy of Maxima you want to remove.

3. Click on the Remove button.

    Maxima saves the current contents of your RAM disk to the appropriate place on your hard disk if you are using Backup or Remember (that way you can restore your RAM disk later if you decide to reinstall Maxima).

4. You're returned to the beginning installation dialog. Click Quit to continue. If you want to remove Maxima from more than one drive, repeat steps 2 and 3 for each drive.

5. Restart your Macintosh.

Maxima is removed from your hard disk. Specifically, the Maxima Control Panel, some special Maxima loader files and the Maxima Preferences file are erased from your hard disk. Your RAM disk backup folder will *not* be removed. Next time your start or restart your computer, no RAM disk will appear.

THE MAXIMA CONTROL PANEL

Click to turn RAM disk

Click to force backup of RAM disk

Click to turn memory extension on or off

Click arrows to set the RAM disk size

Click to adjust the expert features

Click the up/down arrows to set the amount of 24-bit application memory. (This section only appears in 24-bit mode)

RAM Disk   RAM Disk Size:
- ● On   10   MB
- ○ Off

Actual RAM used:
5   MB

[Backup RAM Disk]   [Expert Settings...]

24-Bit Memory Extension
- ○ On   Application Space:
- ● Off   8   MB

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MAXIMA ICONS

Here's what the Maxima icons look like:

RAM disk icon   *Maxima control panel icon*

WHAT TO PUT ON THE MAXIMA RAM DISK

After installing Maxima and restarting your Macintosh, the RAM disk appears as a disk icon on the desktop. You can use the RAM disk as you would any other hard disk or floppy disk. That is, you can copy application programs and data files to and from the RAM disk by dragging and dropping.

Maxima's EasySetup option automatically loads the applications you selected and a System Folder on the RAM disk. If you want to add other items to the RAM disk, copy items that take advantage of the primary RAM disk benefit – fast access. The fast access time most benefits:

1) items that have typically slow access times
2) items that are accessed frequently.

These items are described below. Additionally, PowerBook users should note that copying the right files to their Maxima-created RAM disk will allow them to use power conservation techniques to extend battery life.

APPLICATIONS

The EasySetup option automatically copies your favorite applications onto the RAM disk. Once on the RAM disk, applications launch more quickly. Not every application is a candidate for being put on the RAM disk, and the strategies you might use with various applications to get the most performance from them also varies. What follows are some starting guidelines for a few common Macintosh applications.

Word

1. Put the Word application file, Word Commands folder, and Glossary files (if you use them) on the RAM disk to generally speed up Word.

2. Additionally, put the document file(s) you're editing on the RAM disk if it is a particularly large one (that is if it doesn't fit into Word's memory partition all at once).

SuperPaint

1. Put the SuperPaint and SP Pouch folder into the RAM disk to speed up the application's access to textures, color tables, shapes, brushes, and some commands.

2. Additionally, put the document file(s) on the RAM disk, although this generally only speeds load and save times.

Excel

Put the Excel application on the RAM disk to generally speed up the application, especially when moving between charting and calculation modes and to load faster. To speed up Help with Microsoft products, you must have your System Folder on the RAM disk with the appropriate Microsoft folder.

FileMaker Pro

1. Generally it doesn't make a lot of sense to put the application itself on the RAM disk (unless you're using a PowerBook and trying to preserve battery life).

2. Putting FileMaker databases on the RAM disk greatly speeds access, especially for finds, reports, and calculated fields.

3. FileMaker, like most Claris products, requires a special "Claris" folder to be present in the System Folder. So, if you have started your system from the RAM disk, make sure the folder is there.

Hypercard

1. Generally it doesn't make a lot of sense to put the application itself on the RAM disk (unless you're using a PowerBook and trying to preserve battery life).

2. Putting the Home stack and other stacks on the RAM disk speeds access, especially for searches and calculations in large stacks.

Microphone and other Communications Programs

Put the log file on the RAM disk if you have a fast modem. Also file transfers to and from your Mac might go faster if done to and from the RAM disk (varies based on service and modem response speeds).

PageMaker

1. Long documents, especially those with lots of Placed graphics, greatly benefit from being placed on the RAM disk. Make sure you

put the embedded graphic files on the RAM disk, too, otherwise, access will be slowed when retrieving them.

2. Putting the application and Scripts folder (if you use them) will speed access somewhat. Note, however, that PageMaker accessories, such as Drop-Ins, are stored in the Aldus folder in your System Folder. To speed up the use of these, and printing from PageMaker, you'll need to have your System Folder on the RAM disk.

3. PageMaker, like most Aldus products, requires a special "Aldus" folder to be present in the System Folder. So, if you have started your system from the RAM disk, make sure the folder is there.

Painter

1. Painter uses a number of "extension" files to store things like textures, friskets, brush styles, patterns, and so on. Placing these on the RAM disk improves access speed to many tools.

2. Painter "playbacks" run faster from a RAM disk.

PhotoShop

1. The PhotoShop application is relatively small compared to the size of the Plug-ins and Extensions folders. The Brushes & Patterns folder, the Color Palettes folder, the Optional Extensions Folder and Plug-ins Folder should usually be placed on a RAM disk to speed access and start-up speed.

2. Adobe recommends giving PhotoShop as much memory as possible and to avoid using a RAM disk for the application.

3. Large PhotoShop documents will be accessed faster from the RAM disk. Commands like Revert are greatly speeded when the document is on the RAM disk.

SimCity 2000

Traffic moves faster and generally twice as many cars travel on your roads when you put SimCity 2000 on your RAM disk. You can also build larger cities. Arcologies grow twice as tall. Park attendance doubles. Since everything is accelerated, power plants only last 25 years. (Just kidding!)

POWERBOOK USE

Placing applications on a PowerBook's RAM disk can greatly extend battery life. (The computer can access the application stored on RAM disk memory instead of having to spin the hard disk to retrieve the data.)

> ### PowerBook User Example
>
> Chris has a PowerBook 160 with 8MB of RAM. Chris' primary application is Microsoft Word, notorious for the way it shuffles pieces of the application into memory from the hard disk.
>
> To enhance Word's performance and eradicate Word's periodic hard drive access, Chris copies Word and its associated files (Word Command folder, spelling dictionary, etc.) to the RAM disk. Chris also copies document files being worked on to the RAM disk. Starting up Word and loading the document now works much faster than before.
>
> Using a PowerBook utility like Connectix PowerBook Utilities (CPU), Chris also sets the hard disk to spin down after one minute of inactivity. This helps extend the PowerBook's battery life, since the computer does not have to use power to keep the hard disk spinning while Chris edits documents in Word.

Special Notes for Powerbook Users

Using a RAM disk can conserve power on battery-powered Macs. Your PowerBook or Duo uses less energy to access information stored on the RAM disk than on a hard disk or a floppy disk.

When using Maxima on a PowerBook or Duo:

1. Copy your applications onto the RAM disk and save the documents you want to work on to the RAM disk.

2. If you have lots of physical memory installed (more than 8 MB):

   - Copy your System Folder to the RAM disk (include all necessary System files, such as the System and Finder). See the section "Creating a System Folder for Your RAM Disk" for details.
   - Restart. This makes the RAM disk the startup disk.

3. Use a PowerBook utility like Connectix PowerBook Utilities to spin down the hard disk. Make sure you use the copy of your application or document on the RAM disk instead of the one on your hard disk!

Depending upon your model and options selected, using a RAM disk can extend your battery use between 10 and 25 percent (for example, add 12-30 minutes or more to a battery that usually lasts two hours).

CREATING A SYSTEM FOR YOUR RAM DISK

Maxima's EasySetup option copies your System Folder onto the RAM disk if there is enough disk space. With the System Folder on the RAM disk, your Mac restarts much faster and generally operates faster because it has faster access to system resources when they are stored on the RAM disk.

If your System Folder is too large to fit on a RAM disk, even after using EasySetup, try reducing its size by removing some control panels, extensions, fonts, or preference files from the System Folder.

Here's the minimum you need in your System Folder if you use System 7:

- Apple Menu Items folder (but prune out infrequently used items!)
- Control Panels folder (but prune out infrequently used items!)
- Extensions folder (but prune out infrequently used items!)
- The System and Finder files
- Fonts folder (but prune out infrequently used items!)
- PrintMonitor Documents folder (make sure it's initially empty)
- Startup Items folder (make sure it's initially empty)
- Any System Enablers your Macintosh uses

To reduce the size of your System Folder:

1. Copy only essential extensions and control panels to your RAM disk and remove all the items that are disabled. For example, the System and Finder are essential items you need to start up and run your Macintosh.

   △ **IMPORTANT:** If your Macintosh uses a system enabler, make sure you find this file (system enablers appear in your System Folder) and copy it into the RAM disk's System Folder. Otherwise, your Macintosh may not restart properly.

2. Reduce the number of items in the Apple Menu Items folder or create aliases for them. (The mini-applications in the Apple Menu Items folder can take up a lot of space.)

3. Use Maxima's Load Aliased Extensions and Fonts option. This option allows extensions and fonts to be stored on the hard disk instead of the RAM disk. (See the "Load Aliased Extensions and Fonts" section for information.) You can also save space by reducing the number of fonts in the Fonts folder. You can also use a font utility, like Suitcase or MasterJuggler, to use fonts located outside your System Folder.

4. Reduce the number of preference files in the System Folder and in the Preferences folder. Remove preference files from applications that you no longer use. Some applications also create special folders within the System Folder; if you're not using these applications, don't put the special folders on the RAM disk.

❖ **NOTE:** If you have a System Folder on your RAM disk, your Mac automatically uses it when it starts up. Depending upon your system's configuration and the size of the RAM disk and folder, your machine may take longer to start up from a completely powered down state. However, you will see a general improvement in overall performance, and restarts will be faster.

System Folder User Example

Pat typically uses up to 14 MB of the 20 MB installed on a IIci to run applications. Pat determined this number by looking at the Finder's About This Macintosh box a few times during a normal day and noting the total amount of memory used.

Pat used the remaining 6 MBs of RAM to create a 12 MB RAM disk. Pat's System Folder was 18 MBs, so Pat had to spend time pruning it down. Pat determined the following were not needed:

- ImageWriter chooser file (Pat only uses a LaserWriter).
- Appletalk drivers and network files (Pat isn't on a network).
- Puzzle, Notepad, and other desk accessories Pat never uses.

By eliminating these and other non-essential files, Pat cut the System Folder size to 8MBs, which easily fit on the RAM disk.

PUTTING DOCUMENTS ON THE RAM DISK

Documents placed on the RAM disk, such as large spreadsheets, text files or graphics, generally perform faster, especially when they are being opened or saved. Applications that use "paging" techniques to work on documents larger than available memory show performance increases when documents are placed on the RAM disk. Programs that use paging techniques include word processors, desktop publishing products and graphics programs.

Databases are ideal for the RAM disk since searches and sorts will benefit from the faster access time of a RAM disk. When shared files are stored on a RAM disk (for example, a RAM disk on a file server), the connected users will also be able to access files faster than from a shared hard disk.

An Example of Database Documents on a RAM disk

Terry uses a Quadra 800 as a network database server, which hosts twenty Macintosh users through Ethernet connections. On this server resides several FileMaker Pro databases that users share over the network. At any given time several people may be accessing the database files. While the files are not particularly large (the biggest is 8 MBs in size), Terry is concerned about performance, especially when users are doing finds, updates, and reports from the database.

Terry enhanced the database performance greatly by storing them on a 16 MB RAM Disk. Since the server had 64 MBs of physical RAM, creating a RAM disk was no problem. Terry uses Maxima's writethrough feature to make sure the database files are backed up on all changes.

OTHER USES

The RAM Disk can also be useful as a scratch disk or work space. Some applications create a temporary or scratch file on the hard drive to store extra information outside of RAM memory. Since these files are frequently accessed, the application will benefit from fast access off the RAM Disk.

The RAM Disk can be used as a shared volume through System 7 file sharing. Hosted items can be quickly accessed from the RAM Disk without resulting in extra hard drive activity for the host.

USING THE MAXIMA RAM DISK

BACKING UP THE RAM DISK

Because the RAM disk is permanent, it is automatically backed up whenever you shut down your Mac. The contents of the RAM disk are backed up to the RAM Disk Backup folder on the hard disk. The RAM Disk Backup folder is automatically created when you install Maxima. During the backup process, a dialog box will indicate the progress of the back up process. Similarly, when starting up, a dialog box indicates the RAM disk loading progress.

If you experience a system crash (system error), do not turn off your Mac and then turn it back on. If you turn off your Mac, your RAM disk will not be backed up. Instead of turning off your Macintosh, perform a "soft restart." If you Macintosh has a Programmer's switch, press it to restart your Macintosh.

Occasionally, you may want to backup the RAM disk without shutting down (that is, on your command). To backup the RAM disk immediately open the Maxima Control Panel and click the Backup RAM Disk button.

There are other ways you can back up the RAM disk. Refer to the "Using Expert Settings" section if you want to back up the RAM disk to a different folder, change the frequency of backups, or turn off automatic backup.

   △   **IMPORTANT:** As with any other disk backup you have, you should not use the backup folder except to restore or reload a disk.

RESTORING (RELOADING) THE RAM DISK CONTENTS

Because the RAM disk is permanent, Maxima automatically restores it when you start your Macintosh. Maxima restores the RAM disk by copying the contents of the RAM Disk Backup folder on your hard disk to the RAM disk.

Occasionally, you may want to restore (reload) the RAM disk without shutting down your Macintosh (for example, after you resize the RAM disk.

To restore the RAM disk:

1.   Restart your Macintosh.

2.   Hold down the Command key while your Macintosh starts up. A dialog box appears

```
┌─────────────────────────────────────────────────┐
│ ┌─────────────────────────────────────────────┐ │
│ │  ⚠   Are you sure you want to reload the RAM │ │
│ │      disk? Current contents will be lost.    │ │
│ │                                              │ │
│ │                    ( Cancel ) ║    OK    ║   │ │
│ └─────────────────────────────────────────────┘ │
└─────────────────────────────────────────────────┘
```

3. Click OK if you want to restore (reload) the RAM disk. The current contents of the RAM disk are erased and replaced with the contents of the Backup folder on your hard disk. Click Cancel if you want to leave the current contents of the RAM disk unchanged.

You could also perform the same procedure manually by emptying the RAM disk (by dragging its contents to the trash can), emptying the trash can, then performing a Finder copy of the contents of the RAM Disk Backup folder on your hard disk to the RAM disk.

CHANGING THE RAM DISK

Changing the RAM Disk's Name

To change the name of the RAM disk, select the name in the Finder and type a new name. (Remember that under System 7, you must turn off file sharing before you can change the name of a disk.)

Changing the RAM Disk's Size

From time to time, you may want to change the size of the RAM disk. In such cases you normally are trying to do one of two things:

1. Increase the RAM disk size to make room for more files.

2. Decrease the RAM disk size to make more memory available for applications.

To Resize the RAM disk:

1. Open the Maxima control panel.

2. Click the up and down arrows to set the RAM disk size. For adjustments smaller than 1 MB at a time, hold down the Option key and click the arrows.

3. Close the Maxima control panel and restart your Macintosh.

❖   **NOTE:** If you make the RAM disk smaller, there might not be enough space to hold the entire contents of the RAM Disk Backup folder (that is, the previous contents of the RAM disk). The files that don't fit remain in the RAM Disk Backup folder on your hard disk.

USING THE RAM DISK AS A STARTUP DISK

While placing applications and documents on your RAM disk can greatly enhance their performance, you can also enhance the general performance of your Macintosh by using the RAM disk as the startup disk. When you use your RAM disk as the startup disk, your Mac restarts faster and is more responsive when it accesses System resources, such as fonts and background printing.

The RAM disk automatically becomes the startup disk if it has a System Folder on it. You won't need to set this in the Startup Disk control panel.

DISABLING THE RAM DISK AS A STARTUP DISK

Sometimes you may temporarily want your Mac to start up from a startup disk other than the RAM disk. When you disable the RAM disk as the startup disk, your Macintosh starts up from another disk; the RAM disk is mounted after the startup disk. To temporarily disable the RAM disk as the startup disk:

1. Restart your Macintosh.

2. Hold down the Option key while your Macintosh starts up. You can release the key a few seconds after the "Maxima RAM Disk remounted" message appears.

DISABLING MAXIMA

▲   **WARNING:** You should not use an extension manager to turn Maxima off temporarily. Instead, always turn Maxima off by using its control panel or by using the Installer's Remove button.

At times, you might want to disable Maxima. For example, you might want to disable Maxima to free up more space for running applications.

To disable Maxima:

1. Open the Maxima control panel.

2. Click the Off button under RAM disk. (If the 24-bit Memory Extension is displayed in the Maxima control panel, also click the Off button in this section.)

3. Restart. The contents of your RAM disk will be backed up according to your preferences and your Mac restarted without a RAM disk installed.

To disable Maxima for a single session, hold down the Tab key while your Macintosh starts up. You can release the key after the Welcome to Macintosh box disappears.

▲ **WARNING:** Holding down the Tab key during startup after a restart will not preserve the contents of the RAM disk. Perform a shutdown first or use the Backup RAM Disk button in the control panel before restarting.

❖ **NOTE:** Holding down the Shift key at a restart to disable the extensions will not disable Maxima.

MOUNTING AND UNMOUNTING THE RAM DISK

Like a hard disk, the RAM disk is automatically mounted when the Macintosh starts up or is restarted. And like any other disk, you can unmount the RAM disk by dragging its icon into the Trash.

To remount the RAM disk without restarting:

1. Open the Maxima control panel.

2. Hold down the Option and Command keys at the same time. The "Backup RAM disk" button changes to the "Mount RAM disk" button. Click the Mount button.

STARTUP MESSAGES

Maxima displays one or more of the following status messages in the "Welcome to Macintosh" alert box when you start your Macintosh:

Maxima RAM Disk Created

Indicates that a new, empty RAM disk has been created.

Maxima RAM Disk Remounted

Indicates that a previously created RAM disk has been verified and is ready to use.

Maxima RAM Disk Loaded

Indicates that files have successfully been copied from the RAM disk Backup folder onto the RAM disk.

Booting From RAM Disk

Indicates that the RAM disk is the startup disk.

USING EXPERT SETTINGS

If you used the EasySetup option to install Maxima, you should be able to use the RAM disk without changing the settings that were automatically defined during the installation. However, if you manually installed Maxima or want more control over the RAM disk setup, you can use the information in this section to choose various RAM disk options.

USING ANOTHER BACKUP FOLDER

By default, the contents of the RAM disk are backed up to a folder named "RAM Disk Backup," which is automatically created on your hard disk after you install Maxima. However, you can choose to back up the RAM disk to an alternate folder on your hard disk.

To save space on your hard disk, you can select an alternate folder that contains the files on the RAM disk. For example, if you have some Word files on your RAM disk and a folder on your hard disk with the same Word files, you could back up your RAM disk files to the Word folder on your hard disk. This way you would only have one duplicate copy of the Word files. Similarly, if you have your System Folder on the RAM disk, you could use the System Folder on your hard disk as the backup folder.
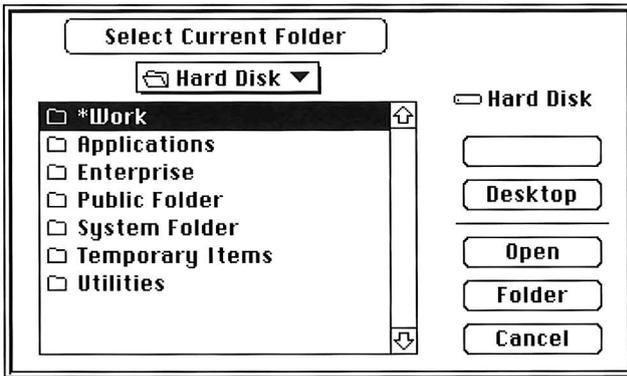
▲ **WARNING:** You can lose data if you accidentally misuse this option. For example, if you unintentionally change a file on the RAM disk, that change may be saved over the original file on your hard disk, since it is also designated as the backup file. You should only use the Alternate Folder option after you are comfortable with how the RAM disk works.

To select an Alternate Backup folder:

1. Open the Maxima control panel.

2. Click the Expert Settings button. The Expert Settings dialog box appears.

3. Check the Use Alternate Folder box. The Select Folder button becomes active.

4. Click the Select Folder button. A dialog box appears.

```
┌─────────────────────────────────────────────────────┐
│ ┌───────────────────────────────────────────────────┐│
│ │       ┌─────────────────────────────┐             ││
│ │       │    Select Current Folder    │             ││
│ │       └─────────────────────────────┘             ││
│ │         ┌───────────────────┐                     ││
│ │         │ 🖯 Hard Disk ▼ │        ⊂⊃ Hard Disk   ││
│ │       ┌─────────────────────────┬─┐               ││
│ │       │ 🗀 *Work              │⬆│   ┌──────────┐ ││
│ │       │ 🗀 Applications       │ │   │          │ ││
│ │       │ 🗀 Enterprise         │ │   └──────────┘ ││
│ │       │ 🗀 Public Folder      │ │   ┌──────────┐ ││
│ │       │ 🗀 System Folder      │ │   │ Desktop  │ ││
│ │       │ 🗀 Temporary Items    │ │   └──────────┘ ││
│ │       │ 🗀 Utilities          │ │   ┌──────────┐ ││
│ │       │                      │ │   │   Open   │ ││
│ │       │                      │ │   └──────────┘ ││
│ │       │                      │⬇│   ┌──────────┐ ││
│ │       └─────────────────────────┴─┘   │  Folder  │ ││
│ │                                    └──────────┘ ││
│ │                                    ┌──────────┐ ││
│ │                                    │  Cancel  │ ││
│ │                                    └──────────┘ ││
│ └───────────────────────────────────────────────────┘│
└─────────────────────────────────────────────────────┘
```

5. Use the directory pop-up menu in the dialog box to select the Alternate Backup folder you want. Click the Folder button when the correct folder is highlighted in the dialog box. Or, click the Use Current Folder button if the folder you want is already open (that is, the folder name appears in the box above the list).

☞ **TIP:** If you want the RAM disk to contain more than one folder, you'll need to create a "container" folder to hold them. To do this (1) Create a new folder; (2) Copy all the folders you want on the RAM disk to the folder you just created; (3) Give the new folder a name and select it as the alternate folder.

6. Click OK to close the Expert Settings dialog box. Make sure the RAM disk size is large enough to hold the folder. If it is not, use the up arrows in the Maxima control panel to adjust the RAM disk to the appropriate size.

7. Close the Maxima control panel and restart your Macintosh. Hold down the Command key while your Mac starts up. A dialog box appears.

8. Click OK to load the new RAM disk contents.

CHANGING THE PRESERVATION MODE AND BACKUP FREQUENCY

You can use the Expert Settings options to choose how the information on the RAM disk is backed up and how often the information is backed up.

You use the Image File Backup option to create a backup that is an exact duplicate of your RAM disk. When the RAM disk is backed up while the Image File Backup option is active, everything on the RAM disk (including the empty disk space) is copied into a single file, or "disk image," on your hard disk. The backup file is named "RAM Disk image."

If the RAM disk contains a large number of small files, using the Image method may provide faster loads and saves than the file-by-file backup method.

❖ **NOTE:** In earlier versions of Maxima, the Image method was required to support file numbers for programs such as MasterJuggler and Disk Express. In Maxima 3.0, both the Image and file-by-file methods preserve these file numbers.

You should not select the Image File Backup option when the RAM disk is mostly empty because the image file will take up unnecessary hard disk space.

You can also use the Backup Frequency options to define how often you want to back up the RAM disk.

To select the Image File Backup option

1. Open the Maxima control panel.

2. Click the Expert Settings button. The Expert Settings dialog box appears.

```
Preserve RAM Disk          Preservation Mode
    ⦿ On                     ◯ File-By-File Backup
    ◯ Off                    ⦿ Image File Backup

 Options:      Backup Frequency
                 ◯ Always (writethrough)
                 ◯ At Restart or Shutdown
                 ⦿ At Shutdown Only
                [ Change Image Location ]
              ─────────────────────────────
              ☒ Double RAM Disk size
              ☒ Write protect RAM Disk
              ☒ Load aliased inits and fonts

                     [ Cancel ]   [[ OK ]]
```
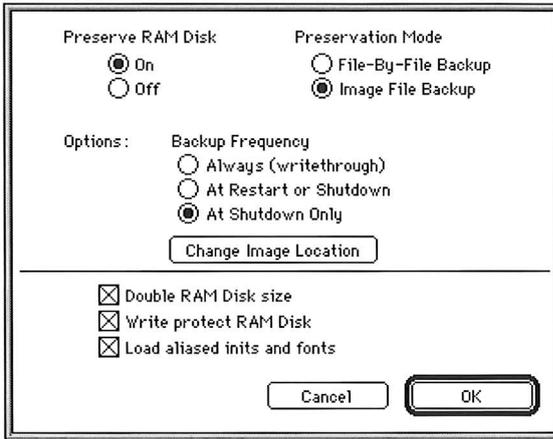
3. Click the Image File Backup button.

4. If you want to change the frequency at which the RAM disk is backed up, click the button for the frequency you want.

5. To change the location where the image file is saved, click the Change Image Location button. Then use the directory dialog box to specify the location in which you want the image file saved.

Turning Off RAM Disk Backup

You can turn off the RAM disk backup. When you do this, no changes or files are backed up when you shut down your Macintosh. This lets you use the RAM disk as a temporary storage device. For example, you might want to turn off the RAM disk backup to load files temporarily onto the RAM disk, for example, when you download files from a BBS.

To disable the RAM disk backup:

1. Open the Maxima control panel.

2. Click the Expert Settings button. The Expert Settings dialog box appears.

```
Preserve RAM Disk
    ◯ On
    ⦿ Off
```
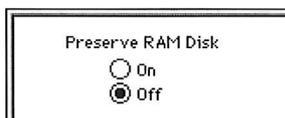
3. Click the Off button under Preserve RAM Disk.

☞ **TIP:** Turn off the Preserve RAM Disk setting if you only have temporary files on your RAM disk. Since these files need not be saved—the temporary files are just that—you needn't waste the hard disk space to back them up.

USING THE REMEMBER MODE

You can also turn off the RAM disk backup, but still have Maxima remember and reload the same files from your hard disk each time you turn on your Macintosh. You do this using the Remember mode.

The Remember mode is best used for storing applications, because they are not likely to be modified. This option is highly recommended for PowerBook users because it helps conserve disk space.

For example, suppose you load Word onto your RAM disk to increase the program's performance. If you already have a copy of Word on your hard disk, you don't need to worry about backing it up. Therefore, you can use the Remember mode to load Word onto your RAM disk without backing up the program.

However, if you use the Remember mode, keep in mind that no files or changes on the RAM disk are saved when you shut down your Macintosh. Therefore, don't use the Remember mode if your RAM disk will contain files you change and want to keep (such as documents).

To Enable the RAM Disk Remember Mode

1. Open the Maxima control panel.

2. Click the Expert Settings button. The Expert Settings dialog box appears.

Preserve RAM Disk
    ◯ On
    ◉ Off

Options: ☒ Use Remember Mode

3. Click the Off button under Preserve RAM Disk.

4. Check the Use Remember Mode box.

5. To remember the current RAM disk contents, click the Remember Now button.

DOUBLING RAM DISK CAPACITY

☒ Double RAM Disk size

The Double RAM Disk size option lets you double the amount of RAM you set aside for a RAM disk. For example, you can create an 8 MB RAM disk by setting aside 4 MB of actual RAM. The RAM doubling is done by compressing the data on the RAM disk. To maximize speed, data is not compressed until the RAM disk is more than 50 percent full. The Double RAM Disk size option is on by default.

☛ **TIP:** Because the RAM disk compression occurs dynamically (only when it's needed), don't fill the RAM disk entirely. RAM disk speed is fastest when it is half full or less. Filling it beyond the half full point results in performance that is still better than most hard disks, but you'll lose as much as half the speed improvement on many Mac configurations.

❖ **NOTE:** When data starts to be compressed, the amount of space available on the RAM disk varies with the compressibility of the data itself. Files with data that has already been compressed can not be compressed further (for example, some system files, compressed archives, and QuickTime movies). In these cases, the actual amount of RAM disk space available may be less than the amount you selected in the Maxima control panel. This is because the amount of RAM disk space shown in the control panel is based on the assumption that Maxima will be able to compress data by 50 percent. If some files cannot be compressed by this amount, there might be less space available on the RAM disk.

SAFEGUARDING THE RAM DISK MEMORY

☒ Safeguard RAM disk memory

The Safeguard RAM Disk Memory option prevents applications from accidentally damaging the RAM disk data by writing information directly to

the RAM disk's reserved memory – only Maxima should use this memory. This option is on by default. It is a good idea to leave the Safeguard RAM Disk Memory option on unless you are using an advanced debugger or other unusual system software that may require access to this memory.

LOAD ALIASED EXTENSIONS AND FONTS

☒ Load aliased extensions and fonts

The Load aliased extensions and fonts option allows the startup System Folder to use the aliases for certain extensions and any fonts in the Fonts folder. This reduces the size of the System Folder and saves space on the RAM disk because only the files' aliases, (which are smaller than the files themselves), are stored on the RAM disk; the actual extensions and fonts are stored on the hard disk. This option is on by default.

❖ **NOTE:** Maxima requires the user to create aliases for extensions and fonts. Maxima does not create any aliases except when you use EasySetup to configure the System Folder on a new RAM disk.

❖ **NOTE:** Some extensions cannot be aliased. For example, the Network and File Sharing extensions and all Chooser devices (such as the LaserWriter and ImageWriter drivers) must be in the System Folder in order to run properly. If an alias for a third party extension does not run, copy the extension into the RAM disk's System Folder.

EXTENDING 24-BIT APPLICATION MEMORY

```
        24-Bit Memory Extension
 (24)   ◉ On    Application Space
        ○ Off        12    MB  [⬆/⬇]
```

When your Macintosh is using 24-bit addressing, you can normally use only 8 MB of application memory. However, Maxima lets you use up to 14 MB of memory. By increasing your application memory, you can run more applications simultaneously. If your Macintosh is using 32-bit addressing, this feature isn't necessary, so it doesn't appear on-screen. (Under System 7, you can turn on 32-bit addressing using the Memory control panel; see your Macintosh User's Guide for information.)

✣ **NOTE:** If your memory control panel lacks a 32-bit addressing section one of the three cases apply:

1. It it a very old Macintosh which is not compatible with Maxima.

2. It is a Mac II, IIx, IIcx or SE/30 which needs to use Connectix MODE32 to use 32-bit addressing.

3. It is a very new Macintosh which can only work in 32-bit addressing.

To use the 24-bit Memory Extension to access more application memory:

1. Open the Maxima control panel.

2. Click the On button under 24-bit Memory Extension.

    ✣ **NOTE:** If the 24-bit Memory Extension portion of the control panel doesn't appear, you are already using 32-bit addressing, and you need to do nothing more to maximize your memory use. Close the panel and go back to what you were doing (you were doing something, weren't you?)

3. Click the up and down arrows to set the application memory size.

4. Close the Maxima control panel and restart your Macintosh.

    ✣ **NOTE:** 24-bit addressing can only manage a total of 16 MB of memory. Some of the 16 MB is used by the hardware in your Macintosh (serial ports, floppy drive, ROM chips, and video,

network, or other NuBus cards). Because of the hardware memory requirements, the total available memory is usually 15 MB less 1 MB per NuBus card installed. For example, if you have 2 NuBus cards installed in your Mac (a graphics card and an Ethernet card, for example), you would have 13 MB of available memory, 15 - 2 = 13.

MAXIMIZING EXTENDED MEMORY

As described above, the extended memory space Maxima creates must also be shared with your Macintosh computer's hardware. The memory space is fragmented because the hardware addresses are scattered within it. This "fragmentation" limits the amount of memory an application uses because the System software is incapable of letting applications use more than one block of memory. This means that the largest block for any one application is still slightly less than 8 MB.

You can decrease this fragmentation and increase the functionality of the extended memory by properly aligning your NuBus cards. On a Mac II, IIx, IIcx, IIfx, Quadra 700, place the cards in slots located away from the power supply. (The power supply is the large, shiny, metallic box inside the Macintosh.) On a Mac IIci, IIvx, Centris 650, Quadra 650, 800, 900 and 950, place the cards in slots located near the power supply. (See your Macintosh User's Guide for information about installing NuBus cards.)

❖ **NOTE:** This fragmentation effect is not present when you use 32-bit addressing.

FREQUENTLY ASKED QUESTIONS

HOW DOES MAXIMA WORK?

With a hard disk or floppy disk, when the computer needs to retrieve information stored on the disk, a complex process is invoked. The computer must form an I/O request that it is sent to the disk through a controller chip and then through a cable to the drive. A simple request may also involve the disk having to physically move its read/write head mechanism to retrieve the appropriate data. Moving the disk drive's heads from track to track on a disk is the slowest aspect of data storage and retrieval. (See Figure 1, below)

By comparison, accessing a RAM disk does not have to go through any extra controllers or cables, or move any physical component to work. With a RAM disk, the data is already stored in the computer's memory. The computer's CPU (central processor unit) simply moves the data to a place in memory where it can work on it. Data transfer within memory is very fast, which is why RAM disks are generally much faster than physical disks.
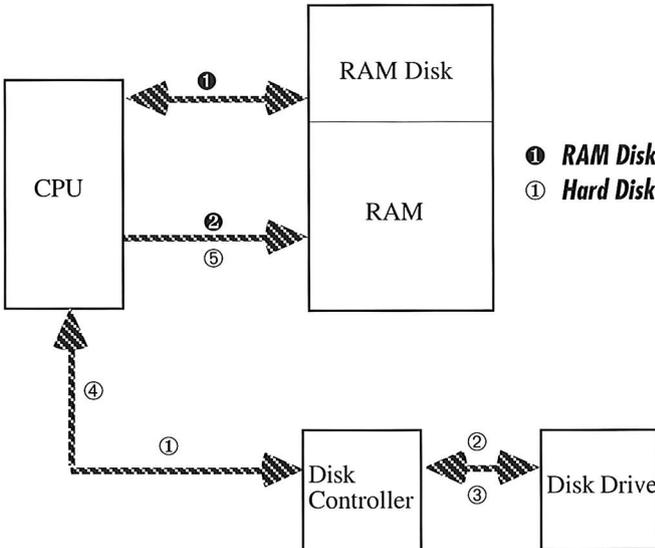
Figure 1 — A simplified view of how RAM disk and physical disks differ

For a RAM disk:

1. The CPU requests data from the RAM disk and gets it.

2. The CPU puts the data into RAM where it works with it.

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For a Physical disk:

1. The CPU requests data from the disk by asking the disk controller for it.

2. The disk controller sends the request to the drive, whose electronics and physical mechanism decipher the request and get the data.

3. The disk drive sends the requested data to the disk controller. Note that the disk is a mechanical device, and is much slower than the other components involved in the process.

4. The disk controller passes the data back to the CPU.

5. The CPU puts the data into RAM where it can work with it.

WHAT MACINTOSH MODELS IS MAXIMA COMPATIBLE WITH?

This table summarizes Maxima's compatibility with various Macs:

Compatible

- All PowerMacs
- All Quadras
- All Centris
- All Performas
- LC III
- All Mac II models except the original(IIci, IIsi, IIvx, etc.)
- All PowerBooks except the Model 100
- SE/30
- All Duos

Not Compatible

- Portable
- PowerBook 100
- Mac Plus and SE
- Original Classic
- Original LC and LC II
- Macintosh 128 and 512

Special Cases

- Mac II requires a 68030 or 68040 accelerator or a 68851 PMMU
- Machines with accelerators must use the 68030 or 68040 CPU and work with virtual memory (check with your accelerator's manufacturer for compatibility)

If you purchased this software and discovered that it doesn't work on your Mac, call Connectix Technical Support (1-800-950-5880) for information on how to return it under the Connectix 30-day Money Back Guarantee.

WILL MAXIMA WORK FASTER ON A POWER MACINTOSH?

Yes, Maxima takes advantage of the processing speed of the Power Macintosh to deliver the fastest possible performance.

HOW IS MAXIMA DIFFERENT THAN APPLE'S RAM DISK?

Maxima 3.0 has several key differences from the built-in RAM disk capabilities provided by some Macintosh models:

- Maxima's RAM disk is non-volatile (automatically backed up), with user defined backup methods and times, including a "write-through" mode that insures that all information is backed up.
- Maxima doubles the capacity of the RAM disk using proprietary compression techniques; for the same amount of memory used by Apple's RAM disk, Maxima will provide you a RAM disk of twice the size.
- Maxima loads aliased extensions and fonts in the RAM disk's System Folder, saving valuable RAM disk space.
- Maxima RAM disks are automatically made the startup disk if a System Folder is present; you don't have to go to the Control Panel to change the startup disk selection.
- Maxima has a Remember mode, which allows it to load the RAM disk with non-changing files from your hard disk (useful for applications, since it saves storage space normally used in backing up the RAM disk).
- Maxima comes with a 24-bit Memory extension, allowing it to work with machines that are not running 32-bit addressing (see "Extending 24-bit Memory Addressing").
- Maxima works on Macs that do not have a built-in RAM disk function.
- Maxima comes with an EasySetup option that copies a System Folder and applications to your RAM disk automatically.

WHEN DOES MAXIMA BACKUP DATA FROM THE RAM DISK TO THE HARD DISK?

By default, Maxima saves the data to the hard disk when you restart or shut down your Macintosh, and when you resize the RAM disk. See the section, "Changing the Backup Frequency," for information about defining when the data is backed up.

WHY ARE THE NUMBERS IN THE ABOUT THIS MACINTOSH WINDOW NOT WHAT I EXPECT?

While in the Finder, if you choose the About This Macintosh command from the Apple menu, certain information about your Macintosh computer's memory usage is displayed.

When you use Maxima, the memory information might not be what you expect. The information below helps explain the memory usage information and how it relates to Maxima.

System Software
When using a RAM disk on machines which support Apple's RAM Disk (for example, Power Macs), the System software reports the sum of the memory used by the System and the memory used by the RAM disk.

Largest Unused Block
The System Software reports the value of the largest contiguous block of memory, not the sum of the fragmented free memory space. Memory space is shared by your software and hardware and can be fragmented because hardware addresses for the ROM (Read-Only Memory) chips and for add-on cards are scattered within it. When 32-bit addressing is active, all the free memory is shown.

Total Memory
When using more than 8 MB of memory with 24-bit addressing, the System software sometimes reports the sum of the memory available for applications and those used by add-on cards. The general solution is to turn on 32-bit addressing. However, if you have a Macintosh with more than one NuBus slot, you can eliminate this confusion through proper alignment of your NuBus cards. Refer to the "Maximizing Extended Memory" section for information.

WHY DOES APPLE RAM DISK APPEAR TO BE CHECKED IN THE MEMORY CONTROL PANEL WHEN MAXIMA IS INSTALLED?

Maxima uses the "RAM disk installed" setting that is part of the Apple System software. Thus, you can have either Maxima or the Apple RAM disk installed, but not both at once. If you check the off button in the RAM disk section of the Memory control panel, you'll turn Maxima off. This is the same as disabling Maxima using the Maxima control panel.

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MAXIMA

Maxima™ 3.0 is the high-performance RAM disk that improves system speed on desktop machines, PowerBooks, and network servers. If you have more than 8 MBs of memory in your Macintosh, Maxima helps you get more performance out of your expensive RAM upgrade.

Desktop Users Accelerate Often-Used Applications with Maxima. A Maxima RAM disk speeds up often-used applications, expedites access to scratch files used by products like Photoshop, and quickens restarts.

PowerBook/Duo Owners Extend Battery Life with Maxima. A Maxima RAM disk containing a System, applications, and key files minimizes hard disk access and preserves battery life. Plus you'll get an overall speed increase, as if you added an accelerator.

Network Administrators Speed Access to Shared Files using Maxima. Putting shared server files on a Maxima RAM disk speeds access for all users on the network.
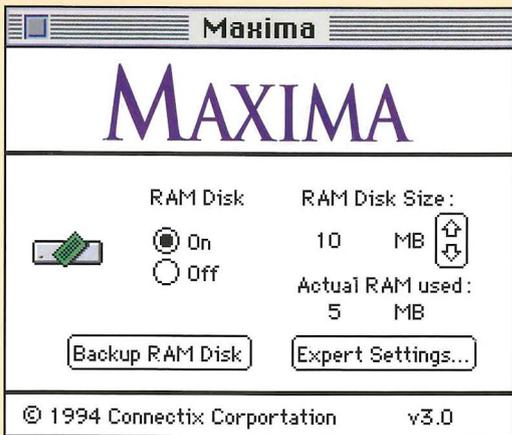
All Connectix products include toll-free technical support.

Key Features and Benefits:

- Maxima RAM disks are fast. Your memory works at up to 10 times the speed of your hard disk, so files and applications load and run faster.

- Start your Mac from a System Folder on the RAM disk, making restarts faster and generally improving the speed of your Macintosh as it accesses system resources.

- Creates double capacity RAM disks — for example, 5 MBs of physical RAM becomes a 10 MB RAM disk.

- Fully compatible with Connectix RAM Doubler™. Using both gets the most performance from your system's memory.

- Maxima is safe — data on the RAM disk is as safe as your hard disk, and is saved on restart, shutdown, or even a system crash.

- Maxima's RAM disk is automatically loaded — files you place on the RAM disk will be there every time you start your Macintosh.

- Maxima instantly configures and optimizes your RAM disk by copying a System Folder and your favorite applications to the RAM disk automatically.

Maxima Requires:

- Macintosh equipped with a 68030, 68040, or PowerPC microprocessor running System 6.0.5 or later

- 8 MBs RAM recommended; more than 8 MBs is required if the machine does not support Apple's built-in RAM disk

- Hard disk

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