














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Volume 21, Issue 10



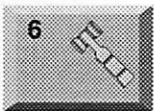
mini'app'les newsletter

the minnesota apple computer users' group, inc.

OCTOBER 1998						
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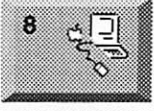
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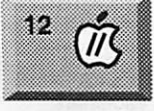
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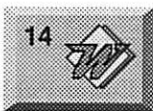
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 "Rick Hammond, Mac OS 8.5
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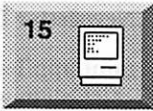
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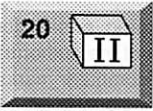
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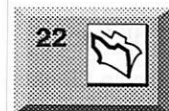
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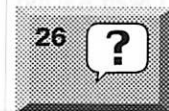
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Mac Programmers SIG
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mini'app'les

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Newsletter Contributions – Please send contributions directly to our Post Office, Box 796, Hopkins, MN 55343 or upload them to our BBS at 612-824-4394.

Deadline for material for the next newsletter is the 1st of the month. An article will be printed when space permits and, if in the opinion of the Newsletter Editor or Manager, it constitutes material suitable for publication.

Editor/Publisher: Tom Ostertag 651-488-9979

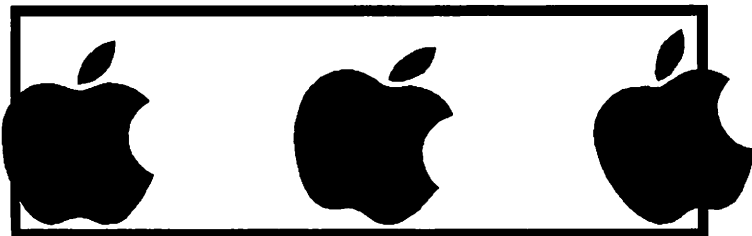
Newsletter Layout: John Hunkins

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Moving? Going to be away from home and leaving a forwarding address with the Post Office? Please send us a Change of Address when you are informing others. By using a moment of your time and a few cents to drop us a card, you save the club some money and you get your newsletter delivered promptly to your new address. If you don't inform us, the Post Office puts your newsletter in the trash (they don't forward third class mail) and charges the club for informing us of your new address. Change of Address should be sent to the club's mailing address: mini'app'les, Attn: Membership Director, Box 796, Hopkins, MN 55343.

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Club CD-ROM

By Denis A. Diekhoff
mini'app'les Vice President

Our Past President, Bob Demeules, has offered to burn CD-ROMs for us to use in place of the New Members floppy disk, if we will provide him with the burnable blank CD's. The object is to create a New Members CD-ROM for owners of the new floppyless iMacs.

From time to time, Maxell burnable CD-ROMs are on sale for \$19-\$20 for a ten-pack with a \$20 rebate. There is a limit of three rebates. Please consider purchasing some of these CD-ROMs, obtaining the rebate, and then donating the CD-ROMS to the club. If you do this, we will have a low cost way of getting the New Members CD-ROM into the hands of members.

If you see any of these CD-ROMs advertised at \$20 per ten pack, please post the information on the club's Bulletin Board.

Thank you.

Members Helping Members

Need Help? Have a question the manual doesn't answer? Members Helping Members is a group of volunteers who have generously agreed to help. They are just a phone or (or an e-mail) away. Please call only during the appropriate times, if you are a member, and own the software in question.

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D: Days, generally 9 a.m. to 5 p.m.
 E: Evenings, generally 5 p.m. to 9 p.m.
 W: Weekends, generally 1 p.m. to 9 p.m.

Please call at reasonable hours, and ask if it is a convenient time for them. By the way, these volunteers can also be contacted on our BBS. We appreciate your cooperation.

If you would like to be a Members Helping Member volunteer, please send an e-mail message to John Hunkins, Sr. on our BBS, or call him at 651-457-8949, with your name, telephone number, contact hours, and the software or hardware areas you are willing to help others.

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1/12 page 2.25" Width x 2.5" Height \$5	Outside back cover . 7-1/2" Width x 7-1/2" Height . . \$50
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Civilization II Rules: a Review

by Dave Peck

Help, I'm spending too much time with this game!

When I first looked at the Civilization demo, I did not get too excited. Being used to first person shoot games like Marathon, I am prepared for hot and heavy action <g>. The game seemed very static. It took a long time to get things accomplished, and since it was a demo, documentation was non-existent. So I stumbled about not knowing what I was doing. But after repeatedly reading that this game is one of the best ever and one of the most popular, I took a chance and purchased it for the very reasonable price of \$29.99. Now I'm hopelessly hooked.

This turn based game is awesome in scope. Maybe that's why it's got a one inch thick manual. Anyway, you'd better read it <g>. Game play sneaks up on you. You represent not only the leader of your tribe, but you yield tremendous powers by completely controlling the direction of every development of your civilization. (This is true even when a Democracy is the active government.) And you are the supreme commander of all armed forces getting to micro manage every tactical and strategic move. Starting at 4000BC, winning the game is accomplished by either taking over the world or being the first civilization to colonize a distant star system. A not so simple task because you only have 6000 years to accomplish it.

The choices during the game setup are endless, but for the most part I chose default settings which seemed to work well for a beginner. The default map size is "medium" which is very large. (For a really long game, pick the big map.) Initially each turn represents twenty years. As the game progresses, the time represented becomes less until each turn equals one year.

It took me a while to figure out that each unit (people, military, etc.)

is representative of a larger number. One citizen icon represents somewhere between one thousand to one hundred thousand people. The same with military units where one airplane icon probably represents a squadron.

You start out with one settler. The initial task is to explore a little and establish your first town. But take care where you place it. This seemingly simple decision has a lot of ramifications for future development based on terrain type (raw materials) and access to the ocean. From there you expand your development with more settlers. Quickly you find yourself making decisions about defending your towns versus creating civic improvements. From early to mid game, barbarian raids upon your cities are not uncommon. It's a juggling act. Eventually along with progress, comes pollution. If you don't keep your city development somewhat balanced, you end up with unhappy citizens. If uncorrected, this leads to Civil Disorder and then to Anarchy. Civil Disorder is bad enough because everything comes to a screeching halt in that particular city with no tax revenue or production.

The initial government type is Despot. As you progress, you can work your way through all government types such as Monarchy, Republic, up to Democracy, and even Communism. Each government type has an effect on the happiness of your citizens and your economy. If you are planning on some heavy duty military action, I would recommend that you avoid Democracy for a while. My natural tendency is to migrate to Democracy. But I discovered that this can interfere with your wars. :-)

Really I'm a peace loving guy, but it gets tiring having foreign representatives show up on your door, insulting you and demanding your latest advance. Consequently, at one point, I was at war with the Japanese, and Russians. I was at

peace with the English, Egyptians, and Vikings. The Russians were pitiful, sailing around in galleons while I had Aegis Cruisers. Anyway, I was beating the tar out of the Japanese when their sniveling emissary shows up, asking to end the war. In simple words I told him to "be gone". Then behind my back, the Senate overruled me and signed a permanent peace treaty with the Japanese! Damn them.<g> This happened a couple of times before I wised up. I discovered later in the game that if you have an important military objective and don't want to be hampered by your Senate, you simply incite a revolution in your own government. Is that being bad? It takes a couple of turns for your government to sort this out. In the mean time you can win your objectives and then cease hostilities if you desire.

An integral part of this game are the Civilization Advances. Your scientists and populace are constantly researching and discovering. Advances are divided into 5 categories- Military, Economic, Social, Academic, and Applied. You control advances by picking what to research. Depending on how well your civilization is doing, determines how fast these advances come. At 4000BC, you start with very basic discoveries and concepts such as pottery, bronze working, trading, and polytheism (belief in multiple gods). Progress continues until you are researching medicine, banking, electronics, flight, and monotheism (belief in a single god). Advanced research includes fusion power, space flight, environmentalism, genetic engineering, and "future" technologies.

If your lazy or not devoting much energy to science <g>, you can steal these advances from other countries or win them by conquest. Your diplomats and spies are used to gather intelligence. They can also incite insurrection, steal industrial secrets, and participate in other forms of espionage. *Continued on Page 16*

Mac eDOM #983 - Helpful Utilities

Copyright © 1998 Mini'app'les
September 1998
Submitted by Bryan Lienke



AliasCrony 2.1.1

AliasCrony is the ultimate alias manager. It has several features:

- Since aliases of applications lose the capability to have files dropped on them when the original is on a different volume, AliasCrony can create a SuperAlias, a new alias kind, having drag capability always active.

- It can create aliases or SuperAliases and put them into specific predefined folders when you're using the Drag&Drop mode.

- It can update aliases (also as SuperAliases) on the fly or else through its menus.

- It can add, to aliases, some useful custom icon, freeing a bit of space on desktop

- You may configure any action above through preferences and change them with one keystroke before creating aliases or SuperAliases .

- It can scan all on-line volumes to create lists of:

- a) attached aliases,
- b) unattached aliases,
- c) aliases and originals on different volumes.

- It can scan also individual folders-disks. The created lists return useful infos about the aliases found, moreover, from these lists, AliasCrony can do several actions:

- a) retrieves and shows aliases and originals.

- b) links/updates/deletes/moves aliases.

- c) shows the Finder's Info window, about aliases and originals.

- d) updates aliases of applications to SuperAliases.

- e) trashes the whole aliases list.



AliasZoo 2.0.8

AliasZoo has one and only one function... to resolve aliases and allow you to fix or delete those that cannot be resolved. AliasZoo audits your Macintosh and displays all the alias files it can find. If some have become orphaned by the loss of their source file or application, you can reroute them correctly with AliasZoo. AliasZoo is especially useful if your volume names change or if you move data between volumes frequently.



SmartKeys 3.3.1

SmartKeys 3.3.1 is a shareware control panel designed to help you type.

SmartKeys does this in four ways.

First, SmartKeys automatically corrects typing that violates conventional typesetting rules, such as typing more than one consecutive space.

Second, SmartKeys automatically corrects fast typing errors, words that are often misspelled, such as "teh" for "the" and "THE" for "The".

Third, it can require modifiers to engage the Caps Lock and the Help key, making them more difficult to press inadvertently.

Finally, in the event of a system crash, SmartKeys can keep a log of what was typed.



Switch-It 1.6.3

With Switch-It, you can use the keyboard to switch between running applications.**

- Switch-It allows you to request the termination of any number of running applications.

- Many parameters can be easily customized, including hot keys, font name and size, text and background colors, etc.

- Switch-It works under Mac OS System 7.0 or later (System 7.5 or newer is recommended).



Yank 3.0.2

Yank is a shareware application that does three things:

- 1) Uninstalls an application and files created by the application by moving them to the trash.

- 2) Cleans up your Preferences folder by moving outdated files to the trash.

- 3) Slims fat binary applications. Yank is a fat-binary application, which means it runs in native mode on a Power Mac and 68K Macs. System 7 is required



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Pam Works with ClarisWorks



By Pam Lienke

Sometimes I want a simple frame or box around some text on my page, or I want a rectangle as part of a diagram.

ClarisWorks allows me to draw a box with either square or rounded corners. I frequently use rounded corners so the box has a softer look to it.

A neat feature is the ability for me to determine how rounded the corners are. I can even change square corners to rounded or rounded ones to square. To do this I need to have the tools palette open (click on the

Tools Palette icon at the bottom of the window, select Show Tools from the Window menu, or press Shift-Command-T) and to select the rectangle or rounded rectangle tool. I place the mouse pointer in the document where I want the upper left corner of the rectangle; the cursor becomes a crosshair. I hold down the mouse button and drag down and to the right. As I do so, the outline of my rectangle appears. When it is the size I want, I release the mouse button. The cursor returns to a pointer.

To change the diameter of a rounded rectangle's corner, I select the rounded rectangle by clicking

anywhere on its outline. When the rectangle is selected and I double click on the rectangle or choose Corner Info from the Edit menu, the Corner Info dialog box appears. I am now free to try different values for the radius of the corners. After entering a number (larger numbers for rounder corners), I click the OK button or press the Return or Enter key.

If I decide I want square corners, I enter zero for the radius. Because the rectangle is a graphic item, I am free to resize it or move it to any location in my document.

ClarisWorks Companion: A Review

By Grace Gallagher

reprinted from the *Washington Apple Pi Journal*, September/October 1998

submitted by Bruce Thompson

ClarisWorks Companion, An official ClarisWorks 5 book

authored by Jan L. Harrington
published by Claris Press

If you buy only one additional book to supplement the official manual in your learning to master ClarisWorks 5, ClarisWorks Companion should be that book.

Although written for first time users, it will provide a valuable in-depth coverage of the basics of ClarisWorks and general computer application concepts for people who have used ClarisWorks 4 and prior versions at a only a cursory level. This book not only gives detailed instructions for specific ClarisWorks functions but also discusses customization of ClarisWorks for the individual user. The Button Bar, the main operating and on screen visual difference between ClarisWorks 5 and previous versions, is explained simply and completely and just that initial explanation will make the version switch much easier and more intuitive for current users.

And it provides the background for understanding the "why" of how

the operating system and program work, not merely the "how". As someone who trains both teachers and students to use integrated computer applications, I have found that the knowledge of the logic on which a program is based is central to the complete and efficient learning and using of a program. ClarisWorks Companion provides that logic knowledge base is small bytes throughout the book. At each point where a new concept is introduced (for example the draw and paint modules and their different strengths and functions) a succinct paragraph or two explains the underlying logic so the operation of the program immediately becomes much clearer for efficient mastery.

ClarisWorks Companion is a totally cross platform book. If you and/or your employer are looking for an integrated program which is truly cross-platform without convoluted translation procedures, this book will demonstrate how totally seamless is the transition from Macintosh to Windows operating systems and return for the files created within it. For Word users who must remember tricks to translate even from different versions of that program within the same platform, ClarisWorks 5 will

appear as a godsend! At every function or instruction, both the Macintosh and Windows instructions are shown in a mini-chart format in ClarisWorks Companion. These charts provide very clear specific instructions in two - four lines for every instruction. Use of the F keys as shortcuts for both Mac and Windows are listed with each set of directions. The one anomaly that I could not understand or make work was the set of 1-x directions used as keyboard shortcuts in the Macintosh directions. Substituting the (command) key for the numeral 1 in each shortcut works very well.

Dr. Harrington introduces ClarisWorks by illustrating the working Claris environment including managing documents, basic formatting, button bar use, online help access, and all of the necessary conventions for functioning in every module. Getting that out of the way at the beginning is another use of the programs internal logic to make each additional "how to" more intuitive.

Word Processing basics of formatting text includes an explanation of documents versus frames which makes the insertion of word frames, tables, or charts so simple. The sim-

ple trick of double clicking on a tool so that it does not instantly revert to the document's default after a single use will make anyone's life easier. Several succinct paragraphs on understanding typography and fonts proceed the setting of type characteristics, again making the whole process more intuitive.

All of the word processing extras - outlining, headers, footers, footnotes, dates, style sheets - and many more are demonstrated. An explanation of why some dates and times don't update, even though set to do so, will eliminate the frustration of trying to do something that is not logically possible. A chapter on word processing tools which includes an explanation/illustration of tailoring find's behavior and the efficient use of both thesaurus and dictionary will speed up the mastery of all 3 tasks.

The Drawing chapter begins with a five paragraph illustrated explanation of the differences between drawing and painting on a computer. That clear explanation, in itself, will make the selection of appropriate features of the integrated program much easier. Even the use of straight or curved lines with the bezier tool is handled simply. Object organizing, aligning, distributing, layering, rotating, grouping, locking, flipping, and much more is covered. A section on modifying clip art using the drawing tools is a boon for the artistically challenged among us.

The one area which I missed in this book is a definitive one on the Slide Show feature of the Drawing module. This is the ClarisWorks alternative to Office's PowerPoint. It completes the set of presentation tools which are least publicized strength of ClarisWorks 5. These are extraordinarily useful for both teachers and business world exhibitions.

The Painting chapter, in addition to clearly explaining the use of the standard painting tools, has a section showing "how to" use tools to edit a painting. Given the almost "can't change" nature of items created with that module, the editing tips and directions are invaluable.

Explanation of the shear, distort, perspective, invert, blend, rotation and resolution capabilities are clear, illustrated, and sometimes even imaginative enough to suggest previously unimagined treatments of rather prosaic art.

The first six pages of the Spreadsheet module should be must reading for anyone new to the concept of spreadsheets. (Or even those of us who use only the most basic of its capabilities) Again, this concise explanation of the logic behind such a program makes understanding and using the tools, commands, and formulas explained in the chapter so much easier. After the instructions on creating a basic spreadsheet, creation and customizing charts from the data is explained simply so that the results will appear professional. Adding labels and frames to a chart is made simple and certainly extends the value of the chart. A 56 page appendix which spells out all of the esoteric function alphabet soup is a great help to anyone who wants to use all of those neat math formulas that come with the ClarisWorks spreadsheet but can't figure out which does what or how to substitute real numbers within the function formula.

Database instructions fill the longest single module sections of the book, over 200 pages. But this is the first set of instructions that has enabled me to use the ClarisWorks database to easily do all of sorting, calculating, and reporting tasks I used to do simply in AppleWorks 3.0.

Beginning with the customary "understanding" section, ClarisWorks Companion proceeds to illustrate creation and manipulation of the myriad of useful data fields. The sections on sorting data for reports and creation of layouts using customized parts and layering enable one to change the ordinary report into a more effective and professional looking document. The explanations of logical queries find versus match, and simple illustrations of searches make further sophisticated

uses of this database much more user friendly. A Data Management Extras section expands the use of a database in sophisticated mail-merge custom documents while also giving added instruction in layout configuration techniques.

The final chapter, Customizing ClarisWorks, walks the user through setting up the button bars to the most efficient placement depending on individual needs and usage. Creating, recording, playing and modifying macros are explained simply and illustrated concretely. Even the setting the preferences (which I though I had mastered) gave me some new ideas to make my ClarisWorks easier for my often used or repetitive tasks.

ClarisWorks Companion contains 4 appendices. For me, using the equation editor was the most helpful. For others, creating HTML for the web or simply internal document linkage might be more useful. Using ClarisWorks assistants is short, simple and quick to cover. The ClarisWorks Functions explanations are invaluable. And for any teacher or simply novice computer user, the glossary at the back gives simple English one or two line explanations for all of that confusing jargon which is used throughout all computer manuals.

For computer newbys or even intermediate users, this book is a MUST companion for ClarisWorks 5. It will enable you to master the program's capabilities quickly and with much less frustration than any other "how to" guide I've found on the market.

If your interest in ClarisWorks 5 is not in learning more about the 5 most used modules, but rather about the Internet, New Media and Paperless Documents, look for next issue's feature on the ClarisWorks 5 book dedicated only to those specific topics.

- Grace Gallager is a trainer for teachers and students in the usage of Macintosh computer applications in the Prince William County (Virginia) school system.

GSoft BASIC: A BASIC Interpreter for the Apple IIGS

Submitted By Harry Lienke

GS-25 GSoft BASIC 1.0 \$60

Includes: 329 page spiral bound manual, index, table of contents; 2 800K ProDOS disks.

System Requirements:

Apple IIGS

System 6.0 or better

1.125M RAM (2M recommended)

3.5 Floppy Disk Drive

Additional 3.5 Floppy Disk Drive or a hard drive

Companion Products:

GS-12 Talking Tools

GS-11 ORCA/Debugger

Contact:

Byte Works, Inc.

8000 Wagon Mound Dr. NW

Albuquerque, NM 87120

Phone 505-898-8183

Fax 505-898-4092

AOL MikeW50

GEnie ByteWorks

Internet MikeW50@AOL.COM

GSoft BASIC is the long-awaited answer to the Applesoft programmer who wants to move to GS/OS, or the programmer who needs a quick way to create a program without the hassle of a full compiler. You can choose between an extended Applesoft-like environment that will feel comfortable to any Applesoft programmer, but that includes extensions like RENUMBER and a full screen editor; or a version that runs from any ORCA compatible shell. (The ORCA shell is not included.) Either way, you can turn finished programs into applications that launch from the Finder using a simple utility that adds a run-time module to your BASIC program.

GSoft BASIC has all of the extensions you'd expect from a modern BASIC, like optional line numbers, PRINT USING, LINE INPUT (no comma problems!), structured statements and true subroutines and functions. It can use all of your available memory, so you can write huge programs that use lots of variable space. Strings can be up to 32767 characters long, double precision

floating-point is available, and GSoft uses integer math for speed, supporting both short and long integers.

Unlike any other Apple IIGS BASIC, GSoft BASIC truly supports toolbox programming. Toolbox programming requires the use of pointers and records, something other BASICs don't have. GSoft BASIC has both.

While GSoft BASIC is an interpreter, and doesn't link directly with compiled and assembled programs, it still supports many of the popular ORCA programming tools. The Applesoft-like shell that comes with GSoft BASIC can use any ORCA compatible editor; you get a version of GSoft BASIC that will work from any ORCA compatible shell; GSoft BASIC works with ORCA/Debugger and Splat!, as well as any other ORCA compatible debugger; and GSoft BASIC supports user tools for adding subroutines written in other languages. There are even samples of user tools written in assembly language.

So whether you are an experienced programmer looking for an environment for quick prototyping or a BASIC programmer from way back who wants a familiar language with all of the features you need to take advantage of the Apple IIGS, GSoft BASIC is a program you'll want to have for your Apple IIGS.

Here are just some of the major features you'll find in GSoft BASIC:

Language Features

- * Full access to the Apple IIGS Tools.

- * Write desktop programs, text programs or graphics programs that use QuickDraw without using the entire toolbox.

- * Define and access your own libraries using User Tools.

- * No fixed limit on program or variable space.

- * Optional line numbers.

- * Modern control statements, including:

- IF-THEN-ELSE

- DO-LOOP

- WHILE-WEND

- SELECT CASE

- * PRINT USING

- * LINE INPUT (For reading text with embedded commas.)

- * Named subroutines and functions with passed parameters and local variables.

- * Disk I/O commands.

- * Data types include SINGLE, INTEGER, LONG, DOUBLE, BYTE and STRING. Strings can be up to 32767 characters.

- * Create types with names for easier to read programs.

- * Supports records and pointers.

- * Dynamic memory commands, including ALLOCATE, DISPOSE and SIZEOF.

- * Loads Applesoft programs.

Incompatible lines are flagged for manual change.

- * Full toolbox support, including support for GS/OS, the ORCA shell and Talking Tools.

- * Access to other languages via user tools.

- * Includes two User Tools

Libraries, with source code:

- Game Paddle for accessing the game paddle ports.

- Time and Date for reading the system clock.

GSoft BASIC is available for immediate shipment. If you act now, you save \$10 off of the cover price! For all orders received before August 31st, 1998, you get GSoft BASIC for just \$50, a \$10 savings from the retail price of just \$60. Include \$5 for shipping in the U.S. and Canada; contact the publisher for shipping rates to other countries.

Incidentally, our shipping rate of \$5 is per order, not per product. Save even more by ordering from our list of over 80 Apple II programs! If you don't have a list, just e-mail a request. We can send a price list by e-mail, or a printed catalog by snail-mail.

Planning a Small Business Network

By Paul Shields

reprinted with permission of the author, originally appearing *Applelinks*, <http://applelinks.pair.com/business_mac/network.shtml>

(Editor's note: This article is the first of two articles by Paul Shields to be reprinted in *mini'app'les*. The second article is titled *Building an Ethernet Network*; the author alludes to that article as next week's.)

Deciding to build a business around the Mac has several advantages, one of the most important being the ease of networking multiple machines. As the business grows, adding more computers and employees, the need for a network to facilitate communications becomes critical. The Mac makes this easy with several options for networking computers and printers. This week's column covers the basics of planning a network that will tie together the multiple computers, printers, and other peripherals in the office. Next week's column will explain network protocol options along with providing information on how to properly build and configure the network.

Network Terms Defined

No discussion of networks would be complete without defining some of the common terms and phrases used in this article and in the industry.

LocalTalk — The original network connection designed into the Mac by Apple, uses the printer port and most often is used for AppleTalk based networks only.

Ethernet — A high speed network interface available on all recent Macs either with an RJ-45 connector or an AAUI connector

AAUI— An Apple proprietary connector used to connect an Ethernet transceiver. The transceiver allows the connection of the network cable (RJ-45, Thinnet, and Thicknet)

Bandwidth — The amount of data you can send across the network at once (LocalTalk 234 kbps, Ethernet 10 or 100 Mbps)

10/100Base-T — The most common Ethernet standard that uses twisted pair cables with RJ-45 connectors. 10Base-T runs at 10Mbps 100Base-T runs at 100 Mbps.

Protocol — The languages used by computers to communicate on the network

Defining Network Requirements

Before building a network, take a few moments to sit down and think about what you want to accomplish. Do you want to share a printer between several computers? Do you have older machines that will need to be connected? Will you want to attach the office network to the Internet? These are a few of the questions to ask yourself before building a network. Below is a table to use, as a guide in collecting the information needed to make the right decisions.

LocalTalk Options

Device	Connections Available	Shared	Other Peripherals
PowerMac 7100	Ethernet (need transceiver),	Yes	Epson Inkjet Printer
PowerMac G3	Ethernet, LocalTalk	Yes	Modem, Jazz Drive for backups
Laser Printer	LocalTalk	Yes	
Epson Inkjet Printer	Serial Port	No	
Total Network Devices: Three			
Planned Growth:	Two computers One color laser printer		

All Macs and most Mac printers have come with LocalTalk ports for years. LocalTalk has the advantages of being simple and inexpensive to set-up, but has the disadvantages of being slow. If you have older computers or peripherals as the primary devices on your network, the best solution may be to start with LocalTalk network and expand to Ethernet as you add newer devices that have Ethernet ports.

Building a LocalTalk network is easy. If the machines are relatively far apart (> 10 feet), the best bet would be to use phonenet connectors. Phonenet connectors are boxes that attach to the LocalTalk port and have a RJ-11 jack for connecting a telephone cord. Phonenet connectors are available from all the local Mac retailers and mail order outlets and are the cheapest way to interconnect Macs on LocalTalk.

Ethernet

If the majority of the devices are Ethernet capable like in the example above, you should consider building an Ethernet network. The faster performance may not be of much value initially, but as the network grows, the difference will be noticeable. Using Ethernet also ensures that you have adequate bandwidth for things like backups and connecting file servers.

Building an Ethernet network will require the purchase of a hub to connect the devices. You will also need a LocalTalk to Ethernet converter for any LocalTalk devices. Several companies make LocalTalk to Ethernet devices including Farallon and Asante. A LocalTalk to Ethernet converter provides only compatibility and does not make the network connection faster. If there is a lot of network traffic to and from the

LocalTalk device, investigate either upgrading to Ethernet or replacing the device with a newer model that supports Ethernet.

Using the information above as an example, you would need the following parts:

- * An Ethernet 10Base-T transceiver for the 7100
 - * A LocalTalk to Ethernet converter for the printer
 - * Three Ethernet Cables
 - * An Ethernet hub
- Other Considerations

There are several issues to consider when building a network no matter how small or large. How the network is used is as important as how many devices will be attached

Backups

Backups are critical, and not doing them only jeopardizes the future of the business. If the network has data distributed across all machines, then installation of a network backup solution or the purchase and installation of a removable

media device at each machine is necessary. Doing backups over the network takes a lot of bandwidth, and backups over LocalTalk are almost unreasonable except for small amount of data. LocalTalk is slow and backups will take a long time to finish. Even if there were only 100 Megs of data on each computer, over LocalTalk backups would take a minimum of an hour per computer. This may seem small at first glance, but the amount of data and number of machines will grow quickly and easily surpass what the network can handle.

File & Print Servers

Some high-end printer such as plotters and color printers will use dedicated print servers to improve performance. This frees the desktop Macs from having to handle the communications with the printer for large print jobs. If the users of the network will be generating a lot of large print jobs, LocalTalk will be too slow to handle the workload.

Postscript print job sizes can quickly climb into the multi-megabyte range and network performance becomes a bottleneck.

The same holds true for file servers. Moving all the critical data to a file server and forcing users to work directly from the server eases the burden of backing up each desktop, but it increases the continuous load on the network. If the network is slow, users will begin copying the data to their hard drives, making changes, and forgetting to copy the file back to the server. There will be constant complaints that the server is slow or not responding and the frustration level will skyrocket.

There are other ways of building a network with more bandwidth and better performance including segmenting the network into groups of users and devices or running TCP/IP instead of AppleTalk. The Business Mac will cover both of these in future columns.

Please direct all feedback to pshields@applelinks.com.

Building an Ethernet Network

By Paul Shields

reprinted with permission of the author, originally appearing on Applelinks, <http://applelinks.pair.com/business_mac/ethernet.shtml>

(Editor's note: This article is the second of two articles by Paul Shields to be reprinted in mini'app'les. The first article is titled *Planning a Small Business Network*; the author alludes to that article as last week's.)

This week's column will focus on building the network. The column will begin with a basic overview of protocols and wiring and conclude with the steps to build and configure the network. The focus is on Ethernet because with the introduction of the iMac, Ethernet is present on all shipping Apple products. LocalTalk is easier to configure but often lacks the flexibility needed in the long-term. In the configuration section, the assumption is that all machines are running Mac OS 8.0 or newer.

Protocol Basics

A basic understanding of network protocols will help with building and maintaining the network over the long haul. The information provided is a quick reference and introduction; more detailed information can be found in a variety of Mac and non-Mac networking books.

TCP/IP

TCP/IP is the standard of the Internet. Each machine has a unique address that either is specifically assigned or is dynamically handed out by a central server that maintains a list of available addresses.

TCP/IP addresses consist of a string of four numbers separated by periods (i.e. 192.112.38.26). The second piece of an IP address is the network mask. Computers use the network mask to figure out how to contact another computer on the network. The final piece, which is only

required if attached to a larger network, is the gateway or router address. The gateway/router ties together different networks allowing them to communicate with each other.

If you choose not to install and configure TCP/IP when building the network, you will probably need to add it later to facilitate communications with the outside world. There are ways to communicate with the Internet without running TCP/IP on your network but these generally require extra hardware or software and can be more difficult to maintain.

AppleTalk

AppleTalk was the protocol originally developed by Apple for use over LocalTalk networks. AppleTalk was designed to facilitate easy file and print sharing and has usability features not found in TCP/IP. When

a Mac boots, the AppleTalk protocol dynamically allocates a unique address. Currently, AppleTalk supports both Ethernet (EtherTalk) and Token Ring (Token Talk) among other network hardware interfaces. AppleTalk supports network browsing much better than TCP/IP. If you have a router on your network, you can create groups of machines called zones. These zones might have names that correspond to building names or department names.

Ethernet Cabling Defined

There are several standards (UTP, Thicknet, and thinnet) for Ethernet cabling. The kind of Ethernet used on all current Macs is known as 10Base-T cabling and uses UTP (Unshielded Twisted Pair) cables that are similar to telephone cables. These cables use a RJ-45 connector that is a slightly larger version of the RJ-11 connector found on telephone cables.

Some older Macs had an AAUI interface for connecting a transceiver. Transceivers that support cable standards other than the UTP common on today's machines are available from Apple or Asante through most catalog resellers. Unless you need to connect to an older network that only supports thicknet or thinnet cabling, stick with the UTP standard, which is much easier to work with and more reliable for most configurations.

Network manuals often refer to an Ethernet crossover cable, a special version of an Ethernet cable that has transmit and receive signals crossed. This allows the connection of two machines without a hub, which is useful if there are only two devices on the network. Crossover cables are available from most computer stores for less than \$10.

Building the Network

In last week's column, we put together an inventory of parts required to build a network. This list of components should include the following: the Macs and printers

with Ethernet cards or transceivers, a hub (if there are more than two machines), and one Ethernet cable for each machine.

There are several issues to consider before building the network. First, the length of the cable from the hub to any component can be no longer than 100 meters (328 feet). If the distance will exceed 100 meters, then the connection requires the installation of a repeater or another hub, which will regenerate the signal to allow for greater distances. Second, while a typical hub has only 4-16 ports, most hubs provide an extra port for daisy-chaining a second hub, so buy a hub that meets the current needs with a small amount of capacity for growth.

Third, there are two standards for the speed of an Ethernet network (10 and 100 Mbps). If the cards in the machines support 100 Mbps and there is a need to use this speed, then the hubs will also have to support 100Mbps. Generally, 100 Mbps connections are used for servers and 10 Mbps connections for desktop computers and printers. This allows multiple users to connect to the server simultaneously and still get good performance. Finally, you may see references to a switch or switching hub when looking at hubs. A switch is an intelligent hub that provides a performance boost, especially on larger networks. For a typical small office (< 20 users) network, a standard hub is fine. As the network gets larger or if large files (> 10-20 MB) are commonly sent through the network, a switch may be appropriate. If your environment warrants the investment in switches or high performance network components, work with a network specialist to ensure proper installation and configuration.

When installing the cabling, invest in tie straps (Velcro recommended). This allows for the securing of cables to avoid unwanted or unexpected disconnects. Also, be careful and do not wrap the cables around power cords, power supplies

or fluorescent lights. All of these emit electrical fields that can interfere with the transmission of data on the network.

Before placing a single component or laying cables, draw or obtain a floor plan for the office. Find a centrally located place for the hub such as a closet or cabinet, and then calculate the distance from the hub to each computer. This ensures that each of the computers will be within 100 meters of the hub. When running the cables put them in an-out-of-the-way place such as the ceiling or underneath a raised floor. As you connect each cable, label it at both ends so that if there are problems in the future, the network administrator can easily identify all connections.

For small networks, testing each cable after installation is not critical as long as care was taken to ensure that no damage was done while installing the cables. For large network or difficult installations, work with a professional cable installer. Ensure that the installers test each cable after installation and require written records of all tests. For very large networks, testing by an independent consultant or contractor will eliminate any bias in the testing process.

Configuring the Computers

When configuring the OS there are a few minor issues to consider. While most network services work over TCP/IP, a few require AppleTalk. Filesharing between Macs still requires AppleTalk, although AppleShare servers do support TCP/IP. Apple Events still only work under AppleTalk and some older printers such as the LaserWriter II series only support AppleTalk for printing.

Configuring the OS

- * Open the AppleTalk Control Panel
- * Set the Connect via to Ethernet
- * Close the Control Panel and save changes
- * Open the TCP/IP Control Panel

* Set the Connect via to Ethernet
For users connected to the Internet via an ISP or part of a larger network, validate the settings with the network administrator before beginning.

For a completely private small network

* Set the IP address to 10.10.10.1 (continue this series with the next machine being 10.10.10.2 and so on)

* Set the network mask to 255.255.255.0

* Leave the router field blank

For a network connected to an ISP with dynamic addresses

* Set Configure to Use DHCP Server

* Fill in the nameserver addresses as supplied by the ISP

Sharing Files & Printers

For AppleTalk printers, connection to the network is all that is required. When the printer turns on, it negotiates a network address and registers a name on the network. Most printers generate a cover page with the name information after warming up. The Apple LaserWriter utility can rename the printer to something more memorable than the generic name assigned by most manufacturers. For TCP/IP printers, refer to the owner's manual for specific instructions.

To access an AppleTalk printer

* Open the Chooser under the Apple menu

* Click the LaserWriter icon

* A list of printer(s) should appear on the right, select one and click setup

* A desktop printer icon is created

* Close the Chooser

This week we will do basic file-sharing with the guest account. A future article will cover how to configure filesharing in a secure manner.

To configure a computer for sharing

* Open the File Sharing Control Panel

* Ensure that the Macintosh Name, Owner Name and Password have entries

* Click the Start button under File Sharing

* Close the File Sharing window

* Open the Users & Groups

Control Panel

* Double-click the Guests icon

* Select Show: Sharing

* Click Allow Guests to Connect

* Close the window and save

changes

* Click on the Folder you want to share

* Select Sharing from the File menu

* Next to everyone, click on the pop-up menu and select the privileges you want to assign (Read, Read & Write, or just Write)

* Close the window and save changes

From another computer on the network, open the Chooser

* Click the AppleShare icon

* Look for the computer based on the Macintosh name from the File Sharing control panel

* Double-click the Computer name

* Click the Guest button, then click Connect

* Select the shared folder and click Ok

* Close the Chooser

* The shared folder should now appear on the desktop

Now that the network is up and running, there are a number of services that administrators can install to improve data reliability and user productivity. Next week we will start looking at those services with a discussion of secure filesharing, AppleShare servers, and data management.

The Business Mac Discussion Board

This forum is dedicated to the issues and problems facing those using Macs in business setting. We'll talk about everything from small office issues to enterprise wide issues. Post your questions, suggestions, comments, or concerns.

Please direct all feedback to pshields@applelinks.com. I keep a web page dedicated to each article with updates and reader feedback. The feedback can be found at <http://www.cyberramp.net/~pshields/wetech/articles.html>.

Paul Shields has been supporting and using Macintosh computers since 1985. He is currently working at a major telecommunications firm supporting a mixed installed base of Macintosh, Windows, and UNIX workstations. He has been dealing with the issues of integrating the Mac into the corporate world for the last five years. For more information please visit his web site at <http://www.cyberramp.net/~pshields/>

MacMall Software Buyers Guide

submitted by David M. Peck

Creative's MacMall Launches Macintosh Software Buyers Guide; software.macmall.com Offers Extensive Information and Ordering Capability for Over 1,000 Macintosh Titles

TORRANCE, Calif. Sept. 15, 1998 — Creative Computers, Inc. ("Creative") today announced that its MacMall division, one of the

nation's largest catalog and Internet providers of Mac products, launched its premier edition of The MacMall Software Buyers Guide. This unique new catalog offers more than 1,000 software titles that run on Apple Computer, Inc.'s ("Apple") (Nasdaq:AAPL) Macintosh computers including the very popular new iMac.

MacMall has also introduced a

new Internet site, software.macmall.com, that offers customers the opportunity to search by both title and key words, access additional information on any given software title and shop online.

"Mac owners have historically used a wider variety of software than PC users, especially education, creative, and productivity titles," said *continued on Page 22*

Have You Backed Up Today? Part 4

by Adam C. Engst <ace@tidbits.com>

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Submitted by Bruce Thompson

TidBITS readers have both offered useful additional information and raised a number of interesting questions concerning the issues that swirl around backup strategies, as discussed in the previous three parts of this series.

<<http://db.tidbits.com/getbits.acgi?tbse r=1041>>

My Backup Strategy

A number of people asked me to explain the specifics behind my backup strategy, hoping that they could apply my rationale to their situation. So, here are the details. I back up to DAT tape using Retrospect 4.0 and an old APS HyperDAT drive hooked to a Centris 660AV that currently does nothing else other than run Apple's LaserWriter Bridge software. Before the 660AV, I used an SE/30 that had a much slower SCSI bus, and also ran numerous other applications. I've found that Retrospect coexists nicely with most types of applications, but not mail servers, which can lose data when Retrospect monopolizes the CPU during backup.

We have two types of machines - machines that are available on the network most days and which are backed up every night by a Retrospect script, and machines that appear on the network on a sporadic basis like PowerBooks and the PC, which back up whenever they appear via a Retrospect Backup Server script. Automated nightly backups make for minimal intrusion and work, since they free me from having to monitor the process, or even notice it. At the same time, nightly backups provide a high level of protection should we lose anything ranging from a single file to an entire hard disk.

To spread out exposure to problems, I back up to three sets of tapes, named Hades, Poseidon, and Zeus (hey, I have a degree in Classics, I'm allowed). The current tape in each set lives in the drive for a week, and

every Monday morning I eject the current set and replace it with the next one, moving up in the alphabet. I used to use default names like "Nightly Backup A," but that became confusing when I had multiple tapes in the set, resulting in tape names like "Nightly Backup A 2" and it became even worse when I archived a set with a New backup in Retrospect, thus ending up with "Nightly Backup A [001] 2." I think better with real names, so I switched to the names of the Greek gods.

Retrospect's EasyScript feature wanted to set me up with a rotation schedule that swapped tapes on Fridays. However, I'm most likely to be "at work" on Mondays, since that's when we publish TidBITS. So I changed the schedule to swap tapes on Mondays. Make sure rotation schedules work for you or you may find yourself not backing up because you didn't have the right tape inserted. So, every Monday morning when I start working, the first thing I do is swap the backup tape set. I'm working on a system of storing the previous set off-site and rotating the off-site backups as well.

The trickiest part of my backup strategy involved dealing with tapes filling up. Retrospect can script Full backups (which erase the contents of that set and start over) or New backups (which keep the contents of that set and start over), but I couldn't figure out a schedule for those that made sense. Plus, I hate wasting space, so I couldn't imagine starting a New backup if I had several gigabytes left on the current tape, just because the New backup script had kicked in. So, I came up with a strategy that requires a little more manual intervention but better fits my style of working.

The Hades set contains three tapes. When it fills up and Retrospect asks for a fourth tape, I cancel that request and manually do a Full backup to reset the contents of that backup set. The Poseidon tape

set uses a similar strategy, but it contains four tapes and is reset when Retrospect asks for a fifth tape. Otherwise, Hades and Poseidon would probably run out of space at roughly the same time, which could force me to go back two weeks to the Zeus set to recover a file that had been deleted just before the reset action took place. Finally, the Zeus set is allowed to contain five tapes, but when Retrospect asks for the sixth tape, I cancel the request and manually perform a New backup to completely new tapes, archiving the previous five tapes in the Zeus set and giving it five more. The filled-up Zeus archival tapes live off-site as well.

If a Full backup of Hades or Poseidon would erase a few days of backups, I give them one more tape and wait to perform the Full backup until they come up in the rotation again. At that point, I get the extra tape back again - it's just temporary space.

This system works well for me, since I end up with nightly backups of all files, three different sets of tapes in case one (or even two) fails, a set of tapes that can be stored off-site, and archival sets of tapes that can be stored off-site. And, the beauty of resetting two of the three sets when they fill up is that I don't have to buy nearly as many DAT tapes as I would otherwise. Of course, I do have to swap in new tapes for the Hades and Poseidon sets every year or so, but that's a minor liability.

DAT Longevity

Several people asked about the number of times one should use a DAT tape, since a variety of advice seems to float around in the ether. I forwarded the question to Craig Isaacs of Dantz Development and Paul McGraw of APS for their input. Craig said that Dantz recommends sticking with the manufacturers' recommendations, but on a more realistic note, commented that the deci-

sion runs along with the entire backup strategy decision - you must decide how much you wish to spend for differing levels of protection. For instance, some large companies never reuse media, preferring to do complete backups daily and taking the previous day's backup off-site forever. These organizations feel that millions of dollars of data is well worth a few thousand dollars of backup media. Obviously individuals would rarely use such a strategy but still shouldn't assume a DAT tape will work forever in constant use.

Paul McGraw's comments were more concrete. He felt that 30 to 50 sessions is a totally reasonable expectation, and he has used DAT tapes personally for hundreds of sessions without failure. Paul qualified his comments, saying that it's probably a good idea to retire a tape after it's been used for 90 days, no matter what. In addition, media vendors say that new tapes leave more residue on the tape drive's heads, so you should run a cleaning tape after using a new tape for the first time. Finally, Paul suggested that if you see frequent media failures, you should look into switching media suppliers, and if that doesn't help, switch mechanisms or even media types.

My advice, particularly for those trying to keep costs down, is to limit your exposure to the possibility of any given tape (or any other form of removable media) going bad. Do this by maintaining multiple backup sets that rotate on a relatively frequent basis. For instance, if you have three backup sets that rotate every day, even if one fails, the previous set is never more than a day old. In addition, I think retiring tapes periodically is a great way to create archival backups - although you might not trust a tape after hundreds of sessions of use, if you retire it in working order, it's likely to be accessible for years, should you need to recover a file from it.

DAT Tape Usage

An interesting fact arose from one of the responses I received from

a previous article. A reader wrote to say that he'd been encouraged to buy a 9 GB hard disk in addition to a 12 GB Sony DAT drive. The reason given was that his 10 Mbps Ethernet network probably wasn't fast enough for Retrospect to use the tapes fully, and by backing up first to the 9 GB hard disk and then backing that up to the DAT tape, there wouldn't be any wasted space on the DAT tapes. It seems that if Retrospect can't get a stream of data coming in fast enough to write to the tape, the DAT drive itself writes what are called "pad blocks" until more data is available. Otherwise, the backup would take far longer, because the DAT drive would have to stop, rewind, and locate the last write point after each time Retrospect's buffer empties out.

Although true, this design decision on the part of DAT drive engineers (a trade-off for speed versus tape capacity) probably doesn't affect you unless you back up to or from an incredibly slow computer, or using LocalTalk. In addition, DAT tapes are cheap and reusable, so if some space is wasted invisibly in this fashion, it's unlikely to be worth the cost and effort of putting a hard disk in the middle of the system.

DAT Drive Pricing

The perennial complaint arose in relation to DAT drives: why are PC DAT drives cheaper than Mac DAT drives? According to Paul McGraw at APS, they're not - at least when you make a fair and accurate comparison. When you compare a PC DAT drive in an external enclosure, without software, to one of equal performance on the Mac (the same mechanism models mostly work on both platforms), the price is virtually the same. Macs generally don't support internal DAT drives, so there is a nearly \$100 difference between an internal DAT for PCs and an external DAT for the Mac. The second factor in the cost is that of software bundled with the drive. Low-end software in the PC world is likely to be cheaper than the high-end

Retrospect, which is the most common program in the Mac world for backing up to DAT. When high-end PC backup programs are bundled, costs are comparable. Finally, there are undoubtedly some economies of scale involved in selling more units into the market.

In short, the answer relates to difficult or impossible internal installation, and a substantial difference in the cost of what is considered "acceptable" backup software. When you compare apples to apples (in this case, high-performance SCSI DAT drives bundled with high-end software), the prices are generally quite comparable.

Many people confuse `_tape_drives_` in general with `_DAT_drives_`. There are numerous different tape technologies, some of which provide extremely low cost (and low performance) PC tape drives. Relatively few QIC (quarter-inch cartridge) tape drives are available for the Macintosh, and those that are use SCSI instead of the cheaper IDE or floppy interfaces used by the PC versions. In those cases, the PC tape drives are both more numerous and quite a bit cheaper.

8mm Tape

Several readers wrote to chide me for claiming that 8mm tape drives were only expensive, high-end solutions. Although that does seem to be true of most 8mm drives, the Exabyte 8700LT stores up to 10 GB (compressed) on a single tape and costs about \$650 (8mm drives don't seem to be as easy to find as DAT drives - I was directed to Computer Discount Warehouse). Reliability and speed are reportedly good, and media cost is as low as \$6 per tape. It's worth a look.

<http://www.exabyte.com/products/8mm/8700lt/>
<http://www.cdw.com/product/default.asp?EDC=69081>

Redux Redux

One of the more popular backup programs of yesteryear, Redux, is about to make a comeback. A new

company called Redux Software has been created specifically to develop and support Redux. The company is working on Redux 2.6, which is an update to the current 2.5.1, and after that they will start version 3.0. We'll be sure to note when Redux 2.6 ships.

<http://www.reduxsw.com/>

Retrospect Express Availability and Features

Craig Isaacs of Dantz Development has confirmed that Retrospect Express is available only through Dantz until 01-Jul-98. That's coming up soon, but some people have been confused by mail order vendors claiming the program hadn't shipped yet. It has shipped, just not to distributors yet. In addition, I've had a number of discussions with people who believe Retrospect Express is missing particular features, such as the capability to back up multiple volumes to a second hard disk. Although it does lack some of Retrospect's high-end features (like tape drive support, security, Backup Server capabilities, network backup capabilities, and most notably custom Selectors for flexible file selection criteria), in each case so far the requested features have been present and documented in the manual.

http://www.dantz.com/dantz_products/express.html

Civilization II Rules, *continued* from Page 5

My first game was completed after about 30 hours of play. At about 2010AD, I had completed the Apollo project and was working on space station components when a bunch of sequential screens appeared showing all the statistics of the game. The first screen announced the celebration of Sir William's 6000 years of rule (that's me). I was advised that my Civilization score was 450 points, and that no further points would be assigned. It gave me the option to

<http://www.dantz.com/store.html>

Auto Backups

Several people suggested using the trunk of your car as an off-site backup location that's easier to get to than a safe-deposit box. Although it's certainly easy, I would be extremely leery of storing magnetic media in a car. It depends on where you live, but here in Seattle, the inside of cars can get quite cold and damp in the winter, and extremely hot in the summer sun. It's possible that CD-Rs might not be as susceptible to environmental damage as tapes or removable cartridges, but frankly, I don't think it's worth the chance. Stick with storing off-site backups in a climate-controlled location like an office or, ideally, a safe-deposit box.

QuickBack

I missed a freeware backup program in the last installment in this series. Jacques Cornell jacques@white.plala.or.jp recommends the freeware QuickBack 1.9.3 by PopChar author Gunther Blaschek. It appears to be a true backup program, though it has a rather annoyingly modal interface and hasn't been updated in over two years.

<http://infosoft.soft.unilinz.ac.at/Info/MacSoftware.html#QuickBack>

continue play. According to the games criteria, I did not win, but I don't think anyone beat me to that distant planet. The Egyptians were working on a space program. All the screens showed that I was the number one civilization in terms of development and power. I need to look into this more but I am continuing this particular game until I get into space.

It's published by MicroProse and was ported to the Mac by MacSoft. It runs on just about any Mac with game requirements being 68030 machine or higher with 8 Megabytes

QuickBack

Backup Book

Marc Shipman-Mueller mamueller@arri.com wrote to recommend The Complete Guide to Mac Backup Management, a \$34.95 book by Tom Dell and Dorian J. Cougias.

<http://www.amazon.com/exec/obidos/ISBN=0121925625/tidbitsselectro00A/>

Lock that Door!

Finally, Alastair Rankine alastair@cia.com.au comments that it's worth thinking about the physical security of your backup media and hardware. Although it's probably not a major concern for individuals, businesses should treat backups as valuable data and keep them in appropriately inaccessible places. In addition, at least Retrospect enables you to set security levels on your backups. You can choose Password Only (no encryption), SimpleCrypt (fast encryption), or DES (strong, slow encryption). Retrospect has other security options as well, such as password protecting access to the program and encrypting data while it transfers from a Retrospect Client to the backup server. If security is paramount for you, make sure your backup software and overall strategy support your security needs.

RAM, color monitor, and CD-ROM drive. A new gold/multiplayer version is due out in a few months. As I try to imagine a 30 hour multiplayer game [g](#), I rate Civilization II, 5 out of 5 stars.

All About RAM

An overview of the different types of RAM

by David K. Every, ©Copyright 1998
<http://www.MacKiDo.com/Hardware/RAM.html>, reprinted with permission
(Editor's note: This article is the conclusion of a three-part series. The first two articles, *All About Memory: A Quickie Overview of the Different Types of Memory*, and *All About ROM*, were reprinted in the September 1998 *mini'app'les*.)

RAM means Random-Access-Memory. RAM is cheap and fast compared to some other forms of memory. RAM is temporary storage. Data loaded into RAM, from the hard-drive or ROM, will be lost when the computer is powered down. Remember to save what is in RAM to hard-drive before you power off or you will lose whatever you did. You can think of your Hard-Drive as your bookshelf (where you store things), but RAM would be your desktop. RAM is where you work on things. The larger the desktop, the more different things you can see and be working on at once, without having to put something away or covering it up with something else.

This is ironic way to name RAM since ROM is also random access memory (but it also read-only), but never try to figure out computer naming conventions — it will only frustrate you.

Packaging

RAM used to be sold as separate chips you put into little sockets individually. But this was a pain in the butt. So now RAM chips are usually sold soldered on little circuit boards (sticks) called SIMMs or DIMMs. There are also custom cards for memory for some devices, but most companies are standardizing on the "standards".

SIMM means Single-Inline-Memory-Module, DIMM means Dual-Inline-Memory-Module — the only difference being that DIMMs have more pins (use both sides) and support more total memory. Physically they are not the same

form factor, so you can not accidentally install the wrong package in your computer and cause harm. Then to mess up the standards, they made many different types of SIMM's and DIMMs — so that you had to call tech-support to figure out which TYPE of SIMM/DIMM and what type of memory you need. Some SIMMs or DIMMs are keyed so that you can't put in the wrong type, most are not.

There is also a new package called SO-DIMM. SO means Small Outline, which means that it is physically much smaller. This is important for portable computers, and many of those will be going to SO-DIMMs in the future (it is not yet very common).

Some memory still comes in proprietary packages — usually soldered on to custom memory cards. This is more common for portables. Also some memory is available in standardized memory cards, like PCMCIA, PC-CARD or CARD-BUS cards (which are basically the same thing).

Most of the time you do not need to know about the different types of SIMM's or DIMMs. You can call up a supplier and ask for memory for your computer, and they can do a look-up on your model and tell you what you need. So these explanations are strictly for understanding the basics and for your information.

Features

What differentiates the types of Packages (SIMM's and DIMMs) is sometimes the amount of pins (or connections) on the edge. Sometimes it is what are the functions of that package and what configuration of memory is on the package. Some of the different features of RAM include -

PARITY is a way of using a little extra memory (one extra bit for every 8) to double check the value, to make sure you have a good value in the RAM. Its like sending the page count on a FAX so that the recipient can make sure all the pages got

there. It sounds good in theory, but computers RAM (in practical applications) only fails once every 10-50 years or so. Most computers with parity RAM can't do anything (when parity fails) except crash immediately — which prevents you from writing bad-data to the hard drive but little else. Most of the time you get a parity error it will be in an area of memory that would not have effected anything. So for 15% more cost, you get very little return except a machine that may crash one more time in every 50 years.

ECC is another type of "Error Correcting" memory but uses a better algorithm (catches more errors). Parity can only detect a single bit error (in each Byte), if two bits in the same byte get an error, then parity thinks everything is OK. ECC can catch both one bit and two bit errors. Again, it costs more than regular memory — and doesn't do that much for most users. A single bit error is likely to happen infrequently — but the likelihood of two bits failing in the same area at the same time is likely to happen very very infrequently. RAM fails so rarely that this is just anachronistic paranoia held-out from the old days (10-20+ years ago) when RAM was not as reliable as it is today.

VOLTAGE. 5v memory is the most common, but speed, size and voltage are related. As we go faster and get smaller, we lower the voltage as well. So 3.3v DIMMs are starting to become more common, and it is possible that 2.5v will someday become the norm. So it was not a sick joke, there are reasons for differing voltages — but it does confuse users.

SPEED. Memory runs at different speeds — measured in Nanoseconds (billionths of a second). Your memory has to be at least as fast as the computer expects, or you may start getting memory errors. So a computers that says "70ns RAM" WILL require AT LEAST 70ns RAM. 60ns is faster, and so could be used, but usu-

ally the computer will still only access that RAM at its rated speed (70ns), so you aren't gaining anything. Smaller is faster in this case because it is a measurement of time to access — 60 billionths, is smaller and faster (less time) than 70 billionths of a second.

DUAL-PORTED (VRAM). RAM can normally only be accessed from one thing at a time (a single BUS). But some designs are much easier if you have Dual-Ported RAM, RAM that supports two separate devices talking to it at the same time (two/dual ports). For Video RAM this means that the computer (CPU) can read and write to the RAM at the same time that the video circuitry can be accessing it (to update your screen image). It can also be used for other types of I/O. It would be like being able to hold on two conversations simultaneously. We need dual ported people (and no sick jokes)!

NV-RAM. This is Non-Volatile RAM — it will not forget things, even when power is removed. NV-RAM is made with a variety of ways. Sometimes it is really EEPROM, but usually it is low-power dynamic RAM with an internal battery, or sometimes external circuitry and a battery. Sometimes it is just SRAM. So NV-RAM just means nonvolatile, and could be just about any type of memory.

PRAM - Parameter RAM. Macs (and some other computers) have a small amount of memory for remembering things, even when the power is off. This is often called "Parameter RAM" or PRAM. The name is defining the RAMs function, not the type. Usually the Macs PRAM is battery backed up SRAM (a type of NVRAM) and is contained on a specialty chip that does other things, like keep track of the date and time, and supply that information to the computer.

Types

Not only are there different types of packages that the RAM comes on and different features, but there are

different TYPES of RAM as well.

DYNAMIC RAM (DRAM)- this is the type of RAM used in most micro-computers main memory. It is inexpensive — relative to the other forms of RAM. The name is redundant since Dynamic means "changing", and all RAM changes — that is what makes it RAM instead of ROM. In this case Dynamic is very specific, it means that the DRAM will not remember stuff for very long (millionths of a second). So the DRAM has to have its own circuitry to refresh itself — remind itself of what it already knows. This circuitry has to look at each location inside of itself, and reminds itself to remember that value — which will decay unless it comes back and reminds itself again. This is the same as you walking down the street repeating a phone number or address to yourself so that you won't forget it. DRAM has to do this because it uses capacitors to remember things (which are like short term batteries), instead of a more complex set of circuits (gates). Capacitors remain charged for only a while, so you have to keep recharging them (by reminding them). Since capacitors are easy to make, and the refresh logic can be shared among a whole chip, the cost of DRAM is cheap. Because capacitors are somewhat slow, and there is refresh logic running part of the time, the access to DRAM is slower than other forms of memory. Access takes about 60ns (60 billionths of a second).

STATIC RAM (SRAM)- this is used when you need fast memory. Instead of the refresh-decay design of Dynamic RAM, SRAM uses a more complex design of switches (called a flip-flop). This means that once you set a value in a SRAM, you do not have to come back and remind it. But the more switches (gates) on a chip, the more it costs, and the more space it takes. The switches are faster than a capacitor, and so SRAM is quick. Also because it does not need to keep charging itself to remember things, SRAMs require much less power. SRAMs are often used in

portables (or they use Pseudo Static RAM which is low-power DRAM pretending to be SRAM). SRAM is also used for L2 Caches, for some Video-Memory, and for other high-speed applications. Access speeds are often as low as 8-14ns (billionths of a second) — or 5 to 10 times faster than DRAM.

Types of Access

How you design the memory to access information can also change the name of the RAM and the performance characteristics. Programmers access memory as a giant linear array (one dimensional) of addresses — similar to your street address or phone number being different from your neighbors. However, inside the chip, memory is laid out in a grid or two dimensional array. This is more like the zip-code to the post office, or area code and prefix to the phone company - it lets them presort by area, with each lesser significant number narrowing the area more and more. Internally to RAM these addresses are the RAS (Row Access Strobe) and CAS (Column Access Strobe) control lines which are just part of the larger address.

Interleave - Memory can be accessed based on the width of the BUS (which varies depending on the processor and machine). But memory is slower than the CPU. So if you take 2 (or 4) banks of memory, and interleave them, you can speed up access. Interleaving is basically alternating each address among the two chips (toggling between 2 different chips). Think of a set of data "AAA" and a set of data "BBB", when we interleave them we get "ABABAB". Since memory is usually accessed sequentially, and the access speed is fixed, by alternating addresses we can almost double the speed. While I am loading A, bank B is ready — when I load from B, A is getting its next address and by the time I load from B and get back to A, A is ready to send me its data.

FPM RAM - Fast Page Mode RAM. Using the RAS and CAS explained

above... instead of sending the whole address to get every location, we can cheat. We send the whole address once, then as long as we are in the same area (column) we only have to move in the row address (the last part). Since the chip won't have to make BIG area changes, it can be a little faster, for much of the time. That is what Fast page means — it is Fast-inside that Page (column). But when you go out of the area (column) it still has to take a performance hit. So it is faster on sequential access, but can't do much for completely random accesses of memory. (Fortunately most access is sequential).

HPM/EDO RAM - Hyper Page Mode or Extended Data Out RAM. This uses a neat trick — the memory will hold its old data until you are DONE sending a new address. This allows the CPU to read the data in, while the RAM is getting the next address. Normally RAM will drop the valid data to a null state as soon as you START to send a new address. On EDO, this means that there is less time between finishing reading one address, and reading another one — because EDO has been starting to get the next address while you were finishing reading the last one. Imagine

looking up two words in the dictionary (at random) — on FPM when you are done reading the definition of one word, you go on and start looking up the next word. With EDO while you are reading the definition of one word, part of you is looking up the next word, so as soon as you are done with the definition you can just pop to the next words page (or you are part way through the look-up and can continue from much closer to your goal).

BEDO RAM - Burst EDO RAM. I don't know how this differs from EDO and SDRAM. I believe it is some hybrid between the two. Burst generally means something similar to synchronous — the first access is normal, but the rest comes back at you very quickly (bursts of speed).

SDRAM - Synchronous Dynamic RAM. This is a newer type of fast DRAM. Performance wise it is getting very good and competes with SRAM. Access times for interleaved SDRAM can be 8-10ns, but not for ANY one address (that is the average). SDRAM uses a trick of addressing. When you ask for an address, SDRAM will get you that address, and then for each tick of the clock it will give you the next sequential address (for some specified size). So your first access is

as slow as normal, but all subsequent sequential addresses keep getting spewed out very quickly. Internally it actually has a fair amount of support logic to do this (an internal controller) and they are programmable to a point (you can change the size of the data coming back) and are going to be the future of main memory because of the speed gains.

Conclusion

Remember, RAM comes in a package (DIMM/SIMM) and has different features and attributes (Parity or Non-Parity, its speed, its voltage, etc.). It also is of a different manufacture (Static or Dynamic), and has a design for how it will be accessed (whether Interleaved, Fast-Page, EDO, SDRAM). All of those together definite the exact type of memory you are using.

My 7500 uses 70ns, interleaved FPM DRAM DIMMs at 5v. The Tanzania based Macs (and clones) use 60ns, non-interleaved, EDO DRAM DIMMs at 3.3v. The G3 Macs use 10ns SDRAM DIMMs (at 3.3v). If you understand this paragraph you are now a memory Guru! If you don't (and you read the article), then send me eMail because my article needs more work.

UMD (a great school) and the iMac

submitted by Bryan (I always knew that the University of MN - Duluth (UMD) was a good school (are there any other MN universities?), and this makes them look even better.) Lienke

Forward Migration: Migrating in Minnesota

*by Dennis Sellers
dsellers@maccentral.com
September 11, 1998
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The University of Minnesota, Duluth Campus, recently installed around 42 iMac systems in a new Web lab previously populated by "dumb" terminals. And with iMacs running Mac OS 8.1, the school took the plunge and upgraded other Macs to OS 8.1, including twenty-some

PowerMac 7300/200s that were installed in a graphics lab last summer.

"Hopefully, this new iMac lab will encourage the school to dump the other dumb terminals they have hiding in various alcoves as well as the 'boat anchor' 486s they have in other Web labs on campus," says David S. Altonson (LibraryPatronStation@d.umn.edu) of the University of Minnesota. "Also, the university is in the construction of a new library, due in mid-2000, that will reportedly have 600-800 Web terminals. And with any luck, as well as intelligence, all those Web terminals will be the 2000-model of the iMac."

Bryan concludes: GO BULL-DOGS!!

Layout Editor's note: Bryan Lienke is a graduate of UMD; the sentiments expressed by Bryan should be taken under consideration in light of the upcoming WCHA hockey season.

“Do I Really Need A Spleen?”

Adventures In Millennial Computing
by Lawrence I. Charters, © 1997
reprinted from the *Washington Apple Pi Journal*, November/December 1997
submitted by Bruce Thompson

As we approach the Millennium, bizarre tales of strange creeds, deeds and practices will become common. It has happened before; a thousand years ago, as the calendar lurched toward the uncertain Year 1000 AD (“uncertain” because calendars were inaccurate, and because few could count past ten), Europe experienced a cultural convulsion as apocalyptic millennialists brought forth tales of coming horror and doom.

Our current age does not lack for strangeness. As proof, you need look no further than the Machine Mutilators, a diverse group without any apparent geographical or social center, and only one cultural constant: they own Macs. And they mutilate them.

Hardware Is Hard

The manner of digital dismemberment has changed over time. Originally, these tended to be frustrated Mac users who wanted more than a single 400K drive and more than 128K of RAM. They cut holes in their Macs and installed SCSI cables through battery ports, clipped in massive circuit boards that could double a machine’s memory (in some cases, bringing it up to a full megabyte!), and installed fans and other cooling devices. For the most part, this group met with some success.

Then there were the aesthetics, who made modifications for artistic or other reasons. One individual, impressed with a bright red Macintosh SE shown on the cover of *MacWorld*, took spray paint in hand and soon had their own bright red Macintosh. For unknown reasons, this individual did not think to remove the case and spray paint just that; instead, they spray painted a fully functional Mac. After letting the paint dry, they flipped the power

switch — and it promptly burst into flames as wiring, shorted by the paint, set the flammable paint afire.

Knowing that cleanliness is next to godliness, another individual decided to blow the dust off the vents on their Macintosh, using a can of compressed air normally used on photography equipment. Unfortunately, they neglected to turn the Mac off first, and the flammable propellant for the compressed air set the machine aflame. On the bright side, the dust was immediately vaporized.

Another individual, upset with the noise generated by their external hard drive, painstakingly crafted a custom-made wooden box to hold the drive, with two small holes, one for the power cord and one for the SCSI cable. The result was a very quiet drive: it almost immediately overheated, and was then forever silent.

Hearing of this unfortunate incident, yet another individual decided that their drive was not going to overheat. They’d noticed the external case would get quite warm after extended use, so decided to create some extra ventilation holes with an electric drill. Not wishing to damage the case by removing it, they drilled holes into the case with the drive still inside — and metal shavings shorted the drive mechanism.

For the most part, this group has faded from the scene. It would be nice to think this is due to improved education in basic physics.

Hydra Headed

This decade has seen the rise of a new type mutilator: the System Folder slaughterer. Several distinct types have emerged, starting with *The Geminis*. Lacking any clear understanding of the System Folder’s purpose, *Geminis* see nothing wrong with having two System Folders. Or three. Or four. Or more.

The record — on a single 200 megabyte hard drive — stands at fourteen. This individual, a lawyer,

also had a healthy collection of viruses. The combination of the multiple System Folders and multiple viruses made the hard disk completely unusable. A recommendation to reformat the drive and reinstall everything was rejected because they didn’t have originals of all the programs on the drive; most were pirated. The lawyer’s legal specialty: enforcing music copyrights?

The System Folder belongs to the Macintosh. It is used to store essential parts of the Macintosh operating system, the suite of programs that tells your Mac how to be a Mac instead of, say, a control unit for a traffic light. You want to have only one set of these critical parts; multiple System Folders risk the possibility of the Macintosh using the wrong System Folder, or random bits and pieces of multiple System Folders, which could make the entire Mac unusable.

Two other maxims: (1) Never stick the System Folder inside of another folder. Apple never intended for it to be hidden; it isn’t shy. And (2) Don’t rename the System Folder. While the Macintosh isn’t subject, for the most part, to the rigid restrictions of *Other Machines* regarding names and placement of folders and directories, most Macintosh programs assume the System Folder is called the System Folder, and not “Weird Looking Stuff.”

All For One

Another popular heresy is practiced by *The Organizers*. Not wishing to see a messy desktop, they put everything in the System Folder. Everything: applications, utilities, word processing documents, QuickTime movies, games. Yes, the System Folder might be 920 megabytes in size, but their desktop is spotless.

Unfortunately, the Mac doesn’t take kindly to this. When you boot a Mac, it checks everything in the System Folder to see if it needs to do something special with the files it

finds; the more files you add (especially ones that don't belong), the longer it takes for the Mac to boot. In case you were curious, the Mac with the 920 megabyte System Folder took about twelve minutes to boot.

As a general rule, never put anything in the System Folder without explicit instructions from the software manufacturer. When you install the Mac's operating system, Apple's Installer puts things there. When you install applications, their installers might, possibly, put things in the System Folder. But there should be nothing in the System Folder that a human being can use; the System Folder belongs to the Macintosh.

Some items, such as extensions and fonts, are supposed to be placed in the System Folder, and come with instructions on how to do so. Please read the instructions carefully. If the software comes with a folder called "Place Contents In System Folder," this means place the contents in the System Folder, not the folder itself. The Mac with the 920 megabyte System Folder, incidentally, had a number of interesting folders inside the System Folder, including, of course, "Place Contents In System Folder."

Biology Lab

Of all the odd cultists, the Vivisectionists are, perhaps, the most dangerous. In almost every case, they take a perfectly healthy Macintosh and then, in small steps or large, remove vital pieces of the System Folder until the Mac fails to work. Invariably, they have good reasons: "I was trying to free up memory." "My hard disk was getting too full." "I didn't know what that stuff was for." "My brother-in-law told me to do it."

After giving it some time, you can probably come up with a fair list of body parts that, strictly speaking, you don't need in order to live. First off, you can remove all your body hair, including eyebrows and eye-

lashes. Most people have their wisdom teeth removed but, you have to admit, we really have far more teeth than we need; you could actually remove them all and live reasonably well on baby food. Who needs an appendix? And what, exactly, does the spleen do, anyway?

If you hesitate to remove unnecessary parts of your body, you should also hesitate at removing "unnecessary" parts from your computer, particularly from the System Folder. Just because you don't know the purpose of the spleen (it promotes production of blood cells) doesn't mean you should remove it. Similarly, just because you don't know the purpose of some (or most) of the things in the System Folder doesn't mean they should be tossed.

Words to live by: the Trash can is forever. It is not a temporary storage location.

The most common Vivisectionist target: the Mac's networking software. "I just have a computer in my home; I'm not on a network" is the usual excuse for throwing away various bits and pieces of AppleTalk, Open Transport, MacTCP and TCP/IP. They then are baffled why they can't print to their printer or dial up and connect to the Internet.

Note how the word "Internet" is constructed; "net" is part of the word. An internet (lower case) is a collection of networks; the Internet (upper case) is the largest collection of networks in the known universe. In other words, if you toss your networking software, you toss your ability to connect to the Internet. Or any other network.

You also toss your ability to connect to a laser printer; most Mac laser printers "network" to Macs. Many non-laser printers, most notably the Hewlett-Packard DeskWriter inkjet printers, also work best when they are networked to a Macintosh. And yes, a single Mac connected to a single printer can be a network. (On a personal note: I hate trying to get machines working after the owner has tossed bits and

pieces of the networking software. The lack of this software, obviously, makes it impossible to connect to a network and grab a fresh copy of whatever is missing.)

Many Vivisectionists toss out AppleScript. "I heard it is a programming language, and I don't program, so I tossed it." Unfortunately, the Mac OS itself uses AppleScript to do many things, and countless applications use AppleScript to talk to both Mac OS and to other programs. If you want to experience bizarre, seemingly random errors and crashes, tossing AppleScript components is an excellent idea.

Other Vivisectionists remove "surplus" fonts. Since the Macintosh is famous for its fonts, determining which fonts are "surplus" is an interesting exercise in rationalization. Hearing rumors that the Mac requires Chicago, Geneva and Monaco to work, some people remove everything else, and then wonder why everything — everything — looks funny. Writing a report written entirely in Chicago should be classified as a crime against humanity.

An extreme example: one exceedingly clever Mac guru ordered a bunch of PowerBook 520 and 540 computers, all of which came with 4 megabytes of RAM. This guru forgot to order extra RAM and, faced with a horde of anxious users, decided to experiment: one piece at a time, parts of a System 7.5 System Folder were removed until the PowerBooks stopped working. Eventually the guru found a combination of things that could be "left out" that cut System 7.5 RAM requirements enough that you could actually launch Microsoft Word 5. Of course, you couldn't print, connect to a network, or do much else.

This guru designed a special label for these custom-tuned PowerBooks, with a nice graphic and their name and address, and affixed it to the computers.

"Well, what do you think?"

"Ah, good: a warning label. Now

they know who to blame."

Thankfully, the guru decided more RAM was a better idea.

Alternative Realities

Q. Is it true that you used to sing "Daisy, Daisy" when you saw this

right in.

Q. But there really is a lot of junk in my System Folder. I have drivers for an ImageWriter, a StyleWriter, a LaserWriter 300, and a bunch of other things I don't have.

A. Use the Extensions Manager

model (no matter what model Mac you purchased), and have since then added heated leather seats, a turbocharger, a larger engine, anti-lock breaks, a radar detector, a cell phone, a color TV in the dash, a refrigerator in the center console, a retractable

A. Yes.

Q. Did the guru get it?

A. Not until I installed a sound clip from 2001: A Space Odyssey as a startup sound on their computer.

Q. But I really am short of RAM. I've only got 8 megabytes, and Mac OS 8 seems to want all of it. What should I do?

A. Buy more RAM; it is cheap. Plus, your computer will run faster and more reliably.

Q. But I really am short of disk space, and Mac OS 8 takes up so much room.

A. Buy a bigger hard drive. Hard drive prices are ridiculously low. You can either get a bigger internal drive or, better yet (for desktop machines), purchase a high-capacity external drive. When you buy that new Power Mac model you've been lusting after, the external drive will plug

into the Extensions Manager has been around since the very early days of System 7, and was greatly improved in Mac OS 7.6, and improved again in Mac OS 8. Unlike the Trash, the Extensions Manager allows you to "remove" things from active use, yet still re-enable them in case you need them.

Q. But the Extensions Manager still leaves them on the hard disk, and I'm running out of room.

A. This was covered four paragraphs back.

Q. Oh, sorry. But don't you have any suggestions that don't involve spending money?

A. Yes: you can go back to using the same version of the operating system and applications that you first used with your Mac; you probably didn't notice a lack of RAM or hard disk space back then. To use a car analogy, you bought a basic

Yet you are still using tertiary and factory tires. You need a bigger battery, performance tires, and deflating the trunk.

Ripping out pieces of is not the answer.

The Mac OS 8 Extensions Manager is a superb tool for highlighting System Folder clutter. In addition to allowing you to sort by name, size, and type, you can now also sort by "type," meaning a suite of information. Note that the new Extensions Manager can also provide information about an extension; in this example, highlighting ColorSync displays information about the extension; if you don't have a color scanner,

MacMall Software continued from page 13

Dan DeVries, executive vice president of Sales and Marketing, Creative Computers, which publishes the MacMall catalog. "Mac owners have been waiting years for a comprehensive collection of Mac software titles available. Now they and all of the new iMac owners can explore the vast universe of software titles available to them in one easy-to-use way."

"The MacMall Software Buyers Guide demonstrates Creative's strong commitment to the Macintosh market and to Apple's vision. As the first fully authorized Apple catalog reseller, MacMall has cultivated one of the largest databases of Mac enthusiasts in the world and continues to shape the

Macintosh consumer market through its innovative direct marketing," added DeVries.

"Developers have created an immense array of software for Apple Macintosh computers over the years, and MacMall has done a great job of bringing a large number of those software titles together in one place," said Mitch Mandich, Apple's senior vice president of Worldwide Sales. "The MacMall Software Buyers Guide is a unique resource that helps the growing community of Mac, and now iMac users, access the thousands of top-quality Mac software titles available to them."

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Any Macintosh developer interested in participating in the MacMall Software Buyers Guide should contact Rick Borucki, rickb@pcmall.com, John Burke, johnb@pcmall.com, or Shelley Duval, shelleyd@pcmall.com.

The Road to Mac OS X: Self-scaling operating systems

by Dennis Sellers, dsellers@maccen-tral.com,
<http://www.maccen-tral.com/news/9808/26.osx.shtml>
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Submitted by David M. Peck

Power users wanting a sneak peek at Mac OS X (10), the consumer version, can keep their eye out for Mac OS X Server 1.0 (formerly known as Rhapsody), due out sometime within the next two months.

One thing that will certainly be worth investigating is how well Apple does on maintaining its plan to streamline and simplify the user experience of its modern operating system. The plan for Rhapsody was to change the "big picture" of the OS. Instead of having the operating system as the context in which most work was done, Apple planned to keep the core of the system largely invisible. Instead, the user would see a collection of applications running on top of the core OS.

Users would extend the system by running more applications, not by adding to an ever-expanding set of extensions, control panels, desktop accessories, background applications, QuickTime components, printing extensions, shared libraries, Finder extensions, Chooser devices and OpenDoc parts. (Yep, Open Doc parts are still with us. Just check out the iMac's operating system.)

Under the new OS plan, the system would be self-scaling. It would allow the user to determine the complexity of their Mac's operating system by running more or different applications. You can use a very simple model or a more complex, dynamic one. The user won't have to understand two dozen different types of system components. There'll just be two kinds of things to keep track of: applications and "bundles." Bundles will be the way to extend applications, not the system as a

whole.

In fact, bundles may be the method by which Apple can eliminate system extensions and control panels, as we know them. Apple's already said that this is the goal with Mac OS X; they just haven't said how it will be accomplished.

A self-scaling system would also make it easier for a user to determine what the problem is when an application fails. "The user will spend less time trying to divine the intricate relationship between the system and various applications and extensions," Apple engineers said in a document entitled "Rhapsody User Experience Preliminary Design Document v. 08."

Will Mac OS X Server be self-scaling? Will the end user version of Mac OS X be? I'm betting they will, at least by the time the latter arrives in mid to late 1999. Time will tell whether I'm right or wrong.

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