

Computer and Information Services Newsletter

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Sending E-Mail to Other Networks and Services



Most campus Electronic mail users soon realize they can send E-mail around the world to colleagues, friends, and parents. With a little more information, you can send Electronic mail to other services and networks that are connected to the Internet, for example BITNET and Compuserve.

Internet Gateways

If you are on the Internet and send Electronic mail to another service or network, the E-mail must pass through a gateway. These gateways act as translators, allowing E-mail from many otherwise incompatible systems to be exchanged.

Free or Fee?

Sending mail from a University of Minnesota E-mail account does not incur cost directly to you; but, of course, that cost is absorbed by somebody. The Internet is financed by educational and governmental agencies and managed by Merit Network Inc. The NSF (National Science Foundation) subsidizes roughly half of the cost of Internet access for educational institutions like ours, and our department currently pays \$47,500 annually for the University's Internet access. Internet gateways to private and nonprofit organizations are funded by those agencies and by individuals.



→ continued on next page



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Commercial information services frequently charge a fee per mail message received or sent over the Internet. So although it does not cost you anything to send mail to someone on a commercial service, they probably incur a cost. Common sense and discretion are your most useful guidelines for sending E-mail to those on commercial services.

The Size Issue

Common sense also applies to the size of an E-mail message and any enclosures. Some E-mail setups will not accept larger "packages," for example 17K or 50K.

Enclosures tend to be larger than electronic mail messages and pose additional considerations. Watch for an upcoming E-mail article in our newsletter devoted just to enclosures.

Internet Addresses

In order to send mail to other services you must understand Internet addresses. So although we've covered this topic before, we've reprinted much of that information in the section called *A Review*.

Personal names sometimes appear to be part of the E-mail address. These names are actually a type of comment that has been included in the E-mail address line. As shown in Figure 1, comments and address lines can appear in different formats. These Internet examples were taken from actual E-mail messages, but the senders' real names were changed.

Figure 1: Internet Addressing and Comments

Examples	
flh@einoed.in-berlin.de (F. Le Hanne)	
Rose Bud <rose@UMS1.LAN.MCGILL.CA>	
"(DOE J J)" <doe@TACOM-EMH1.ARMY.MIL>	
"Tara A. Hu" <TAHX@TSRN9.TS.WM.EDU>	
Internet Addresses	Comments
flh@einoed.in-berlin.de	(F. Le Hanne)
rose@UMS1.LAN.MCGILL.CA	Rose Bud
doe@TACOM-EMH1.ARMY.MIL	"(DOE J J)"
TAHX@TSRN9.TS.WM.EDU	"Tara A. Hu"

A Review

Your Internet E-mail address identifies you as a unique person on the Internet. Internet addresses are in the form of

username@internetaddress

Your University of Minnesota E-mail address probably looks something like one of these:

elvi0023@student.tc.umn.edu
elvis001@staff.tc.umn.edu

Both are complete E-mail addresses. Let's dissect the first address into its components.

elvi0023 is the username or account name

@ denotes the end of the username and start of the Internet address (@ is pronounced "at")

student.tc.umn.edu is the Internet address given to the system that acts as a mail server, sometimes referred to as an electronic post office or host

Most usernames and hostnames are designed to contain information about the user and host. Let's dissect student.tc.umn.edu to learn what its parts imply.

student students use this machine

tc it is located somewhere on the Twin Cities campuses

umn the University of Minnesota pays for a portion of its operation

edu this name is at an educational institution (*edu* is an Internet top level domain name)

Below are three other examples of E-mail addresses.

FRANK@JUPITER.AI.MIT.EDU
GATES@MONEY.MICROSOFT.COM
STEVE@CRAY.NASA.GOV

From the first address we can deduce that frank has an account on a system called jupiter. Jupiter is probably in the Artificial Intelligence (ai) department at MIT, an educational (edu) institution.

From the second, we wildly speculate that this is the E-mail address of Bill Gates on a system called money. Money is part of Microsoft Corporation, a commercial (com) institution.

The third address looks like it belongs to someone called steve on a machine called cray. The Cray belongs to NASA, a governmental (gov) agency.

Top Level Domain Names

Figure 1 includes examples from Germany (de) and Canada (ca). The *de* and *ca* portions of the names are Internet top level domain names. We published a list of top level domain names in our December 1992 newsletter in the *Tales from the Network Woods* section. These names range from aq (Antarctica) to za (South Africa).

Other Networks and Organizations

Although many companies and organizations use E-mail every day, they may not be connected to the Internet. Those that are connected to the Internet use an Internet gateway and probably have .com or .org at the end of their name, as shown in the examples below.

```
ELVIS@DAYTONS.COM
ET@HOME.FANCLUB.ORG
```

Even if the company or organization is not part of the Internet, they may be able to exchange Electronic mail with the Internet.

Below we've listed some well known organizations that can send mail to the Internet. Prodigy is not listed because it cannot exchange E-mail with the Internet.

Below, where we used "address" in our examples, the organization may use a different identifier, for example username. For our America Online example the "address" is *jackfrost*. Note that there is no space or punctuation between jack and frost, the first and last names; this is typical of most E-mail addresses.

You May Have to Phone First

To best determine whether you can use the Internet to send someone Electronic mail, ask that person whether they can send Internet mail, and if so, what is the Internet form of their address.

America Online: a commercial information service that doesn't support direct replies, attached files or messages larger than 17K. Here is the Internet to American Online format:

```
ADDRESS@AOL.COM
```

To send mail to Jack Frost who has an account on America Online, you would use this E-mail address:

```
JACKFROST@AOL.COM
```

Applelink: a commercial information service from Apple Computer. Here is the Internet to Applelink format:

```
ADDRESS@APPLELINK.APPLE.COM
```

ATTMail: an AT&T commercial network. Here is the Internet to ATTmail format:

```
ADDRESS@ATTMAIL.COM
```

BIX: the BYTE Information Exchange. Here is the Internet to BIX format:

```
ADDRESS@DCIBIX.DAS.NET
```

BITNET: a mainframe-based educational network. Here is the University's Internet to BITNET format:

```
ADDRESS@SYSTEM.BITNET
```

When addressing BITNET mail, *system* is the BITNET node name. Below are examples with different node (system) names: UKCC, UMINN1, and UMNACVX. The later are BITNET addresses for our VM1 (UMINN1) and VX (UMNACVX) central systems.

```
LISTSERV@UKCC.BITNET
ELVIS@UMINN1.BITNET
ELVIS@UMNACVX.BITNET
```

Other Internet sites may require different address formats to send mail to BITNET.

Compuserve: a major commercial information service from H & R Block. It doesn't support text messages larger than 50K. Here is the Internet to Compuserve format:

ADDRESS@COMPUSERV.COM

Compuserv addresses have two numbers separated by a comma. When sending mail from the Internet to Compuserv you *must* change the comma to a period. Here is an example:

76543.321@COMPUSERV.COM

Econet: an expansive international network with Internet and DASnet gateways. (The DASnet mail gateway is an automatic message forwarding service offered by DA Systems, Inc.) Here is the Internet to Econet format:

ADDRESS@IGC.ORG

Fidonet: an independent nonprofit network. The correct form here is more complex. In the E-mail format shown below you must replace the # symbol with the appropriate Fidonet number(s), reversing the order in the Fidonet name.

FIRSTNAME.LASTNAME@P#.F#.N#.Z#.FIDONET.ORG

Here are two Fidonet addresses:

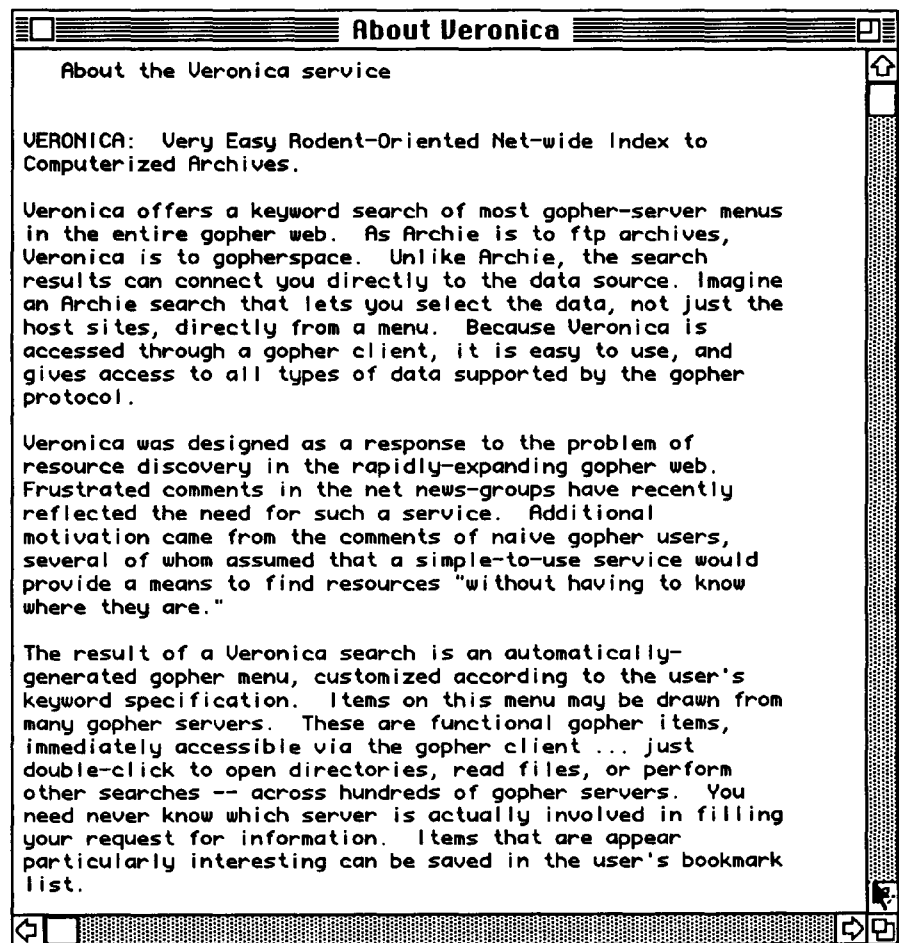
JACK FROST @ 6:7/8.9
MOE SKITOW @ 5:123/44

Here are the Internet forms of those addresses:

JACK.FROST@P9.F8.N7.Z6.FIDONET.ORG
MOE.SKITOW@F44.N123.Z5.FIDONET.ORG

Note that the Internet form requires a period between the first and last names.

Figure 2: Veronica, a New Gopher Service



MCI Mail: a major commercial service with gateways to Compuserve and the Internet. Each MCI Mail account has an address (a number) and a name associated with it. Here is the Internet to MCI Mail format:

ADDRESS@MCIMAIL.COM

To send mail to Jane Doe whose MCI Mail address is 1234567, you can use any of these addresses:

1234567@MCIMAIL.COM
JANE_DOE@MCIMAIL.COM
JANE_DOE/1234567@MCIMAIL.COM

Note the underscore between the first and last name. If you suspect there may be more than one Jane Doe, you can include both the username and number address.

IBM: you can reach *some* IBM employees from the Internet. To learn the Internet form of their address send a WHOIS message to this Internet address:

NIC@VNET.IBM.COM

The form of the WHOIS message is lastname, firstname. A comma and a space must separate the two names. Here is a sample inquiry for an employee named Moe Skitow.

WHOIS SKITOW, MOE

NIC@VNET.IBM.COM will send you E-mail with a message something like this:

Skitow, Moe is
 n\$2wawa@mispvmic9.vnet.ibm.com
 from INTERNET

Use Veronica

Documentation that provides some guidelines on addressing mail from the Internet to other networks and services is also available on Gopher.

To access this documentation from Gopher select *Other Gopher and Information Servers*. Then select *Search Gopherspace using Veronica*. Use the *Search* option and the keyword *internetwork*. Figure 2 is a partial look at the *About Veronica* information available from Gopher. Veronica is a relatively new Gopher service.

The Information Could Fill a Book

To learn more about the Internet you can also buy a book. The *And Books, Too* section of this newsletter lists a recent publication by Ed Krol: *The Whole Internet: User's Guide & Catalog*.

Free E-Mail Accounts and Training

This Fall quarter Computer and Information Services began providing E-Mail accounts to all University faculty, staff, and students registered in a degree program. We are also providing the training for approximately 60,000 people at the University. Our classes explain what E-Mail is, how it works on the Internet, and how to access E-Mail using different computer configurations and software. We will also provide demonstrations of an interactive session for terminals and POPmail, an Electronic mail program for the Macintosh and IBM compatibles.

Our Winter quarter training schedule is below.

Winter E-Mail Training

Location and Dates	Time
▼ East Bank	
Tuesdays in 2-620 Moos Tower	2:30-4:30 pm
January 5, 12, 26	
February 2, 9, 16, 23	
March 2, 9	
Thursdays in 2-620 Moos Tower	2:30-4:30 pm
January 7, 14, 28	
February 4, 11, 18, 25	
March 4, 11	
▼ St. Paul	
Fridays in 110 Green Hall	2-4 pm
January 15, 29	
February 12, 26	
March 12	
▼ West Bank	
Fridays in 130 Blegen Hall	1:30-3:30 pm
January 8, 22	
February 5, 19	
March 5	

The Role of the Laptop in Expanding Personal Productivity

*Rick Heydinger, Alliance for Higher Education
Sr. Fellow, Educational Policy and Administration*

I recently made a move from a position as a University of Minnesota officer with an immediate support staff of seven to a senior fellow in the College of Education as a "tub on its own bottom" and no immediate support staff. Returning to more scholarly pursuits has not only recharged my intellectual batteries but increased my appreciation for the role which technology can play in dramatically increasing personal productivity.

When you're a sole entrepreneur, as most faculty and staff are, it's essential to find ways to multiply your own productivity. Delegating work and adding staff is not an option.

I have been a user of computing since 1965, running number crunching programs written in FORTRAN, using spreadsheets to assist in what-if resource questions, using word processing as the next generation typewriter, and for over twenty years using computer networks to sporadically communicate with colleagues. Yet it is only with the purchase of a state-of-the-art laptop ten months ago that all the developments in computing and telecommunications had a dramatic impact on the way I conduct my work and my personal productivity.

Previously all of my uses of computing and telecommunication were applications in which I superimposed the computational resource on top of existing practices. And, even though I have always been comfortable using these technologies, I used them relatively little because I did not find any real productivity gains. For example, it was still easier to keep my calendar or my name and address file in my little black date book in my pocket. It was still easier to call colleagues on the phone than it was to try to connect through an unreliable computer network that they might or might not check regularly. It was still easier to sketch out my overheads for a presentation and let a clerical person run through multiple iterations while I clarified what I really wanted.

Yet with the purchase of a Macintosh PowerBook, all of this changed. It wasn't simply the physical size of the machine or its portability. I still own a Radio Shack TRS-80 Model 100 which I purchased ten years ago, and it

When you're a sole entrepreneur, as most faculty and staff are, it's essential to find ways to multiply your own productivity.

didn't have this impact. It wasn't the built in modem which permitted access to computer networks, for both an IBM-PC and a Mac which I owned in the early 1980s had this capacity.

As I have reflected on this "sea change," two technological developments have come together to usher in this change for me. First, the power of laptops has dramatically increased. Eight megabyte CPUs with built-in 120 megabyte hard drives and an external floppy drive are available. Second, this is packaged in a device which weighs less than seven pounds but has a first class keyboard and a display which is better than anything but the more sophisticated monitors. Thus, when our office purchased the laptop, it was the "smallest-biggest-fastest" machine in the office. But, I could also easily take it with me wherever I went. After a few days I quit using my desktop and simply plugged in the laptop each morning when I came into the office.

Why did this machine have such a dramatic impact on the way I function? An essential characteristic is its *functionality*. For the first time I had a portable machine that combined speed with storage capacity. Any task that I could perform on our office machine I could now perform on the laptop, whether it be word-processing, graphics, or database manipulation.

it is only with the purchase of a state-of-the-art laptop ten months ago that all the developments in computing and telecommunications had a dramatic impact on the way I conduct my work and my personal productivity.

Most importantly, I could easily take it with me, *wherever* I was. Its power combined with transportability gave it a dimension that no other machine ever had. Hence, a name and address file with over a 1000 names on it is on the hard drive. My bibliographic files with over 450 abstracts can easily go with me on the airplane. All my correspondence for the past six months is with me at all times and easily accessible. The overheads for eight different presentations are always in my shoulder bag which carries the laptop. Letterhead for memos is graphically captured. And this particular laptop has a fax card in it, so I've got my fax machine with me also. Thus all of my professional information files are with me, as well as all the processing capabilities that I use. (Total disclosure also requires admitting that eight video games are on the machine for my kids to use on trips, etc.).

Coupling portability with this level of computing power has led to the change in the way I function. A recent example illustrates the point. As I boarded a plane for New York City, I called my voice mail at the University of Minnesota and received an urgent request from a co-author that he needed a modified version of the displays we were using in one our papers. While on the airplane, I modified the displays, wrote him a cover letter using U of M letterhead and pasting his name, address and fax number into the letter from the database, and then faxed these documents to him from my hotel room in New York City using the laptop. My co-author was the first one to ever see hardcopy of this material.

Certainly such a work style may not be for all of us. And certainly the speed with which today's society implicitly demands response may not be necessary or in the best interests of long term personal health. However, today's technology provides us with some very powerful levers in expanding one's personal productivity.

A Footnote

The author recently remarked on new winter hazards – he slipped on the ice and cracked the case of his laptop.

“The good news is that the machine still works. Times have changed when you worry first about the machine over your shoulder and about your body second.”

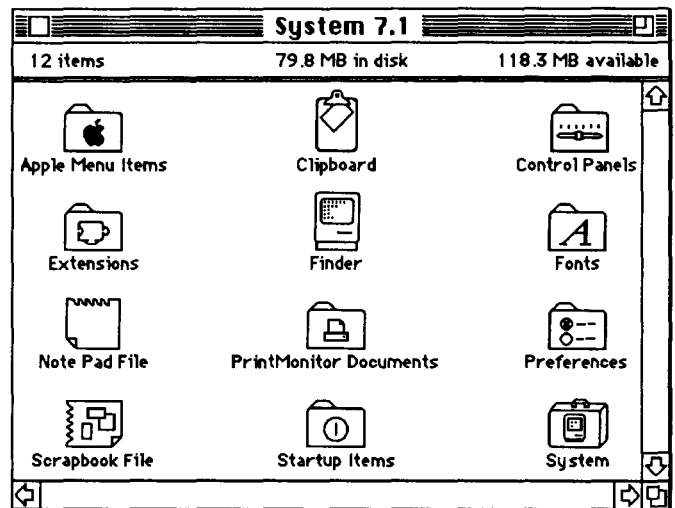
System 7.1 for the Macintosh



In October Apple released its newest update to System 7, version 7.1. Along with adding a few new features, most of what Apple is doing with 7.1 is building a foundation for world markets and for future system developments, such as OCE (Open Collaboration Environment), AppleScript, and QuickDraw GX. As new features are developed, Apple plans to market them as separate modules that can be added to the system as control panel devices or as extensions that works in the background. This strategy offers you the choice of adding or passing on the upcoming whiz bangy features that enhance your work environment. That way, if you're using a Mac Plus primarily for word processing, you won't have to deal with a system feature that slows down CPU processing because it can display 16 trillion colors. The new System 7.1 System folder is shown in Figure 1.

System 7.1 is installed on the Mac IIvx in the Shepherd Labs Microcomputer HelpLine.

Figure 1: Contents of System 7.1 System Folder



System Requirements

Systems 7.0 and 7.1 both require a Mac Plus or better, a hard disk, and at least 2MB of random access memory (RAM). However, we *strongly* recommend that you have at least 4MB of RAM.

Tune Up

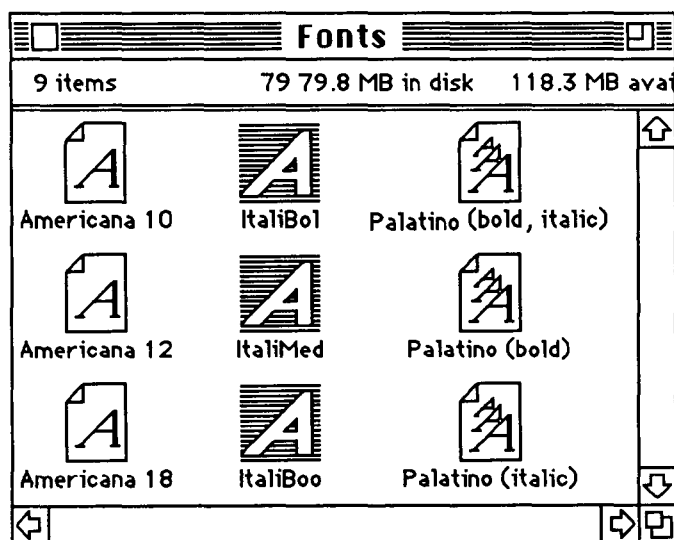
The System 7 TuneUp, which improved printing performance and stability in low memory situations, has been integrated into 7.1 with a few additional bug fixes. One of the bug fixes improves working with text in 16- and 32-bit graphics mode. System 7.1 does not include any new printer drivers.

Flexible Upgrades: System Enablers

In the past, whenever Apple released a new computer, it also had to release a new revision of system software to support the special features of the new model. Beginning with System 7.1, new computers will be released with a system enabler, a drop-in software module that provides the code necessary for a particular model to work with the system. So, unlike previous versions of system software, System 7.1 will not have to be revised every six months or so. This will simplify testing requirements for developers, and simplify support in organizations that wish to standardize on the same version of system software.

System 7.1 already works with older Macintosh models and includes enablers for the new Mac IIvx, Performa 600, PowerBooks 160 and 180, and Duos 210 and 230. It also includes a 32-bit system enabler that lets owners of Macs SE/30, II, IIx, and IIcx (older 68020 and 68030 machines) install more than 8MB of RAM. Previously if you used one of these older Macs and wanted to use more than 8MB of RAM, you had to install special software, such as Mode 32.

Figure 2: New Font Folder Holds Bitmapped, PostScript, and TrueType fonts.



Fonts Folder

The place where fonts are stored has been changed. They are now kept in the *Fonts* folder, which is located inside the System folder. Unlike previous versions of the system, all bitmap, TrueType, and PostScript Type 1 fonts can reside in this folder. (In System 7.0, you had to store PostScript outline fonts in the Extension folder and bitmapped and TrueType fonts in the System file.) Figure 2 shows a System 7.1 Fonts folder with icons for all three types of fonts: bitmapped (Americana), PostScript (Itali), and TrueType (Palatino).

You install fonts in two ways: by dragging the appropriate icons, either suitcases or files, into the Fonts folder or by dragging the icons onto the System Folder icon. Although you don't have to restart your machine to have the fonts available to applications, you shouldn't have applications, other than the Finder, running when you move fonts around.

Cautions

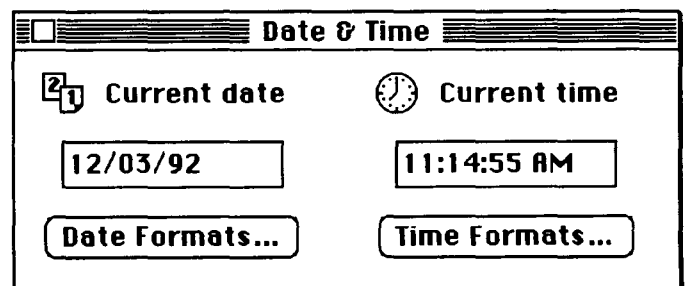
To have downloadable PostScript fonts show up in application menus, you must have both the bitmap screen and the outline PostScript fonts in the Fonts folder.

The current version of Adobe Type Manager (ATM) does not work with System 7.1. Adobe is offering an upgrade for a \$7.50 shipping and handling charge. Information about upgrading is included in a *ReadMe* file on System 7.1. At press time we did not have this upgrade.

File-Sharing: More Secure

System 7's file-sharing feature has been made more secure by removing guest access as the default (for more information on guest access read *Macintosh File Sharing* in our October 1992 newsletter). Previously, when you set up

Figure 3: Date and Time Control Panel



personal file sharing, guest access to your hard drive was automatically allowed, which could have serious consequences in a networked environment like the University. In System 7.1, you have to set up the guest access option with the *User and Groups* control panel.

Control Panels

Two new control panels have been added to System 7.1: Date & Time and Numbers. These features add the flexibility needed to display numbers in other countries. With the *Date & Time* control panel, shown in Figure 3, you can change how times and dates appear based on personal preference or local custom. The *Numbers* control panel lets you choose among several formats for displaying numbers and currency. Your options for these new control panels are shown in Figures 4, 5, and 6.

QuickTime

QuickTime is installed as an extension in the System folder; it works in the background to add capabilities that let your application programs integrate graphics, sound, video, and animation into documents. Although the new 1.5 version of QuickTime is bundled with System 7.1, you must drag it into the System folder after running the 7.1 installer. The 1.5 version adds two major new features: a new video compressor and support for Kodak's Photo CD format.

Video Compressor

Video-image files tend to be very large. The video compressor can squeeze these files down to about half the size of those produced by the older version. This way, you can get larger playback images without jumpiness. Unfortunately, the compressor works rather slowly, so in order to take advantage of this feature, you'll need a souped up Quadra with an immense hard drive.

Kodak Photo CD Compatible

In case you haven't noticed all the commercials lately, Kodak is offering a choice of having your film transferred to a CD-ROM. You drop off your film at your local Kodak film-processor and pick up negatives, prints, and a CD with each of your pictures stored at several resolutions.

Figure 4: Date Formats Options for New Control Panel

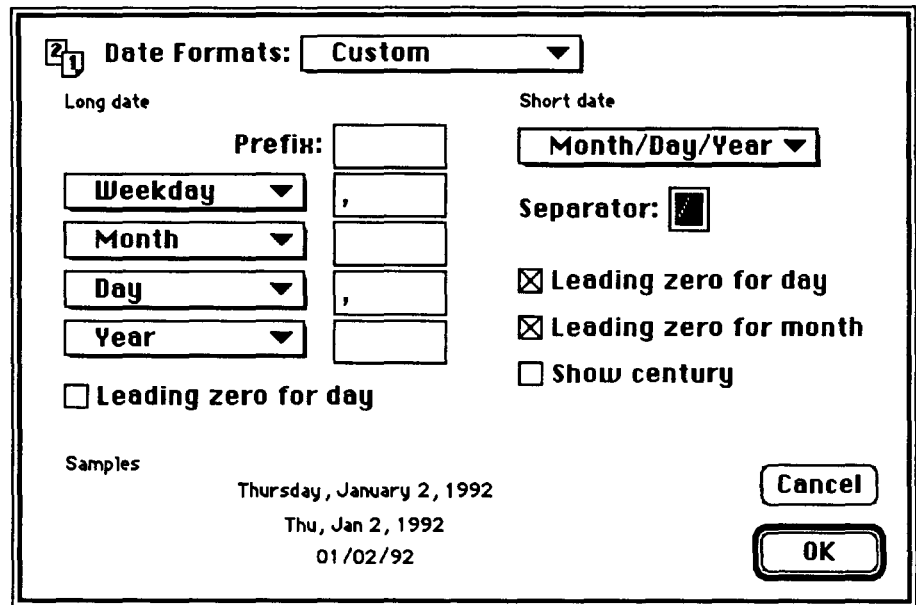


Figure 5: Time Format Options for New Control Panel

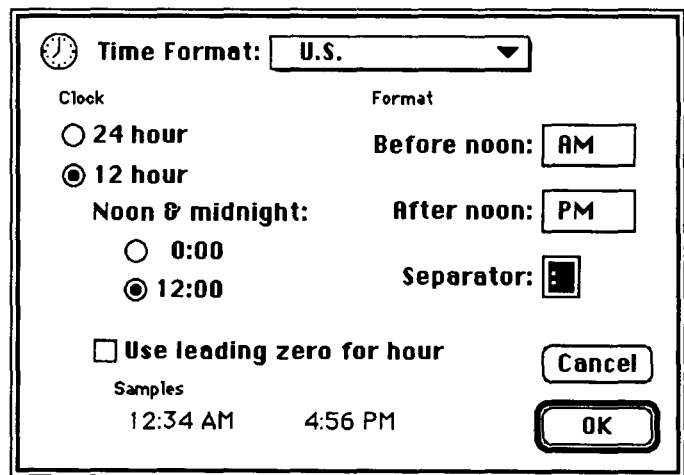
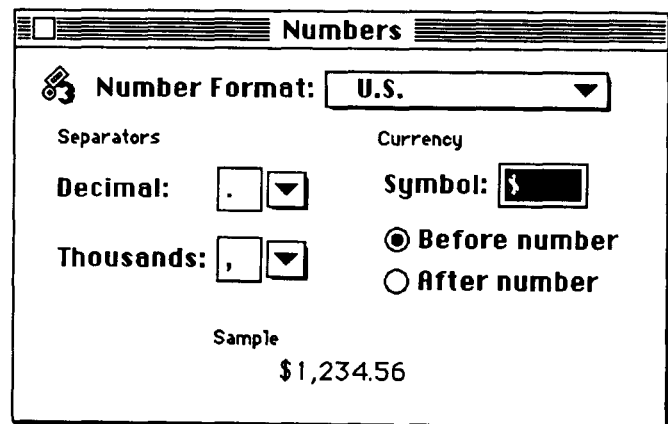


Figure 6: Number Format Options for New Control Panel



A typical CD can store up to 100 images, and Kodak's process lets you add photos to your CDs. Great, you say, but how can I look at the pictures? This new version of QuickTime allows you to view Kodak digital-image format pictures on a CD-ROM. Of course, you'll also need a CD-ROM player hooked up to your Mac.

Photo CD Cautions

QuickTime requires at least 4MB of RAM. Older CD-ROMs might not support the Photo CD format, and only the newest CD-ROM drives, like the AppleCD 300i and the Mac IIvx/CD configuration, support adding images after the first Photo CD is produced.

At Ease

Apple recently introduced the Performa line of computers. They use a different Finder, called *At Ease*, to manage files and open applications. The System 7.1 upgrade kit includes *At Ease*, which you can add after installing the new system. *At Ease* simplifies the Mac's DeskTop by dividing it into two folders and limiting the actions you can perform. The folders have buttons you click to start an application or open an existing document.

Unlike the traditional Macintosh DeskTop, you cannot drag icons around or use the trashcan icon to dispose of things. Since *At Ease* removes the *Control Panel* from the Apple menu, you cannot change settings. You can, however, control access with passwords and force users to save to a floppy disk rather than the hard disk.

Once *At Ease* is installed, the System 7.1 *File* menu has a command that allows you to switch between the standard Macintosh Finder and *At Ease*.

WorldScripts

Another change in System 7.1 involves WorldScript technology. Previously, Apple had to re-engineer the system software to support certain languages: those that were read from right to left, such as Arabic, Persian, or Hebrew; those that used non-roman characters, such as Russian or Hindi; and those that were written with thousands of different characters instead of 20 to 30 letters, such as Japanese, Korean, or Chinese.

This requirement caused a time-lag between the introduction of a new Macintosh in the Americas or Western Europe and that same computer in Asia, Africa, or Eastern Europe. With the release of System 7.1, Apple can ship Macintoshes with the same system-software architecture anywhere in the world, after making what are now routine

software changes in menus and dialog boxes for language specific support.

WorldScript technology is basically several modules that modify how text is handled by the system. It also has a feature that allows you to choose among alternate keyboard layouts without changing menus and dialog boxes. This enables you to mix roman and non-roman languages within one manuscript without having to fiddle with different systems.

You must purchase the WorldScript modules separately; they do not come with System 7.1.

Database Access

The Data Access Language (DAL) driver extension is no longer included with System 7.1. By eliminating DAL, system memory is freed up and system set-up is simplified for people who do not require database access on servers.

If you are using software that enables Macs to act as DAL clients with mainframe- and minicomputer-based databases from within spreadsheet, charting, and data-analysis applications, you will need to obtain the DAL driver separately. Apple reports that developers will offer DAL drivers along with their applications.

Compatibility

System 7.1 is compatible with virtually all applications that run on System 7.

Caution: AppleShare and MacTCP Users

AppleShare customers should upgrade to AppleShare 3.0.1, and MacTCP customers must upgrade to MacTCP 1.1.1. (MacTCP is on the *information* volume of the Mac Information Server.)

Compatibility Checker

The System 7.1 *Before You Install* disk has a compatibility checker that looks at the software you have on your hard disk and creates a report about whether or not the software is compatible with System 7.1.

When we ran it, POPmail and Gopher were flagged as being questionable. We've tested the latest versions of both and, as long as you are using MacTCP 1.1.1, both programs work fine with System 7.1.

Apple IIe Card and the Mac LC II

To use the Apple IIe Card with System 7.1 on a Macintosh LC II, you need version 2.2 of the Apple IIe Card Software. You should upgrade to version 2.2 only if you are using your LC II with System 7.1. The Apple IIe Card Software 2.2 may also be used with the original Macintosh LC, but it is not required.

We will obtain this upgrade and put it on the Mac Information Server's *information* volume in the *System Software* folder.

Installing on the Quadras

To install System 7.1 on a Macintosh Quadra, use the *Installer* program's *Easy Install* option, or choose *System software for any Macintosh* in the Installer's *Customize* window. Beware if you use the Quadra option in the *Customize* window. Some parts of the Monitors control panel will not work correctly.

Updating is Not Free

This update is a departure from Apple's former policy of upgrading Macintosh system software at the University: you will be *unable* to obtain free copies of the software. Instead, you must purchase it. The five System 7.1 update and upgrade options are listed below:

800K Disks

The upgrades come on HD (high density) disks. You can get 800K disks after you've purchased the upgrade kit. To obtain 800K disks, call Apple at 800-769-2775.

Option 1: Update Kit M7202LL/A

For individual users upgrading from System 7.0 or 7.01 to System 7.1. To qualify for this upgrade you must have *purchased* System 7.0 from Apple rather than obtained copies from the Microcomputer HelpLine. Those who received System 7.0 when they purchased a computer through the Microcomputer Discount Program are also eligible to purchase this update kit.

Only available directly from Apple by calling
1-800-769-2775
Price \$34.95 (one price for all)

There is one exception to this policy. Members of user-groups who call the 800 number and identify themselves as a member of a user group will receive a 20% discount.

Option 2: Personal Upgrade Kit M7200LL/A

For individual users upgrading from System 6.x to System 7.1.

Available at Williamson Book Center
University of Minnesota price: \$85

Option 3: MultiPack Upgrade Kit M7201LL/A

For up to 10 users upgrading from System 6.x to System 7.1. We expect this to be available for \$300-350 as a special order from the Computer Desk in the Williamson Book Center.

Option 4: Details are not yet available.

For up to 10 users upgrading from System 7.0 or 7.01.

Option 5: Details are not yet available.

Apple's Volume Licensing Program for more than 10 users.

The Personal Upgrade Kit

We obtained the Personal Upgrade Kit (option 2). Below we've listed the contents of the nine disks in the kit.

	Version
Before You Install Disk	
Compatibility Checker	
Install 1 Disk	
Install FDHD	7.1
Installer	3.4
System	7.1
Install 2 Disk	
Finder	7.1
Finder Help	7.1
Network Extension	7.1
A/ROSE	1.1.7
EtherTalk Prep	1.0.2
EtherTalk Phase 2	2.3.1
Network	2.3.3
Token Ring	1.0.1
TokenTalk Phase 2	2.4.1
TokenTalk Prep	2.4.1

	Version		Version
Tidbits Disk		Disk Tools Disk	
CloseView	7.1	Apple HD SC Setup	7.1
Easy Access	7.0	Disk First Aid	7.1
Scrapbook File	n/a	System Folder (with minimal 7.1 to boot up)	
<i>Apple Utilities (a folder)</i>		Printing Disk	
LaserWriter Font Utility	7.0	Installer	3.4
Read Me (a Teach Text document)	n/a	AppleTalk ImageWriter	7.0.1
Teach Text	7.0	imageWriter	7.1.2
<i>Apple Exchange (a folder)</i>		LaserWriter	7.0.1
Apple File Exchange	7.0	LQ AppleTalk ImageWriter	7.0.1
DCA-RFT/MacWrite	1.0.1	LQ ImageWriter	7.0.1
<i>Control Panels (a folder)</i>		Personal LaserWriter SC	7.0.1
Color	7.1	Personal LW LS	7.2
Data & Time	7.1	Printer Update (installer document)	7.1
File Sharing Monitor	7.1	PrintMonitor	7.1
General Controls	7.1	StyleWriter	7.2.3
Keyboard	7.1	<i>Only System 6.x (a folder)</i>	
Labels	7.1	Backgrounder	1.3
Map	7.1	Laser Prep	7.1.2
Memory	7.1	At Ease Installer Disk	
Mouse	7.1	At Ease - Read Me (Teach Text document)	n/a
Numbers	7.1	Installer	3.2
PowerBook	7.1	Install At Ease (installer document)	1.0.1
Sharing Setup	7.1	<i>At Ease Parts (a folder)</i>	
Sound	7.1	At Ease	1.0
Users & Groups	7.1	At Ease Setup	1.0
Views	7.1	Control Panel Handler	1.0
Brightness	7.0.1	At Ease Items (an empty folder)	
Cache Switch	7.0.1	<i>Mouse Practice (a folder)</i>	
Monitors	7.0	Mouse Practice	MacroMind Player 3.0
Startup Disk	7.0	QuickTime 1.5 Disk	
<i>Extensions (a folder)</i>		QuickTime Read Me (Teach Text document)	n/a
AppleShare	7.1	QuickTime	1.5
Caps Lock	7.1	Teach Text	7.0
File Sharing Extension	7.1	Scrapbook	7.1.2
<i>Apple Menu Items (a folder)</i>		<i>Replacement Scrapbook File (a folder)</i>	
Alarm Clock	7.1	Scrapbook File	n/a
Battery	7.1	Scrapbook File Read Me (Teach Text document)	n/a
Calculator	7.1	1.MooV (simple player document)	n/a
Chooser	7.2	7.MooV (simple player document)	n/a
Key Caps	7.1		
Note Pad	7.1		
Puzzle	7.1		
Scrapbook	7.1		
<i>Control Panels (a folder and an alias)</i>	n/a		

	Date	Size
Fonts Disk		
Chicago	Apr. 1992	47K
Courier	Sept. 1992	135K
Geneva	Sept. 1992	87K
Helvetica	Apr. 1992	135K
Monaco	Sept. 1991	54K
New York	Sept. 1991	85K
Palatino	Jan. 1992	295K
Symbol	Sept. 1992	69K
Times	Sept. 1991	281K

Apple Classic Fonts (a folder of bitmapped fonts)

Athens	Sept. 1991	5K
Cairo	Sept. 1991	7K
London	Sept. 1991	4K
Los Angeles	Sept. 1991	10K
Mobile	Dec. 1991	9K
San Francisco	Sept. 1991	4K
Venice	Sept. 1991	5K

Documentation

The documentation that comes with the upgrade kit is very skimpy. In addition to the Macintosh User's Guide, two other manuals are included: Upgrade Guide and At Ease Setup Guide.

The 34-page *Upgrade Guide* briefly mentions the Date & Time and Numbers control panels, Fonts folder, and QuickTime extension. Otherwise, the information is a basic review of system components, which is also covered in the larger *User's Guide*. Don't expect an explanation on the differences between System 7.0 and 7.1 or information on WorldScripts and system Enablers. This documentation is strictly for setup.

The 46-page *At Ease Setup Guide*, on the other hand, gives comprehensive instructions on how to set up and use this alternative to the Finder. A section on training new At Ease users is also included.

Word 5.1 Upgrade for Macintosh



Microsoft recently released an update to Word. The new version is 5.1 and includes an assortment of improved features, new capabilities, and a few bug fixes. This article is an overview of what's new.

Version 5.1: Free or Fee?

Those who bought the Academic version of Word 5.0 on or *after* October 1, 1992 can get a free upgrade. Otherwise, you must purchase the new version.

\$0

To obtain the free upgrade, you need to submit a special order at the Book Center. Bring your dated purchase information to the Computer Desk at Williamson Hall.

\$19.95

If you purchased Word 5.0 *before* October 1, 1992, you can get an upgrade to 5.1 through Microsoft, but not through the Book Center. If you were conscientious and sent in your registration card, you should have received a notice from Microsoft that offers the upgrade for \$14.95 plus shipping (\$5). If you haven't received the notice, you can call Microsoft at 800/426-9400.

\$100

If you still have a 4.x version of Word and would like to upgrade to 5.1, you can purchase Word at the Computer Desk for \$100 (the upgrade from 4.x to 5.1 costs \$129, so you save money purchasing a new copy rather than the upgrade).

New Features

The new features offered by Word 5.1 are listed below. For an overview of the many features offered in Word 5.0, see the March 1992 issue of the *Computer and Information Services Newsletter*.

Toolbar

The Toolbar is designed to give you quick access to the Word commands you use most often. Each button on the Toolbar is associated with a particular command. Word

has a default set of buttons, but you can customize the Toolbar to fit your needs.

Ribbon Buttons

Two new buttons have been added to the ribbon: the *Table* button and the *Chart* button. The Table button displays a table grid, giving you a graphical way to insert a table into your document. The Chart button invokes a module that you can use to create charts in your document. To edit a graphic created by the Chart module, just double-click on the chart or graph.

Envelope Utility

This utility is designed to provide an easy way to create envelopes and to store addresses. To create an envelope, you use a dialog box shaped like an envelope. You can also store addresses that you use frequently and select the one you wish to use from a list.

Text Annotations

Annotations are comments that you can add to a document. They can be useful when you are editing or reviewing documents and wish to make suggestions or raise questions and don't want to interrupt the flow of text.

Drop Caps

A drop cap is typically used in publishing to set off the first letter in a paragraph by making it larger and flowing the subsequent text around it. Word now includes this capability not only for individual characters, but also for words and graphics.

Adding Bullets and Nesting Paragraphs

On the default Toolbar, Word includes buttons to add bullets (•) and hanging indent paragraph formatting to selected text. Another button indents selected text one-half inch to create a nested paragraph format.

Improved Spelling Checking

Now you get more feedback on the progress of spell checking and improved handling of large custom dictionaries. The *Ignore All* button has been modified to include all instances of the word during the current spelling check and any other spelling checks you conduct until you quit Word. And, if you wish, you can reset *Ignore All*.

PowerBook Feature

Word provides a battery power indicator on the Ruler so you can monitor how much power is available without leaving Word.

Movies

You can add sound, video, and animation to your documents with QuickTime movies. Although you can't use Word to create movies, you can insert an existing movie into a document.

Miscellaneous Improvements

A new Group tool has been added to the Picture window so that you can combine several elements into a single element.

When using Find File, you can direct the search to a particular folder rather than an entire drive.

A feature that allows printing on both sides by printing odd pages and then even pages has been added.

Additional file converters allow you to open and save documents created in WordPerfect 2.0 for the Mac, Microsoft Excel, MacWrite II, WordPerfect 5.x for MS-DOS, and Windows Metafile.

Hardware Requirements

To run Word 5.1 under System 6.0.2 to 6.0.8, you need at least a Mac Plus with one 800K floppy drive, a hard drive, Finder version 6.1 or later, and at least 1MB of memory. If you are using the grammar checker, you need at least 2MB of memory.

If you are running System 7 on your Macintosh, you will need at least a Mac Plus with one 800K floppy drive, a hard drive, Finder version 7.0 and at least 3MB of memory, with 4MB recommended if you plan on using the Toolbar or grammar checker.

Some features of Word 5.1 are available only if you are running System 7.x of the Mac's System software.



Tales from the Network Woods

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▼ FastPath 4s Must Be Upgraded



FastPaths come in three versions: the FastPath 4, the FastPath 4w/kit, and the FastPath 5. In the past year, Networking Services replaced the built-in software (2 PROMs) in all FastPaths at no charge to any department. Different

departments pursued different solutions for their obsolete FastPath 4s. Some departments upgraded their FastPath 4 to a 4w/kit for \$275. Other departments traded in the FastPath 4 for the more capable FastPath 5.

All new units purchased by departments are now FastPath 5s.

Among many other features, the new software PROMs enabled us to do new software upgrades and reboots from our central office rather than using a Macintosh directly connected to local LANs. This has been labor saving for us, and departments have benefited by faster recovery from a problem since we don't have to go to the FastPath's site to fix it.

Previously none of the FastPaths were covered by a maintenance contract. We have successfully contracted with Shiva for a software and hardware maintenance agreement for all the University's FastPaths. We will handle that cost centrally. Repairing failing FastPaths at the University will also be covered under the contract.

Improved FastPath Security

To further secure the network, we completed the password protection of University FastPaths. Security analysis of our AppleTalk Network had shown a threat to its reliability if we did not safeguard the FastPaths from possible intruders. Even just one password unprotected FastPath would mean hours or days of downtime; this is unacceptable on the network you depend on to be your pathway to other users.

Growing Pains

As the University's AppleTalk network continues to grow, the 256K of memory on the FastPath 4 is not enough to hold all the information needed by the FastPath. Only FastPath 4w/kits or FastPath 5s can continue to provide

service to their LANs. We are actively eliminating unneeded AppleTalk net numbers and zones to push that day further into the future. However, these savings will only prolong the life of a FastPath 4 for a few months.

All FastPath 4w/kits and 5s are fine, but you must do something with your FastPath 4!

- reconfigure it so it does not need a FastPath (Telecomm's EtherJack or AppleJack),
- trade in the 4 for a 5 at a cost of \$999, or
- upgrade to a 4w/kit at a cost of \$95.

FastPath 4w/kits

The 4w/kit upgrade increases memory from 256 KBytes to 512 KBytes and adds a ventilation case with a fan.

A Mandatory Upgrade

You cannot refuse to change out or upgrade your current FastPath 4. We must prohibit FastPath 4s because when they run out of memory, they can bring down other parts of the University's AppleTalk network. FastPath 4s will be prohibited on the net and become an unsupported product after the upgrades to FastPath 4w/kits are completed.

▼ AppleTalk: Present and Future

AppleTalk is a very popular network protocol at the University. Network protocols function on physical media. AppleTalk on slower media or PhoneNet is called LocalTalk (230,000 bits per second) while on Ethernet it becomes EtherTalk (10,000,000 bits per second). All Macintoshes and most LaserWriters have built-in LocalTalk connections. In addition, recent models, like the LaserWriter IIg and Quadras, have built-in EtherTalk connections. Obtaining EtherTalk capability for the other models requires putting an Ethernet card into an internal slot or adding an external adapter to the machine's SCSI port. The cost for those cards and adapters is approximately \$135-235. Not all Macs and printers have the required slot or SCSI port.

AppleTalk Connections

The University has a ubiquitous Ethernet backbone; it stretches throughout all University buildings. LocalTalk Apple Macintoshes and LaserWriters that can communicate with this backbone are usually connected to the Ethernet backbone via a FastPath router. While devices equipped with an EtherTalk connection are usually connected directly to the backbone.

FastPaths

As University AppleTalk networks continue to grow, the 256K of memory on the FastPath 4 is not enough. This means all FastPath 4s must be upgraded, as stated above in the *FastPath 4s Must Be Upgraded* section.

Networking Services' AppleTalk Network Survey

The following table shows the growth of devices on the AppleTalk network during the past year. The new Quadras and PowerBooks appear in the 1992 survey. The fastest growth is in EtherTalk connections.

Table 1: AppleTalk Computers and Printers on All University Campuses

Date of Survey	1991 5 Nov	1992 4 Nov	% Increase
LocalTalk Connected Devices			
<i>Computers</i>			
Mac512, Mac+, Classic, Classic II	179	210	17
Mac SE, SE/30, LC, LC II	528	614	16
Mac II, IIX, IICX, IICI, IIFX, IISI	502	728	45
Quadra's	na	14	
PowerBook 100, 140, 170	na	14	
LocalTalk MS-DOS	84	99	18
<i>Printers</i>			
LaserWriters, DeskWriters	537	655	22
ImageWriters	59	49	-17
EtherTalk Connected Devices			
<i>Computers</i>			
Mac512, Mac+, Classic, Classic II	0	10	
Mac SE, SE/30, LC, LC II	31	92	197
Mac II, IIX, IICX, IICI, IIFX, IISI	60	211	252
Quadra's	na	17	
PowerBook 100, 140, 170	na	1	
LocalTalk MS-DOS	-	7	
<i>Printers</i>			
LaserWriters, DeskWriters	14	45	221
ImageWriters	0	6	
Totals			
<i>Computers</i>			
LocalTalk MS-DOS	84	106	26
LocalTalk Macs	1,209	1,580	31
EtherTalk Macs	91	331	264
Total Mac Workstations	1,300	1,911	47
% EtherTalk to Total	7%	17%	
<i>Printers</i>			
LaserWriters, DeskWriters	551	700	27
% Laser EtherTalk to Total	3%	6%	
Image Writers	59	55	-7

FastPaths' Future at the University

We see a device similar to the FastPath being needed for several years. The need will continue due to the many (over 600) LaserWriters that do not seem to expire, yet have only a LocalTalk port. For new installations we are searching for a simple device that provides the Ethernet IP address and connection on one side with LocalTalk on the other.

EtherTalk on Macs is the Future

For Macintoshes, we are recommending Ethernet cards (approximately \$150 currently) for all new purchases or current systems for the following reasons:

1. Ethernet connections provide 4 to 5 times the throughput of LocalTalk for each user. This capacity will be needed in several planned University applications, such as those that use QuickTime or high bandwidth graphics.
2. Currently, just one intensive network application can block or slow activity for others on the same LocalTalk LAN; while 5 or 6 intensive users would not block an Ethernet LAN.
3. Standardization of addressing for millions to intercommunicate requires the large address space of IP on Ethernet not the 65,000 of LocalTalk.

AppleTalk Consortium to Improve Protocol

Network World reported on November 16th, 1992 "... the formation of a consortium whose goal will be to make AppleTalk a more robust protocol for enterprise nets." The group will address vexing issues regarding use of AppleTalk in large router-based internets, such as the protocol's inordinate use of costly bandwidth, inefficient path selection and poor congestion management capabilities. "AppleTalk has the most deficiencies [of any protocol] when routing over the wide area since it was intended for small work groups"...

These issues are minor for the University, as our AppleTalk network only circulates 15,000 bits of routing information every 10 seconds. Our star based network uses reliable components to avoid multiple paths to the same object and thus avoids inefficient path selection.

Two AppleTalk Protocol deficiencies seen at the University are restart becalming and non-registering of net addresses. Becalming requires all FastPaths connected to the same wire (LANMark groups in particular) to be turned off to prevent reseeding the network with old configuration information during changes to the net. Becalming irritates

users by requiring a long down time for AppleTalk reconfigurations. Since current AppleTalk has a 16-bit net address field, only a local registration is possible. Several times an AppleTalk net connecting into the University's network has caused routing problems when its net numbers are identical with ours.

Recap

LocalTalk is the dominant version of AppleTalk currently in use on the University's Network, but we have many devices connected. Future AppleTalk users should use EtherTalk connections for their devices for better throughput. FastPath 4s have run out of memory and *will be prohibited* from the University network. Many of the deficiencies of AppleTalk are to be addressed by a joint Apple and vendor consortium.

Bargains

Mac Upgrade: POPmail II 2.0.7



POPmail is electronic mail software that is widely used at the University. We announced POPmail in March 1992 and continue to improve the interface and add options. Our latest release is version 2.0.7. POPmail II runs on all Macs that have at least one megabyte of RAM and System 6.0.7 or later.

New Features

Below we've listed the features that have been added to POPmail II since version 2.0.5.

Marking Messages

Sometimes you might want to single out a message. You can mark a message index line for future reference. To do this you choose *Mark* from the *Edit* menu or use the keyboard shortcut **⌘-4**. This appends a diamond (◊) to the end of the message index line. To remove the marker, choose *Unmark* from the *Edit* menu, or use **⌘-5**.

Sorting Messages

In the *Message* or *Archive Browser* windows, messages can be sorted in four ways: by correspondent, by subject, by date, and by status (unread or marked). The default for sorting messages is by date. To sort on a different header, click on the From, Subject, or Status headers over the message index. (If you don't see these headers, you've selected skinny window from the *Setup* menu's *Option* menu.)

Printing Control

A *Page Setup* command was added to the *File* menu to control paper size, orientation, scale, and other standard printer options. Now when you choose the *Print* command from the *File* menu, you see the standard printing dialog box.

Saving Messages as Text

Customized selection of your favorite word processor to open messages that have been saved as text files has been added. Set this up by choosing the *Option* command from the *Setup* menu or clicking once on the *Options* button in the *Message Sender* window. New text files are automatically named by using whatever is in the subject line.

Adding Date to Message Header

Most mail servers add the date to each message header. In some cases, however, the server is not set up to provide this service. If this is the case with the mail server you are using, you can add this feature to POPmail. Set this feature by choosing the *Option* command from the *Setup* menu or by clicking once on the *Options* button in the *Message Sender* window. Check the box next to "Server does not add date to the message header."

Obtaining POPmail

The POPmail upgrade is available in the usual places.

You can get the POPmail software, documentation, and MacTCP drivers from the Mac Information Server in the MicroCenter zone. Look on the *information* volume for the *Communications* folder, then the *Network Software* folder. The folder labeled *POPmail II* contains the latest release, version 2.0.7. The latest MacTCP drivers that need to be used with System 7.1 are also available in the MacTCP v1.1.1 folder

If you prefer, you may obtain the latest version of POPmail via anonymous ftp from

boombox.micro.umn.edu

Look in the directory named

/pub/POPmail/macintosh/2.0.7

Future Upgrades

We've set up a mailing list (a POPmail group) to notify people about POPmail updates and upgrades. To add your name to this group, send E-mail to:

popmail-news-request@boombox.micro.umn.edu

SPSS for Windows Site License



The University has site licenses and volume discount agreements for a variety of microcomputer, workstation, and central system software.

We recently added SPSS for Windows to that list. We have three modules for SPSS for Windows: Base, Professional Statistics, and Advanced Statistics.

Table 1 lists the SPSS discounts available through our department. For information about other site licenses and volume discounts, see the *Software Site Licenses* article in our October 1992 newsletter.

Licensing Information

The SPSS discount is available only to those who can pay for the package with a University budget number; that is, the software is not available to individual students, faculty, or staff. To lease any of these software packages, a departmental representative must sign a special form.

Departments pay an initial license fee. This fee enables the department to use the software for one year. Departments are not authorized to make multiple copies of the software. If a department wants more than one copy, it must lease more than one copy. If a department wishes to continue using the software after the first year, it will be charged an annual renewal fee.

Departments interested in leasing SPSS should contact our office in Room 190 Shepherd Labs, phone 625-1300.

CUFS

Departmental CUFS IV should credit the following Computer and Information Services CUFS account: Area 357, Org 2001, Sub Org 07, Rev Src 4410, Sub Rev 20.

Manuals

The initial fee covers the disks only. You must purchase manuals separately. SPSS manuals are available at the Minnesota Book Center in Williamson Hall. The Microcomputer HelpLine also has copies of the manuals.

DOS to Windows Upgrade

Those who previously purchased SPSS for IBM/MS-DOS can upgrade to SPSS for Windows at no additional cost, providing you return your original diskettes. This upgrade applies to the Base and Advanced Statistics modules. The Professional Statistics module is new and must be purchased separately.

Currently the Professional Statistics Module is available only for SPSS for Windows.

Table 1: SPSS Discounts

Software	Fees	
	First Year	Renewal
SPSS 5.0 for Windows		
Base	\$ 75	\$ 50
Advanced	30	30
Professional Statistics	30	30
IBM/MS-DOS: SPSS/PC+		
Base	75	50
Advanced	30	20
Mac		
Base	75	50
Advanced for Mac	30	20

Our Software Library

Overview



Do you need a word processing program? Which one do you buy? Microsoft Word? MacWrite? WordPerfect?

Maybe you also need a spreadsheet and a database? There are so many packages available. What are you to do?

Our Microcomputer HelpLine in 152 Shepherd Labs may be able to help. We have a collection of software packages which we receive and purchase from a variety of sources. Our collection is listed in Table 1.

For Evaluation Only

The packages in this collection are available for evaluation purposes only and cannot be removed from our premises. However, for a reasonable time, you may examine a package's manuals, load the software on one of our machines, and try it. In this way you may examine firsthand the common and unique features of a specific package or of several.

Supported and Unsupported

Please keep in mind the size of our collection. Not all of the software is preloaded on the HelpLine machines. Although we have experience using the software for which we teach classes, our consultants do not support or even use all of the software available in our library. We may be able to give you a few pointers, but we may have no more experience with the package than you do.

We try to maintain a variety of popular and highly rated products so you can look at the software and manuals out of their shrink-wrap and try them on equipment that resembles yours. Our software library is not a complete collection, by any means, because we do not have the funds to buy, update, and store all the software that a community as diverse as the University would like to have available. If you find an old favorite missing from the list, it was probably removed from our shelves. Further, we do not

always update our software as new versions are released. One reason for this is that we receive demonstration copies for which we have no update privileges. We also may not update software that has been replaced by other products that offer a better value.

Look for Future Updates

We will update this list periodically to inform you of what's been added to our collection. If the software you are interested in is not on our list, it may eventually show up in our Shepherd Labs HelpLine.

The Categories

For your convenience we've divided our collection into categories and have presented it as a table. We've also included brief explanations of what these categories mean. The table does not include prices. Actual prices can vary greatly from the vendor's suggested retail price, the book store's price, special promotional prices, the update price, and other retailers' prices.

Many software companies now offer versions for several operating system environments. Our list integrates software for these computer environments: Macintosh, DOS, Windows, and OS/2.

• Marks Computer Desk Sales

A • next to the software's name indicates that the package is for sale at the Computer Desk in the Williamson Hall Book Center. You can look on Gopher or stop by our Shepherd Labs HelpLine and pick up current *Software* price sheets for the Macintosh and IBM to see what the Book Center keeps in stock. The Book Center may be able to special order software for you. But please note, special orders may require advance payment.

Communications

Communications software enables you to transfer information from one computer to another. The packages differ in what they let you transfer, how the transfer is made, and the type of computers with which you are able to communicate.

Database

Database software allows you to organize related, and sometimes unrelated, information into different formats. Whether it is a personal address book, a library collection, or a parts inventory, database software helps you manipulate and keep track of your valuable information.

Desk Accessories

Desk Accessories, or DAs as they are commonly called, are usually mini-versions of software that would fit into one of our other categories of software programs. Basically, they are small utility programs that perform a designated task.

Desktop Publishing

Desktop publishing software is also known as page layout software. Page layout software mimics the manual paste-up tasks of publishing. You use this software to arrange text and graphics on the screen and print the results. Desktop publishing software is particularly valuable when a very high degree of control over the document's format is important; typically this includes brochures, advertisements, and sometimes newsletters.

Graphics and Design

Graphics packages can bring out the artist in you, and this category is very broad. It contains software for all kinds of drawing, painting, charting, graphing, and plotting applications. You will also find software packages for scanning, computer-aided drafting, and 3-Dimensional design.

Integrated

Integrated software may provide the solution to several of your software requirements. An integrated program offers a combination of several applications. Generally they include word processing, spreadsheet, graphics, database and communications capabilities. They have their limitations, but if you are on a budget or don't require the full features of a dedicated software package, integrated software may be the answer.

Language

This category contains some of the computer languages programmers use to create software applications.

Mathematics and Statistics

Mathematics software focuses on aspects of numeric and symbolic manipulation. Statistics software is for those who need to characterize a set of experimental data for standard deviation and specialized measures that go beyond the simple statistics capabilities found in some spreadsheet software.

Misc.

Here is the inevitable miscellaneous category where we have lumped software packages that do not have a separate category listing. Look the list over. You might be surprised what you find here.

Music

Music software is to musicians what desktop publishing software is to publishers or spreadsheet software is to accountants. It is a tool to help you create, edit, print, and play back musical compositions.

Scheduling

Scheduling software is a tool you use to maintain calendars, appointments, and other schedules for resources, such as people, equipment, rooms, and time.

Spreadsheet

Spreadsheets are flexible information tools; they look like grid paper with built-in numeric calculation capability. The calculation capabilities range from the simple ability to add, subtract, multiply, and divide values to more complex built-in formulas to calculate averages and use conditional "if" statements. (Also see the Mathematics and Statistics category.)

Utilities

Utility software helps you perform computer maintenance tasks, such as backing up your hard disk, repairing damaged disks, compressing files, and translating files from the Macintosh format to the IBM format. There are many useful tools in this group.

Word Processing

Word processing software is essential for almost every computer user. Basic word processing features include the ability to create, edit, format, and print documents. However they are becoming more sophisticated as new features allow you to perform page layout, create graphics and tables, and check grammar and spelling.

Table 1: Software Collection

Software Title	Vendor	Computer or OpSys Environment			
		Mac	DOS	Win	OS/2
v e r s i o n s					
▼ Communications					
Lap-Link Pro	Traveling Software				4.0c
MacLinkPlus/PC	Dataviz				7.0
MicroPhone II	Software Ventures Corp	•			4.0
Netware Lite	Novell				1.0A
Tincan Terminal Emulator	Yale University				5.0.2
Procomm	Data Storm				2.4.2
VersaTermPro	Synergy Software				3.6
▼ Database					
4th Dimension	Acius	•			3
Access	Microsoft				1.0
dBASE IV	Borland	•			1.5
EndNote Plus	Niles & Associates				1.2
File	Microsoft	•			2.0
FileMaker Pro	Claris	•			2.0
FoxBASE+/Mac	Fox Software	•			2.01
FoxPro	Fox Software				•2.0
Notebook II/Bibliog.	Pro/Tem				4.05
Omnis Seven	Blyth Software				x
Paradox	Borland	•			4.0
Pro-Cite	Personal Bibliographic	•			2.0
Reflex (Plus)	Borland				x

	Mac	DOS	Win	OS/2
▼ Desk Accessories				
Mac RTL	Foundation Systems	1.0		
Sidekick	Borland	•2.0		
Smart Alarms	JAM Software	3.07		
SmartScrap & Clipper	Solutions	1.03		
Suitcase	Fifth Generation Systems	2.0		
▼ Desktop Publishing				
DesignStudio	Letraset	1.01		
PageMaker	Aldus	•4.2		•4.0
Publisher	Microsoft	1.00		1.00
Quark XPress	Quark	3.1		
Ready, Set, Go!	Manhattan Graphics	5		
Ventura Publisher	Ventura Software	3.2		4.0.1
Ventura Publisher Gold Series	Ventura Software	3.0		
▼ Graphics				
Adobe Dimensions	Adobe Systems	1.0		
Adobe Illustrator	Adobe Systems	•3.2	4.0	4.0
Adobe Photoshop	Adobe	•2.0.1		
Adobe Streamline	Adobe Systems	•2.0		•3.0
Aldus Freehand	Aldus	3.1		
Aldus Super 3D	Silicon Beach	2.5		
Autodesk 3D Concepts for Windows ..	Autodesk			1.0
AutoSketch	Autodesk	3.0		x
CA-Cricket Draw III	Cricket	•1.0		
CA-Cricket Graph for Windows	Computer Associates	•1.0		1.2
Canvas	Deneba	•3.0.4		
Chart	Microsoft	1.02		•3.0
Color MacCheese	Delta Tao Software	2.07		
Corel DRAW!	Corel Systems	3.0		
Cricket Presents	Computer Associates	•2.0.1		
DeltaGraph Professional	DeltaPoint	2.0		
Freelance Graphics	Lotus	•4.0		•1.08
Generic CADD	Generic Software	6.0		
Harvard Graphics	Software Publishing	•3.00		1.01
IntelliDraw	Aldus	1.00		
MacDraw Pro	Claris	•1.5		
MacPaint	Claris	•2.0		
MacroMind Director	MacroMind	3.0		
Ofoto	Light Source Inc.	x		
PixelPaint Professional	SuperMac	2.0.1		
PowerPoint	Microsoft	•2.01f		•3.0
PrePrint	Aldus	1.51		
Print Shop	Broderbund	•1.3.2		
Prograph	TGS Systems	2.0		
SigmaPlot	Jandel	4.11		5.0
Sketch!	Alias Research	1.5		
Super 3D	Silicon Beach	1.0		
SuperPaint	Silicon Beach	•3.0		
Swivel 3D	Paracomp	1.1		
Turbo C	Claris	2.0v2		
UltraPaint	Deneba	1.0.1		
Upfront	Alias Research Inc.	1.01		1.1

• the package is for sale at the Computer Desk in the Williamson Hall Book Center

		Mac	DOS	Win	OS/2
▼ Integrated					
BeagleWorks	Beagle Bros	1.0.1			
ClarisWorks	Claris	•1.0v2			
DataPerfect	WordPerfect		•2.2		
GreatWorks	Symantec	2.0			
PlanPerfect	WordPerfect		•5.1		
WordPerfect Office	WordPerfect	3.0	3.0		
WordPerfect Works for DOS	WordPerfect		1.0		
Works	Microsoft	•3.0	•3.0	•2.00	
▼ Languages					
68000 Development System	Apple	2.0			
<i>BASIC</i>					
Basic Compiler	Microsoft	•6.0			
Basic Interpreter	Microsoft	5.28			
QuickBasic	Microsoft	•1.0			
Turbo Basic	Borland	x			
Visual Basic	Microsoft		•1.00		
Visual Basic, Professional Toolkit	Microsoft	1.00			
<i>C and COBOL</i>					
Borland C++ w/ Appln Frameworks	Borland	•3.1			
QuickC	Microsoft	2.51	•1.0		
Think C	Symantec	•5.0			
Cobol Compiler	Microsoft	3.0			
<i>FORTRAN</i>					
FORTRAN	Microsoft	2.2	•5.1	5.1	5.1
FORTRAN Optimizing Compiler	Microsoft	5.0			
<i>Pascal</i>					
Pascal	Microsoft	4.0			
QuickPascal	Microsoft	1.0			
THINK Pascal	Symantec	•4.00			
TML Pascal II	TML Systems	3.0			
Turbo Pascal Database Toolbox	Borland	1.21			
Turbo Pascal Editor Toolbox	Borland	4.0			
<i>Other Languages</i>					
HyperCard Development Kit	Claris	2.0v2			
HyperTMON	ICOM simulations	1.0			
Macro Assembler	Microsoft	•6.0			
Object Professional	Turbo Power	1.01F			
ObjectVision Pro	Borland	•2.1			
QuickTime Developer's Kit	APDA	1.0			
Spinnaker Plus	Spinnaker Software	2.0			
Turbo Assembler	Borland	2.0			
Turbo Debugger	Borland	2.0			
Turbo Prolog Toolbox	Borland	x			
Windows Device Developm't Kit	Microsoft		3.0		
Windows Software Developm't Kit	Microsoft	3.00	3.00		
▼ Mathematics and Statistics					
Data Desk Professional	Data Desk, Inc.	3.0 r0			
MacSpin	Abacus Concepts	3.01			
MathCAD	MathSoft	•3.0		•3.1	
Mathematica	Wolfram Research	2.0.3.1			
Minitab	Minitab Inc.	•8.2	•8		
SPSS/PC+ Studentware Plus	SPSS Inc.	1.0			
Statistix	Analytical Software	•3.0			
StatView	Abacus Concepts	•4.0			
Theorist	Prescience	1.11			
TK Solver (Faculty ed.)	Universal Technical Sys.	2.0			
TK! Solver Plus (College ed.)	Universal Technical Sys.	1.0			

		Mac	DOS	Win	OS/2
▼ Misc.					
Adobe Type Manager	Adobe Systems	•2.0.2	•2.5	•2.5	
Agenda	Lotus		•r2.0		
Authorware Professional	Authorware	1.7.1			
Bookshelf	Microsoft		1.00		
CA-Cricket Presents	Computer Associates	2.1			1.4
Calendar Creator	Power Up!	1.00			
CompileIt!	Heizer	2.1a			
Display Master	Intersecting Concepts		2.04		
Expressionist	Prescience	3.0			
Fontastic Plus	Altsys	2.0.2			
Fontographer	Altsys	3.5			
FormFiller	Bloc Publishing		3.0		
formulator	ICOM	1.1			
Freedom of Press	Custom Applications	2.1A			
Grammatik 5 for Windows	Reference Software Int'l				5
Grammatik Mac	T/Maker	2.0			
Hollywood	Claris		x		x
HotShot Presents	SymSoft		1.1		
ISYS	Odyssey Development		3.01		
Just Joking (for Windows)	WordStar				x
Lexicon Mastery: French Tutor	Northern Bytes	2.1			
MacAuthority	The Cobb Group		x		
MacPresents	Educational Multimedia	1.0			
MacRecorder Sound System	Farallon	2.0			
MathType	Design Science	3.0			
MicroGrade 2.0	Chariot Software Group	2.0.4			
MicroTest III	Chariot Software Group	4.0			
MORE	Symantec	3.1			
OmniPage	Caere	3.0			
Persuasion	Aldus	2.1		•2.10	
Project	Microsoft	3.0		x	3.0
QEMM 386	Quarterdeck Office Sys.		6.0		
Read -it! O.C.R. Pro	Olduvai	4.0			
ResumeWriter, Student Version	Bootware Software				x
SAM	Symantec	•3.5			
SmartForm Designer	Claris	1.1v1			
STELLA II	High Performance Sys.	2.2			
SuperGlue II	Solutions		x		
Tempo II	Affinity Microsystem	1.0			
Timbuktu	Farallon	4.0			
TMON Professional	ICOM Simulations	7.0			
Toolbook	Asymetrix		1.53		1.5
TYPINGtutor 5	QUE Software	•1.0	•1.0		
Windows Resource Kit	Microsoft				3.1
Windows 3.1	Microsoft				•3.1
▼ Music					
CODA	CODA Music Software	2.1			
Composer's Mosaic	Mark of the Unicorn	1.1			
Deluxe Music Construction Set	Electronic Arts	2.5			
Finale	Coda Music Software	•2.6.1		•2.0.1	
MusicProse	Coda Music Software	•2.1			
Performer	Mark of the Unicorn	•4.02			
Professional Composer	Mark of the Unicorn	•2.3M			

• the package is for sale at the Computer Desk in the Williamson Hall Book Center

Software Title	Vendor	Computer or OpSys Environment			
		Mac	DOS	Win	OS/2

versions

▼ Scheduling

Front Desk	Layered	6.0			
MacProject II	Claris	•2.1v3			
Meeting Maker (single user)	ON Technology	1.5			

▼ Spreadsheet

Excel	Microsoft	•4.0		•4.0	2.21
Lotus 1-2-3	Lotus	•1.00	•3.1+	•1.0a	
Multiplan	Microsoft	•4.2			
Quattro Pro	Borland	•4.0		•1.0	
Resolve	Claris	•1.1			
Wingz	Informix	1.1		3.0	3.0

▼ Utilities

AccessPC	Insignia Solutions	2.0			
Capture	Mainstay	4.0			
ConvertIt!	Heizer Software	1.5			
DiskLock	Fifth Generation Systems	2.01			
DOS Mounter	Dayna	3.0			
FASTBACK PLUS	Fifth Generation	•3.0			
HiJaak	Inset Systems		2.1		1.0
MAC-to-DOS	Peripheral Land Inc.				x
Macintosh PC Exchange	Apple Computer, Inc.	1.0.1			
MacPing	Dartmouth Computing Serv.	2.0.2			
MacTools	Central Point	2			
MacTools Deluxe	Central Point	1.2			
Norton Anti-Virus	Symantec		2		2
Norton Backup for DOS	Symantec		2.0		2.0
Norton Desktop for Windows	Symantec				2.0
Norton Utilities	Symantec	•2.0		•6.01	
Now Utilities	Now Software	4.0			
PC Tools	Central Point Software		8		
PKLITE Professional	PKWARE, Inc.				x
PKzip	PKWARE, Inc.		1.1		1.1
QuickTime Starter Kit	APDA	1.0			
Snooper	Maxa				x
Sonar Bookends and TOC	Sonar/Virginia Systems	2.5/1.1			
SUM II	Symantec	•2.1			
SuperLaserSpool	Fifth Generation Systems	3.0			

▼ Word Processing

Ami Pro for Windows	Lotus			•3.0	
Correct Grammar for DOS	Lifetree Software		4.0		
DeScribe	DeScribe, Inc.				2.0
EXP	Brooks/Cole		2.1		
FeiMa	Wu Corp.	3.0			
MacWrite II	Claris	•1.1v3			
Norton Texta Writer	W. W. Norton & Co.		2.0		
PowerPoint for Windows	Microsoft				3.0
Word	Microsoft	•5.1	•5.50a	•2.00	1.1
WordPerfect	WordPerfect	•2.1	•5.1	•5.1	
WriteNow	T/Maker	3.0			

• the package is for sale at the Computer Desk in the Williamson Hall Book Center

Book Center: 625-3854



The offers listed here are made to University departments, employees, and students, and are subject to the eligibility rules of the Micro-computer Discount Program. If you have questions about availability, phone the Computer Desk in Williamson Hall at 625-3854. The Computer Desk is open Monday-Friday from 8:30 am to 5:30 pm during the Fall, Winter, and Spring quarters and for reduced hours at other times. You can charge your purchases on your *MasterCard* and *Visa* accounts.

▼ Sign Up For Automatic Notification

You can get product and price change bulletins for the products sold through the Computer Desk via E-mail. To be added to the mailing list, send an E-mail request to:

`request@boombox.micro.umn.edu`

Once you are on the mailing list, you will receive notification via E-mail as soon as we have new prices or products.

▼ Sales Tax and Handouts

Individuals must add 7% sales tax to all prices listed here or in our handouts. University departments do not have to pay sales tax. For more complete descriptions of the hardware products listed here or of those available through the discount program, consult our handouts. Paper handouts are available at all Microcomputer HelpLines. Electronic versions are available from the Computer Consultant (gopher). Our current handouts are: IBM PS/2 Computers, ZEOS MS-DOS Compatibles, Printers for IBM-Compatible Computers, Apple Macintosh Computers, Macintosh Printers and Peripherals, NeXT, and Network Connections. Some specialized handouts are also available.

▼ IBM Notebooks in Shepherd Labs

The Microcomputer HelpLine in Shepherd Labs currently has these IBM notebook computers available for test drives: ThinkPad 300 and PS/Note N45 SL.

▼ New: IBM ThinkPad Notebooks

IBM recently released three new notebooks: the ThinkPads 300, 700, and 700C. Their prices and selected hardware features are listed in Table 1.

Common Features

The three ThinkPads come with one 1.44MB 3.5-inch floppy drive and these ports: parallel, serial, keypad/mouse, and external VGA. All three machines also come with an NiMH battery pack and an AC adapter.

Built-in Screens

The ThinkPads 300 and 700 have LCD (liquid crystal display) Super Twisted Nematic displays. Both can display 64 shades of gray. The ThinkPad 700C has a color LCD screen; it's an active matrix, Thin Film Transistor (TFT). If you plug an external monitor into the 700C, you can view it and the built-in screen simultaneously. The ThinkPads 300 and 700 can be upgraded with an active matrix TFT color display.

700 and 700C, Distinguishing Features

You can upgrade the 700 and 700C's processor to a 486SLC2 (50/25).

The TrackPoint II is a small pointing device that's built into the middle of the 700 and 700C's keyboard. You can use it instead of an external mouse. The "click" buttons you find on a mouse are located beneath the spacebar. This TrackPoint II arrangement lets you keep your hands on the keyboard while using mouse-type commands.

The time it takes to recharge the 700 and 700C's batteries varies. The optional quick-charger recharges the 700's batteries in 2 hours and the 700C's in 1.4 hours if the 700C is powered off or in suspend mode. You can purchase an optional car battery adapter for the 700 (not the 700C) and a quick charger for both 700s.

300 Distinguishing Features

The ThinkPad 300 has a built-in Ethernet port. To use the port you need to order a 10BaseT (twisted pair) adapter cable (part number 33G9293) which comes with the software you need to connect it to a network. The network drivers support LAN Manager and Novell.

The ThinkPad 300 supports an optional feature IBM calls a port replicator. This feature lets you use the 300 without detaching or attaching any peripherals cables.

Table 1: New IBM ThinkPad Notebooks

Model	300	700	700C		
▼ Fixed Features					
Microprocessor	386SL	486SLC	486SLC		
Speed (MHz)	25	25	25		
Co-processor socket	Y	Y	Y		
Built-in Screen and VGA					
9.5-inch	Y	Y	-		
10.4-inch	-	-	Y (color)		
Memory					
Standard: MB	4	4	4		
Maximum: MB	12	16	16		
IC DRAM Card slots	-	2	2		
Standard RAM slots	3	-	-		
Weight: Pounds	5.9	6.5	7.6		
Battery Life: Hours	up to 4	up to 7.5*	4-7.5*		
Expansion					
32-Bit Microchannel port	-	Y	Y		
16-Bit ISA port	Y	-	-		
• DOS Software Included	N	Y	Y		
• International Warranty: Years	1	3	3		
▼ Variables					
Hard Drive: MB	80	120	80	120	120
Order No.	2615-065	2615-067	9552-300	9552-301	9552-30B
Book Center Price	\$1957	\$2124	\$2266	\$2431	\$3585

* battery life is not based on continuous use

▼ Sample IBM Price Changes

Prices dropped on selected IBMs since we listed some sample changes in our November 1992 newsletter. Table 2 has updated sample prices.

Table 2: Sample IBM Price Changes

PS/2 & Part No.	Memory	Hard Drive	Price
<i>386SLC Microprocessors: OS/2 preinstalled</i>			
56SLC, 8556-059	8MB	160MB	\$ 1,135
57SLC, 8557-059	8MB	160MB	1,355
<i>386SLC Microprocessor, preloaded with DOS 5.0 and selected software</i>			
56SLC, 8556-3T2	4MB	80MB	\$ 1,099
<i>386 Microprocessor: must purchase operating system</i>			
70, 8570-E61	2MB	60MB	\$ 500
70, 8570-121	4MB	120MB	685
<i>486DX Microprocessor: must purchase operating system</i>			
95, 9595-OMT (PS/2 95s have a 3-year warranty)	16MB	1GB	\$ 10,515

And Books, Too



If you cannot find the computer books you want in the Book Center's Reference section, tell us what books you want to buy. Send specific titles or areas of interest to: Maureen O'Brien, 160 Williamson Hall, Minnesota Book Center, 231 Pillsbury Drive SE, Minneapolis, MN 55455.

A 10% Discount

The prices listed below are suggested retail prices. The amount you actually pay will be less because you will receive a 10% discount at the cash register.

Here's what is new in the Reference section:

- ✓ *The Whole Internet: User's Guide and Catalog* by Ed Krol, an O'Reilly & Associated, Inc. publication for \$24.95.
- ✓ *Macintosh Bible, 4th Edition* by Arthur Naiman, a Publishers Group West publication for \$32.00.
- ✓ *Numerical Recipes in C, 2nd Edition* by Williams Press, a Cambridge University publication for \$49.95.
- ✓ *Big Mac Secrets* by Macki, a Que publication for \$39.95.
- ✓ *Genius: Richard Feynman and Modern Physics* by James Gleick, a Pantheon publication for \$27.00.

Help: Computer and Information Services

Distributed Services and Planning

Phone

Help Line Hours

Computer Services Information Line

625-1555

anytime

If you do not know which computer service phone number to call, dial the Computer Services Information Line.

Central Systems Help Lines

To use these systems, you need a user name and password, which you get when you open an account.

Qualified users can apply for grants to handle some computing-related costs.

Machine ID

- EPX (UNIX), NVE (NOS/VE), UZ (Ultrix), VX and VZ (VMS) 626-5592 Monday-Friday 9 am to 4 pm
1 Nicholson Hall Walk-in Consulting Monday-Friday 10 am to 4 pm
- VM1 (IBM/CMS), 99B Coffey Hall Walk-in Consulting 624-6235 Monday-Friday 9 am to 4 pm
- MEDLINE (MinnesotaMEDLINE on NVE) 626-8366 Monday-Friday 9 am to 4 pm

Microcomputers and Workstations HelpLine

Software, hardware, peripherals, local area networks 626-4276 Monday-Friday 9 am to 4 pm

- East Bank 152 Shepherd Labs above above
- West Bank 93 Blegen above Tue. and Fri. 1-4, Thur. 9-noon
- St. Paul 99B Coffey Hall above Mon. and Fri. 9-12, Wed. 1-4 pm

E-Mail (Electronic Mail) and LUMINA Help Lines

- E-mail: call for help using your University account. 626-7676 Monday-Friday 9 am to 10 pm
Walk-in help available in most campus Public Computer Facilities.
- LUMINA: call if you have trouble connecting. 626-2272 Monday-Friday 9 am to 4 pm

General Information

Acting Associate Provost with Special Responsibility for Computing & Information Systems on the Twin Cities Campus
Donald R. Riley 626-9816

Computer and Information Services

- Distributed Services and Planning Shih-Pau Yen
- Engineering Services Don Clark
- Networking Services Lawrence Liddiard
- Software Services and Operations Lee Croatt
- St. Paul Services Mel Sauve
- Central System Accounts, IBM CMS 624-7788
- EPX, NVE (includes MEDLINE), UZ, VX, VZ 6-8366
- Disability and Computing Services, voice 6-0365
- TDD 6-0569
- Equipment Repair and Warranties (Engr. Serv.) 5-1595
- Faculty Resource Center (to make an appointment) ... 5-1300
- Network Addresses (130 Lind) 5-8888
- Public Computer Facilities (obtaining access) 5-1300
- Software Services (includes contract programming) .. 5-2303
 - Data Entry Services, Minneapolis 6-8351
 - Data Entry Services, St. Paul 4-7297
- Tape Librarians (Central Systems)
 - EPX, NVE, UZ, VX, VZ (Lauderdale Comp. Facility) .. 6-1838
 - VM1 (IBM/CMS in St. Paul) 4-3482
- Training, Course Registration (190 ShepLab) 5-1300

Other Departments

- Computer Desk, Williamson Hall Book Center 625-3854
- AIS (Admin. Info. Services) Customer Assistance 4-0555
- LUMINA to U (University Libraries) 6-2260
- Supercomputer Center Help (3030 SCC) 6-0808
- Telecommunications, Networking Services
 - Information 6-7800
 - Repair 5-0006

Access Information

SLIP: 2400/9600 626-1920
SLIP: ADI-100 and ITE only 3-0291

- Terminal settings for these systems are 8-1-N (8 data bits, 1 stop bit, no parity) unless otherwise noted. The number you dial may depend on the modem's bps or baud rate.
- Dial-in Server: 626-0300, -1200, -2400, -9600
 - At 9600 Telecomm supports the V.32 and MNP level 5 error correction).
 - On campus ADI-100 and ITE setups use 626-2400.

Internet addresses.

LUMINA: 300/1200/2400 625-6009
LUMINA.LIB.UMN.EDU

E-mail and Internet Interactive Sessions, Twin Cities

Students GOLD.TC.UMN.EDU
Faculty and Staff MAROON.TC.UMN.EDU

Gopher or Computer Consultant (log in as gopher)

300, 1200, 2400, 9600 see Dial-in Server
CONSULTANT.MICRO.UMN.EDU

PUBINFO (tn3270 only) ___ PUBINFO.AIS.UMN.EDU

EPX, NVE (includes MEDLINE), UZ, VX, VZ
300, 1200, 2400, 9600 see Dial-in Server
300/1200/2400 at 7-1-even 626-1630
EPX or UZ or VX or VZ or NVE.CIS.UMN.EDU

EPX, NVE (includes MEDLINE)
300/1200/2400 625-1445
up to 19.2 campus data phone 3-2400
EPX or NVE.HSCS.UMN.EDU

VM1 (IBM/CMS) at 7-1-even
1200/2400 624-4220
up to 19.2 campus data phone 4-4220
VM1.SPCS.UMN.EDU

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- Our Vacation/Sick Leave software users can join a forum that includes update information and usage hints by sending E-mail to: VSL-news-request@boombox.micro.umn.edu

Computer and Information Services Newsletter

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