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MARCH
1992

LB COMPUTING NEWSLETTER

NEW COMPUTING RATES

ARA THROUGH ICS DATA SWITCH

THE GCG PACKAGE

COMMON LINK

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Newsletter Closing Date is Friday, March 13, 1992

Address all communications for the Newsletter to loginnewsletter@lbl.gov or put in Maggie Morley's Drop Box in the Workstation Group File Server

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DEPARTMENTAL MATTERS

CSA COMPUTING: FASTER AND CHEAPER

Marv Atchley

An upcoming upgrade of the CSA Cluster will result in decreased computing costs. As a result of the planned upgrade from DEC 6500s to 6600s, to take place this month, the price per cycle will go down, thereby facilitating more computing power for the dollar.

The numbers in the table below reflect a net cost reduction for nearly all types of use and a substantial cost reduction for use of Economy mode. While the CPU speed on the 6600s will be approximately 2.5 times the speed on the 6500s, the rates will be doubled, so that the price per cycle is reduced and the additional capacity will allow more computing.

COMMITTED RATES

	\$ Per Hour	\$ Per Hour
	Previous	Present
PRIME TIME Connect	1	1
Interactive & Equal Batch	140	300
NON-PRIME TIME Connect	0	0
Interactive & Equal batch	70	150
BATCH Normal	70	150
Economy	25	30
Standby	0 ¹	10

- Standby will not run during the day: priorities will still be in place.
- The system will be less loaded in Economy.
- There will be no change in disk rental charge.
- Licenses for a lot of software come with the central machine.
- The 6600's floating point processor is much faster (more than 2.5 times the speed of the 6500).

¹ Standby rates had gone to zero in recent years, when Computing Services' budget was covered by commitments. Since commitments this year are less than the anticipated budget, standby rates have been raised.

LBLnet NEWS

APPLETALK REMOTE ACCESS THROUGH THE ICS DATA SWITCH

Russ Wright

What is AppleTalk Remote Access?

AppleTalk Remote Access (ARA) allows a Macintosh to connect to LBL's AppleTalk network from a remote location using a modem and some software developed at Apple. (Software presently lists for \$125, but we are looking into a site license for LBL).

How do I use ARA?

Normally you would get two modems: one for your Macintosh at home and one for the Macintosh at LBL. In addition, you would need to acquire an analog phone line for your office Macintosh, since modems don't work over digital phone systems.

There is a better way...

Using LBL-developed ARA scripts, you can use ICS modem pools to access your Macintosh at LBL. Using this solution, only one modem is required—the one that goes on your Macintosh at home. Instead of connecting a modem to your LBL Macintosh, you need to hookup an Async Data Interface (ADI) to it. The cost of an ADI is currently \$17/month (compared to \$25 - \$35/month for an analog phone line) and many of you may already have an ADI in your office. If you currently use the ADI to connect to a host (such as CSA or UX5), you will have to use a program that communicates over the LocalTalk (printer) port to connect to that host (NCSA Telnet is the most widely used program of this type at LBL). Just to make it clear: you can NOT use the ADI for both Remote Access and host connection.

If you wish to use Apple Talk Remote access (with or without going through the ICS switch), please contact the Workstation group (x6858). It is our intention to provide this service by the time this newsletter is distributed.

Supported Modems

- Hayes 2400 baud modem
- US Robotics Courier V.32bis
- MultiTech Multimodem V.32
- ICS-Global Village PowerPort/V.32
(Internal 9600 baud modem
for PowerBooks)
- SupraModem V.32¹
- SupraModem V.32bis

We expect to support the Supra modems. They should be available soon. (The V.32 (9600 baud) modem lists for \$300 and the V.32bis (14400 baud) modem lists for \$400).

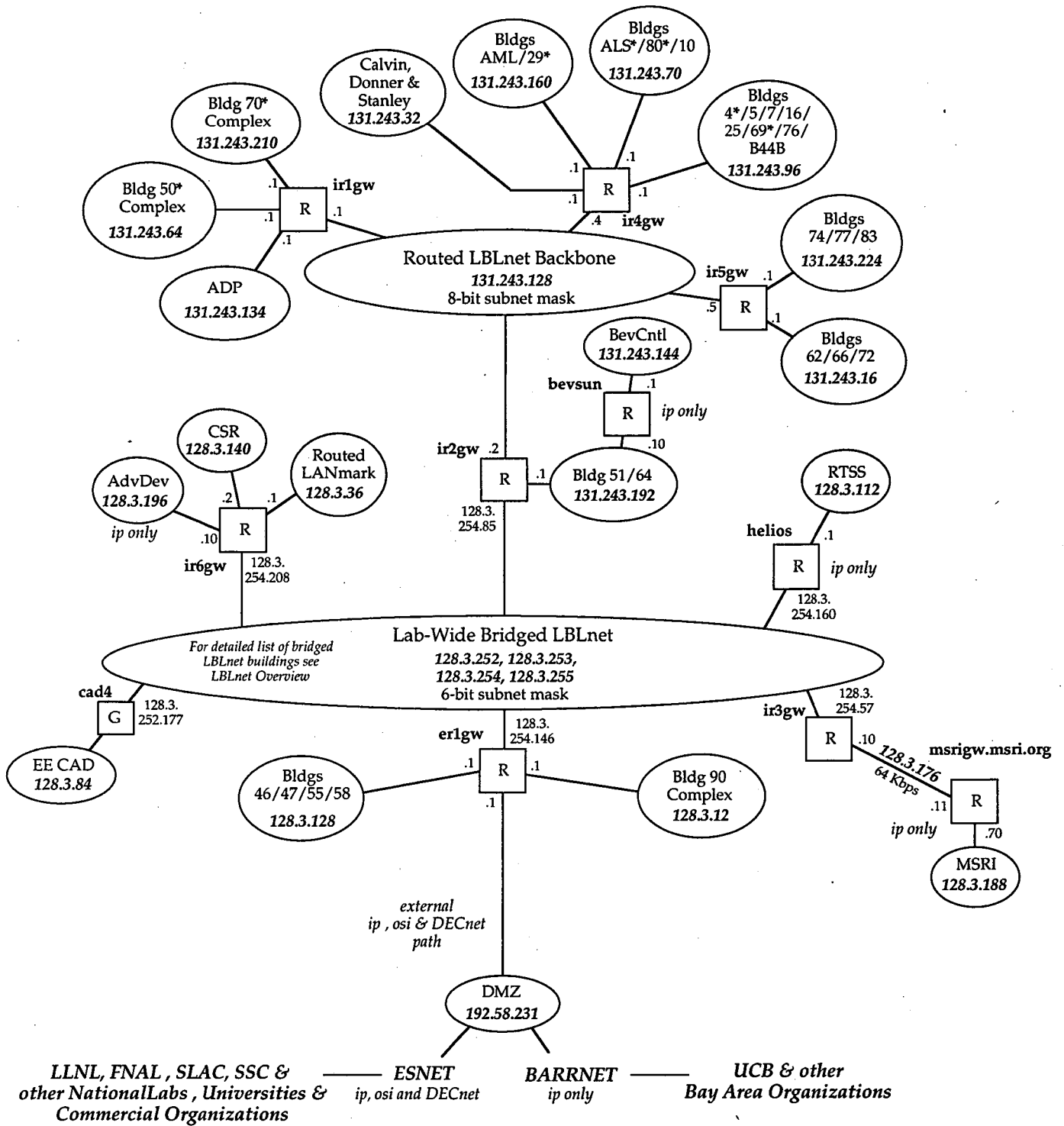
NOTE: If you have another modem that is supported by Remote Access but is not on the above list, you may be able to persuade us to add it to our list of supported modems.

Forward comments and questions to the Workstation Group at x6858 or

UNIX or
Software Tools Mail: workstation@lbl.gov
VMS Mail: lbl::workstation

¹ The Supras are not available yet.

* Not installed yet



LBLnet Subnet Overview

R = IP Router, G = Gateway w/ no routing
Circles Represent Routed Ethernet Subnets

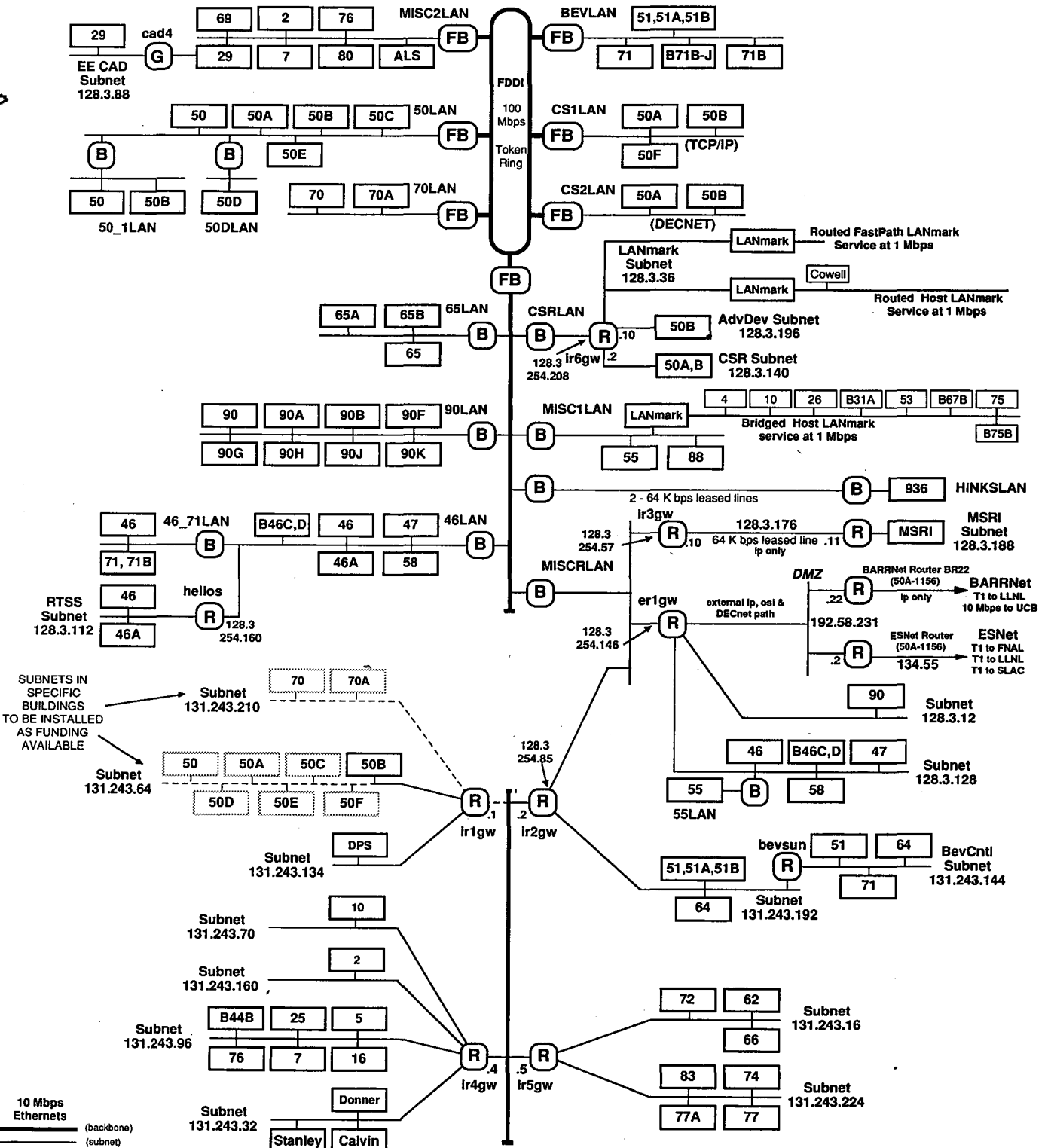
Bob Fink/Craig Leres/Ted Sopher

16 January 1992

- R Router - IP, OSI & DECnet
- G Gateway - no routing

LBLnet Bridged Backbone

128.3.252, 128.3.253,
128.3.254, 128.3.255
6-bit subnet mask



LBLnet Routed Backbone

131.243.128
8-bit subnet mask

Lawrence Berkeley Laboratory LBLnet Overview

Bob Fink/Ted Sopher - CNRD/ICSD

16 January 1992

ICSD TRAINING SCHEDULE

March - June, 1992

COMPUTING RESOURCES DEPARTMENT

The following courses are offered by the Computing Resources Department.

To enroll in the C Programming course, the UNIX classes, the X Windows Class, the AVS class or the Electronic Mail Survey class please contact Rita McLean, x5872 (you'll need a VMS/CSA login). To enroll in the courses for the Mac and IBM PC, obtain your supervisor's approval and then contact Gayle Milligan, x4511.

There is no charge for these classes.

(In the following listing, those classes with asterisks (*) appended are already full).

Bldg. 50B, Rm. 1237

<i>Introduction to UNIX</i>	9:15 - 12 Noon
March 4, 5, 6	April 14, 15, 16
May 12, 13, 14	May 26, 27, 28
June 9, 10, 11	June 23, 24, 25

<i>C Programming</i>	1:30 - 3:30 PM
March 18, 19, 25, & 27	

IBM-PC: Bldg. 50B, Rm. 1237

<i>Introduction to PC-DOS</i>	2:30 - 4 PM
April 28 & 30	May 12 & 14
June 9 & 11	

<i>Introduction to Windows</i>	9 - 10:30 AM
April 28 & 30 *	May 12 & 14 *
June 9 & 11	

X Windows System

March 5 & April 16	1:30 - 3:30 PM
March 26, April 1 & 17	9 - 11 AM

<i>Electronic Mail Survey</i>	10 - 12 Noon
March 18	April 30

<i>AVS</i>	8 - 5 PM
March 20	

Macintosh: Bldg. 50B, Rm. 1229

<i>Begining Microsoft Word 5.0</i>	1-3 PM
March, 17, 18, & 19 *	April 14, 15, & 16*
May 19, 20, & 21	June 16, 17, & 18

<i>Begining Excel Spreadsheet</i>	9-11:00 AM
March 23, 25, & 27 *	April 20, 22, & 24
May 18, 20, & 22	June 22, 24, & 26

<i>Introduction to FileMakerPro</i>	10 - 12 Noon
March 24 & 26 *	April 28 & 30 *
May 26 & 28	June 23 & 25

NOON TIME CLASSES (no sign-up required) in the following subjects are also offered:

Macintosh: Bldg. 50B, Rm. 1229

<i>Basic Macintosh Class</i>	12 Noon - 1 PM
March 11	April 8
May 13	

<i>Introduction to System 7.0</i>	12 Noon - 1 PM
March 4, 18, & 25	

MORE CLASSES

AVS COURSE

Wes Bethel

An introductory course on the use of the Application Visualization System (AVS) will be held on Friday, March 20, (9:30 AM to noon & 1:30 to 5 PM) in the Workstation Training Room (Bldg. 50B, Rm. 1237).

These sessions have been set up by the Graphics Group of the Computing Resources Department.

In the class, users will learn how to create complex three-dimensional images, using the powerful visualization tools built into AVS. Students will create and transform (rotate, scale, etc.) objects in three-space; assign object properties such as color; and adjust virtual lighting parameters. Students will also be introduced to the fundamental principles of scientific visualization, such as the use of color in images. The class will apply a number of different visualization techniques to multiple three-dimensional scientific datasets. An introduction to extending AVS is provided in which a brief survey of the anatomy of AVS modules is presented.

AVS is an interactive application useful in displaying multi-dimensional data. The system has a rich toolkit for manipulating and displaying 3-dimensional data. For example, given a 3-dimensional scalar field, one could use built-in tools for viewing transparently-rendered isosurfaces. Or, one could view 2-dimensional slices from the 3-dimensional data. On the other end of the spectrum, AVS has facilities for generating familiar scatterplots from 2-dimensional data. AVS is very easy to use: you can produce spectacular pictures without ever writing a single line of code by using the visual programming interface (network editor) to create simple or complex visualization networks.

AVS consists of a central software kernel which executes, at the user's direction, separately compiled and linked software modules; it is based upon the X-windowing system and, as such, may be used from any color X workstation.

Working knowledge of UNIX, the X-windowing system and the C programming language is recommended, but not required. Registration is limited to 6 people, and is on a first-come basis. Please contact Rita McLean at x5872 to register for this class.

Forward comments and questions to me at x6626 or

UNIX or

Software Tools Mail: EWBethel@lbl.gov

VMS Mail: lbl::EWBethel

X WINDOW SYSTEM CLASS

Ruth Hinkins

An Introductory Course on the X Window System will be given in Bldg. 50B, Rm. 1237 on

- Thursday, March 5, 1992 from 1:30 to 3:30 PM
- Thursday, March 26, 1992 from 9 to 11 AM
- Wednesday, April 1, 1992 from 9 to 11 AM
- Thursday, April 16, 1992 from 1:30 to 3:30 PM
- Friday, April 17, 1992 from 9 to 11 AM

In each class we will provide the basic information you need to begin using X.

- We will show how to start the system in different environments on Sun, DEC and Mac workstations.
- We will include simple examples of customizing client programs such as window managers and terminal emulators.
- There will be a brief discussion of the functionality of the various components of X: the role of server & client, Xlib, and toolkits.

Why use the X Window System?

- It has become an industry standard. It is supported by a consortium of vendors including DEC, Sun, IBM, HP, and AT&T. A large amount of application software has been developed for use with X.
- It provides network transparency. You can use your workstation for input and output even though you may be computing across the network on a machine with different architecture. X provides the tools for building device-independent graphical user interfaces.

Contact Rita McLean at x5872 to register for this class. Registration is limited.

Forward comments and questions to me at x5402 or

UNIX or

Software Tools Mail: RLHinkins@lbl.gov

VMS Mail: lbl::RLHinkins

UNIX CLASS

Ludmilla Soroka

A three-day Introductory course on the UNIX™ Operating System will be given six times during the next four months in Bldg. 50B, Rm. 1237 (from 9:15 AM to noon).

As follows:

March 4, 5, 6	April 14, 15, 16
May 12, 13, 14	May 26, 27, 28
June 9, 10, 11	June 23, 24, 25

This course is intended for new UNIX users and is specific to our LBL central UNIX system. Objective is to familiarize users with the essential UNIX literacy skills.

Upon completion, participants should know how to

- log into a UNIX system;
- change a password;
- get online help;
- use *vi*, one of most commonly available UNIX screen editors;
- send and receive UNIX mail; and
- organize their UNIX environment—their login "home."

For most of the course, students will be using the window-based graphical user interface (GUI) to UNIX. The default current version of such an interface on Suns is *OpenWindows* 3.0. *OpenWindows* is based on the X Window standard and Sun's Network Extensible Window System (NeWS). Even though Windows will be used, the strong emphasis will be on the basic command line UNIX interface for the benefit of people who are using Macs or PCs and who do not plan to acquire a UNIX workstation. Using Windows, each student can work on several UNIX sessions at one time. Using the Window-based GUI will speed up the learning process considerably.

More topics are covered in the handouts. Here is an outline of material covered therein.

• Introduction

Why UNIX?

Windows on Workstations vs. Windows on PCs and Macs.

Macs

PCs

UNIX with Windows

• Major components of UNIX or UNIX topology

Kernel

Shell

Utilities

• Logging in and out

• UNIX File System

Permissions on files and directories

Setting or changing permissions

Settings default permissions with *umask*

File transfer

• UNIX vi text editor

Survival guide to new UNIX and vi users

VI command summary

• Working in the C shell

Basic shell commands

File display and manipulation commands

Directory display and manipulation commands

Input/Output (I/O) Redirection.

Filters and Pipes.

Advanced Printing

using Pipes and Re-direction

C Shell history Command

C Shell Aliases

Shell Variables

C Shell job control

• UNIX mail utility

Class size is limited to 9 (since the classroom computers are the nine color SPARC1 Sun stations) and reservations are required: call Rita McClean, x5872, to register. There is no need to establish a UNIX account number: students will be provided with classroom UNIX accounts which will be turned off after the last session of each class.

The Introduction to UNIX classes are going to be presented regularly — twice every month—and will continue as needed.

Forward comments and questions to me at x5604 or

UNIX or
Software Tools Mail: L_Soroka@lbl.gov

VMS Mail: lbl::L_Soroka

GENERAL NEWS

DETEX NOW ON CSA

Martin Gelbaum

DETEX, a filter to strip TeX and LaTeX commands from a file, is now on CSA. (It has been available for some time on UNIX, where it is called "detex".)

Users employ DETEX to convert a TeX or LaTeX document into a plain text file, without any of the TeX or LaTeX "markup" commands. DETEX DOES NOT BREAK the document into individual words. It merely deletes the TeX or LaTeX control sequences. The character "%" is recognized as a comment indicator and the commented text is not passed to the output.

USAGE

On CSA, you must first define DETEX as a foreign command as follows:

```
$ detex ::= $TEX_DISK:[TEX.LOCAL.DETEX]detex
```

Then, to remove the TeX commands from sample.tex type

```
$ detex sample.tex
```

The output, sans markup commands, is written to "sample.txt". (DETEX on VMS writes its output to a file with the same name as the first file argument with ".txt" appended—that is, "filename.txt"). If DETEX cannot open the file sample.tex, it will give an error message and stop.

The command DETEX by itself gives rudimentary documentation; HELP TEX, subtopic DETEX, gives details.

DETEX on VMS differs from detex on UNIX in that DETEX cannot handle data through "pipes". Further, on VMS, DETEX writes the output to a file with the same name as the first file argument but with a file type of "txt".

DETEX was written by Kamal Al-Yahya of Stanford University; NorthLake Software made some minor changes to make it run on VMS and other minor changes were made at LBL.

ARBORTEXT "DVIPS" SOFTWARE TO BE TAKEN OFF UX1

We plan to remove the ArborText "dvips" software from UX1 at the beginning of April, 1992. We provide and will continue to support this software on UX5 and CSR, and functionally equivalent software ("psprint") on the CSA cluster. (For the CSA equivalent, see HELP articles TeX (or LaTeX), subtopic PostScript.)

Since those platforms run much more quickly than does UX1, it is no longer cost-effective to offer the ArborText "dvips" on UX1.

Notice that printing TeX and LaTeX output (DVI files) does NOT depend on the ArborText "dvips" program: "dvips" is used mainly for merging PostScript files directly into DVI files. Again, we have "dvips" on UX5 and CSR and functionally equivalent software on CSA.

NAG FORTRAN LIBRARY TO BE TAKEN OFF UX1

We plan to remove the NAG FORTRAN library from UX1 at the beginning of April, 1992; we provide and will continue to support this same library on UX5, CSR, and the CSA cluster. Since those platforms run much more quickly than does UX1, it is no longer cost-effective to offer NAG on UX1.

IMSL FORTRAN LIBRARY TO BE TAKEN OFF UX1

We plan to remove the IMSL FORTRAN library from UX1 at the beginning of April, 1992; we provide and will continue to support this same library on UX5, CSR, and the CSA cluster. Since those platforms run much more quickly than does UX1, it is no longer cost-effective to offer IMSL on UX1.

NAG UPDATED TO MARK 15 ON UX5 AND CSR

Martin Gelbaum

On February 11, 1992, Mark 15a of the NAG FORTRAN library of routines for numerical and statistics problems was installed on the UX5 and CSR (UNIX) machines. This is the same version of the NAG FORTRAN library that was installed on the CSA cluster in December. Further, like the NAG library on CSA, this is the double precision version of the library.

Note that NAG is not licensed for any of the clients of CSR, UX5, and CS.

Mark 15 represents a further expansion of the NAG FORTRAN library. It contains a total of 1045 documented routines, of which 167 are new at Mark 15. Two new chapters have been added:

F07 - Linear Equations (LAPACK)

G12 - Survival Analysis (Statistical techniques used in the analysis of survival/reliability/failure time data.)

LINKING WITH NAG ON UX5 AND CSR:

Link your object code with NAG on UX5 and CSR as in the past by:

```
f77 -O -o your_prog your_prog.f -lnag
```

We should like to remind users about the following critical items when writing code that will link with this library of DOUBLE-PRECISION FORTRAN routines.

Make sure to

- (1) Change REAL or COMPLEX type specifications to REAL*8 or COMPLEX*16
- (2) Change certain intrinsic function references, e.g., REAL or FLOAT to DBLE, ALOG to DLOG, CMPLX to DCMPLX, etc., and
- (3) Change real constants to double precision form, e.g., 0.1 OR 0.1e0 to 0.1D0

ON-LINE DOCUMENTS FROM NAG

For details on NAG, Mark 15, on UX5 and CSR, see the file "news.doc" in the directory

`/usr/local/lib/nag/doc`

There are several other useful documents about NAG in that directory. See in particular the file "un".

On CSA, see the file "news.doc" in

`LBL102:[MATHLIB.NAG.MARK15.DOC]`

There are several other useful documents about NAG in that directory. See in particular the file "un.doc".

ON-LINE SAMPLE NAG PROGRAMS:

There are numerous NAG sample programs—with sample input data and results—on UX5 & CSR and on CSA:

UX5 & CSR:

In the directory, `/usr/local/lib/nag/examples`, see the subdirectories

`source` (example source programs),
`data` (input data for these programs),
`results` (results of these programs).

CSA:

In the directory `LBL02:[MATHLIB.NAG.MARK15]`, see subdirectories

`expt.dir` (example source programs),
`expd.dir` (input data for these programs),
`expr.dir` (results of these programs).

Forward comments and questions to me at x4749 or

UNIX or

Software Tools Mail: `martyg@lbl.gov`

VMS Mail: `lbl::martyg`

SOME NOTES ON USING POSTSCRIPT

Martin Gelbaum

If you find that some (alleged) PostScript files refuse to print, you need to ask yourself these questions:

(1) Is the following eleven-character string (with the case as shown) on the first line, starting on column 1?

```
%!PS-Adobe-
```

This string, referred to as "magic cookie", tells the software that drives the printer to execute the file's contents as a PostScript program, i.e., to interpret the commands and create the appropriate graphics or text. Without the magic cookie, the printer will list the file—that is, print the text of the PostScript code—a great waste of paper!

The magic cookie makes a PostScript program "minimally conforming" according to the PostScript Language Reference Manual, (Pg. 266).

VMS users should note that if a file has "FORTRAN carriage control", the printing software may well try to interpret the first character of each line as FORTRAN carriage control ("1" means form-feed, etc.) and lose the critical first character ("%") of the magic cookie. Therefore, if you write PostScript files from FORTRAN, open files with

```
'carriagecontrol=list'
```

(2) Does the file have a "showpage" command in it?

If there is no `showpage` (or the much rarer "copypage") command, even with the magic cookie, nothing will print. `showpage` means "transmit the current page to the current output device", causing any marks painted on the page actually to appear. `showpage` then performs the equivalent of "erasepage" and `initgraphics` in preparation of the next page. (See Pg. 223 of the PostScript Language Reference Manual.) No matter how clever the PostScript code, without a `showpage` (or `copypage`) command, nothing gets printed.

`copypage`, another PostScript output operator, transmits the page WITHOUT erasing the current page or changing the graphics state. Thus, you use `copypage` for debugging or for printing successive pages with incrementally-added contents. Ergo, `showpage` is used much more often than `copypage`.

When you use `showpage`, you can usually count the number of `showpage` commands in a PostScript file to get a very good idea of how many pages it should print. However, note that many PostScript files define a little macro such as

```
/ej {gsave showpage grestore} def
```

for the `showpage` command,

Of course, many modern PostScript drivers put the page count as a comment at the end of the file!

(3) Did you receive the file over E-mail?

When you get a file via E-mail (or other software) all lines may have, for example, fixed length 80-byte records; a line in the file can be broken at the wrong place, causing the printer to refuse to print because of a "spurious" command (which is in fact a word fragment—caused by an unexpected and "illogical" line break). As they say, GIGO. In general, be very careful with PostScript files received via e-mail

Forward comments and questions to me at x4749 or

Unix or

Software Tools Mail: martyg@lbl.gov

VMS Mail: lbl::martyg

ELECTRONIC MAIL CHANGES AT NERSC

William Jaquith

People at LBL using electronic mail to communicate with colleagues at LLNL's NERSC (National Energy Research Supercomputer Center), may find that old MFE addresses no longer work.

The changes have been widely advertised within the NERSC (formerly MFE) environment, but to review some of the changes:

- The MFEnet has been removed with the departure of CTSS from the Cray computers. Users may recall this as the MFE "TELL" mail system. Typical addresses were "user@mfenethost"
- These old addresses have been replaced by Internet addresses. Typical addresses are now "user@f.nersc.gov"

There are several ways to reconnect with your colleagues. You can send mail to postmaster@f.nersc.gov with your colleague's name and other information. Or perhaps you can call your colleague and ask what their new electronic mail address is. Jean Wolitzer at NERSC should also be able to answer questions.

(wolitzer@ccc.nersc.gov — phone (510) 423-7248)

LBL users who are registered in the LBL Electronic Postoffice can tell their colleagues that their LBL electronic mail address is: FMLastname@lbl.gov

Forward comments and questions to me at x4388 or

UNIX or
Software Tools Mail: WDJaquith@lbl.gov

VMS Mail: lbl::WDJaquith

NOTES FROM TROUBLE MAIL

Maggie Morley

Following are further examples of typical exchanges from our on-line UNIX and VMS TROUBLE mail facilities.

MESSAGE:

I saw using "help software" that there is a program called umodem on the UX machines, but I can't find it and can find no other information on it. What do I have to do to find it, or has it been deleted in the meantime? Thank you for your trouble!

RESPONSE

Revised "help software"; like you, I can't find "umodem" on our systems. However, as the revised article shows, you can use "kermit" on UX1/5/3 and "sz", a more advanced program. See "man kermit", "help kermit", and "man sz" for details. (With "sz", I'd use "sz -a filename" between UX5 and your Macintosh (or, I expect, PC) to get the linefeeds you expect in your text file on your microcomputer.)

MESSAGE:

I use rdist to keep some of my scripts on csr up to date. Currently there is some kind of version mismatch between rdist on csr.lbl.gov and rdist on the math departement suns. Could one or both of you fix this? The error message is: updating host csr.lbl.gov rdist: connection failed: version numbers don't match.

RESPONSE

This message is also printed when your .cshrc prints output when it is not interactive. E.g. if "rsh csr -l dwp -e "cat < /dev/null"" prints anything, then you rdist will give you a "version numbers don't match" error.

To make sure you don't print output when you aren't interactive, preface all commands that produce output with "if (\$?prompt)" or redirect their output to /dev/null.

There should be no problem with the "rdist"; we use the latest version available from SUN which is the one that comes with SUN OS 4.1.1 Rev B.

MESSAGE

I have heard a rumor that WKSG is not recommending Quadra purchases, on the grounds that some software packages won't run on it. Can you substantiate/dispel that rumor for me?

RESPONSE

In the 11.05.91 issue of MacWeek it was reported that several major applications—including *4th Dimension*, *PageMaker*, *Adobe Type Manager*, *Microsoft Excel Mail & Word*, *THINK C* and *Quark Express*—were not compatible with the Quadras unless the 68040 processor's caches were turned off. Turning off the cache effectively reduces the machines' performance to that of a Mac IIci. The developers said they planned to offer patches or upgrades and most should be available by now. Microsoft *Word 5.0*, for instance is fully compatible with the 040's. So at this point a Quadra is probably a safe bet, but you may want to look at what software you'll be using and contact the developers to make sure it'll all work.

MESSAGE:

Trouble: I have tried using the DECWindows application PAINT on workstation D0LBL5 but did not see how I could print a hardcopy on a laserwriter. The PAINT print command sends a postscript file to a given queue, but how do I save this file so I can print it with lpr?

RESPONSE

Under the File pulldown, select "print..." and make sure "Delete File When Printer" is NOT checked, a file named "untitled.ps" will be created. You can then send that file to a printer.

MESSAGE:

How do I kill a UNIX process that won't die? Repeated kill -9 17629's didn't seem to do it. The process got loose when my phone connection got hung up in the middle of m.

RESPONSE

To quote from "man kill":
 "The terminate signal will kill processes that do not catch the signal, so "kill -9 ..." is a sure kill, as the KILL (9) signal cannot be caught." "kill -9 PID" (where of course PID is the process you want to terminate) usually does the trick, albeit violently. As you undoubtedly know, people often try "kill -HUP PID" first because some programs do catch it and do something sensible with it.

It is also milder, similar to "hanging up a phone", whereas "kill -9 PID" is the same as "kill -KILL PID". As you saw, some particularly stubborn, nearly "immortal", processes refuse to take the murderous hint from the owner (the "kill -9") and do not go away until the machine is halted. Fortunately such processes rarely, if ever, try to take revenge on us.

MESSAGE:

Please excuse my ignorance, but I do not know what machine I am currently reading news off, or how to switch over to netnews.lbl.gov. All I do is say "rn" while I am on UX*. Please, explain what one does to switch over to netnews.lbl.gov.

RESPONSE

We are in the process of switching newsreading servers. The new server is called netnews.lbl.gov. If you are currently reading news off of csam.lbl.gov, please switch over to netnews.lbl.gov by putting the command `setenv NNTPSERVER netnews.lbl.gov` in your .login file. If you have any questions, please send e-mail to "trouble@lbl.gov".

MESSAGE:

Hello - I have been trying to change my passwd globally by using "yppasswd" but when I do so it only changes the UX5 passwd. I followed the directions in the yppasswd man page by using the user name, but it still only changes the password on UX5....what am I doing wrong?

RESPONSE

Sometimes, yp takes a while to propagate passwd changes. I tried to force it to remake its maps, so please let me know if you still have problems (give it the rest of today, if possible).

MESSAGE:

Dear Trouble, I am using Kermit 3.01 to read my e-mail on CSA. How can I easily print the mail I see on my printer (next to my PC, not etherneted), in a more elegant way than using PrintScreen? Smartcom, for instance, allows that with a simple hot key stroke.

RESPONSE

So far, PrintScreen looks like the best bet. Nancy Travis of our WorkStation Group (x7690) will look into this further and will let you know if she finds a better way to print the mail from Kermit 3.01 onto your printer (which presumably is driven by your PC, not by our distributed printing system.)

MESSAGE:

What happened to cern\$grafatc_lib ? Until yesterday I could link with it and today I can't. Please let me know what logical is the equivalent to that.

RESPONSE

The name cern\$grafatc_lib was declared obsolete some time ago and has been removed. Please use cern\$graf_lib instead. Sorry for the inconvenience,

If you want wider distribution of your comments or questions, we encourage you to send them to trouble since it is seen by a wide range of people, including Divisional management. To use Trouble, enter the VMS, Software Tools, or UNIX mail system and send mail to the address

trouble <return>

We won't, of course, include any user's name in the exchanges.

HUMAN GENOME CENTER NEWS

Manfred D. Zorn

THE GCG PACKAGE

Overview

The Human Genome Center has acquired the Sequence Analysis Software Package, a widely-used software package for Molecular Biology. The package originated at the University of Wisconsin, where its Genetics Computer Group compiled this set of sequence analysis tools to run on VAX/VMS (See Devereux, Haeberli and Smithies, 1984, *A Comprehensive Set of Sequence Analysis Programs for the VAX*. Nucleic Acids Research 12(1); 387-395).

Recently, the distribution and maintenance of the suite has been provided by Genetics Computer Group, Inc. of Madison, WI. A long-awaited UNIX version was finally released in September 1991 and is now available on the HGC fileservers.

The GCG programs are provided as UNIX commands which perform a particular action. Commands may be redirected and piped into other commands. Command line options and parameters modify the actions and define input and output filenames. A sophisticated graphics library allows you to use a wide variety of devices to display and plot the results of the analysis programs. However, the GCG package does not feature a graphic user interface with point and click operation. GCG, Inc. likes to compare its operation to a scientific journal. You can submit programs relevant to molecular biology and they will be reviewed and possibly included in further releases of the GCG software. GCG will maintain the programs and keep them up-to-date. Thus the package presents a very comprehensive set of programs used in Sequence Analysis of nucleic acid and protein sequences. Published research assisted by this software should cite the above reference and the author of the particular program used.

Initialization

Users of the Human Genome Center will have an initial setup installed upon login. To initialize the GCG package you type

```
gcg
```

and wait until the Unix prompt reappears. (The start-up script creates a number of special system variables that emulate a VMS specific directory specification mechanism and this takes a while.) Other users have to run the start-up script first

```
source ~sequence/gcg/gcgstartup
```

and then initialize the environment by running `gcg`. You may put one or both commands in your `.login` file to set up the GCG environment at the time you log in. You can customize your GCG environment by using a file `.gcgrc` in your home directory. This file can contain any valid csh shell command and global GCG switches to specify the graphics environment and general properties of the programs, e.g., beep when an error occurs. For example, you might put the command "comcheck" in your `.gcgrc` file to automatically list a command summary with options and parameters every time you use a GCG command until you are familiar with the most often-used settings. You can specify default settings for individual commands in a file with the name of the GCG command and the extension `.init`, e.g., `foldrna.init`, in your home directory to reflect the parameter setting that you like to use most of the time you invoke the command. Command line options and parameters override the setting in any case. In case you want to return to your previously installed environment, there exists a command

```
exitgcg
```

to leave the GCG environment and revert to your previous one.

Short Description

Once you initialize the GCG environment the functions are invoked as UNIX commands.

Help. Two commands provide help and information about GCG:

`genhelp` is organized as list of individual commands;

`genmanual` provides an on-line copy of the GCG manuals.

Fragment Assembly programs let you enter and assemble overlapping nucleotide sequence fragments into one continuous sequence. These programs are based on the method of Staden (See the January 1992 Newsletter).

Mapping. Restriction enzyme digestion maps can be calculated and displayed by several different programs. One program is provided to simulate RNA fingerprints.

`map` displays both strands of a DNA sequence with a restriction map shown above the sequence;

`mapplot` generates a graphical output, `mapsort` sorts the restriction fragments according to size to simulate separation by electrophoresis.

Comparison. DNA and protein sequences can be compared and the results shown graphically in dot-plots or optimal alignments.

Database searching capability is provided by the **fasta** suite of programs to look in various sequence databases, but you may also search the documentation of the databases. Individual entries can be retrieved with their associated annotation. It is possible to create data library with your own sequences.

Multiple sequence alignment programs allow you to create, edit, and display multiple sequence alignments.

A **profile** program aids in the definition of conserved and variable regions by generating a profile of the alignment.

profilesearch then can be used to look for the newly defined profile in the database for matches.

Pattern recognition helps you analyze features in the sequence, e.g., terminators, repeats, loop structures, etc.

Secondary structure. M. Zuker's **foldrna** predicts the optimal structure of RNA which can be displayed by several associated programs, e.g., squiggles, mountain, domes, circles.

Protein analysis. Most GCG programs work on both DNA and Protein sequences. However, some (e.g., **motifs**), identify specific features in protein sequences, or predict protein features useful in isolating the protein (**isoelectric**), and suggest possible secondary structures of the protein, (**peptidestructure**, **moment**).

Translate is a set of programs to convert DNA into protein sequences and vice versa.

Display is a suite of display programs that make publication-quality displays of plasmids, manuscripts, figures, and sequences. The output of GCG commands can be converted into figures and annotated with text in various fonts and sizes. A text formatter, **red**, creates publication-ready documents that can be printed on PostScript printers.

Sequence Exchange is a suite of utility programs that convert between the various formats used by public database providers, i.e., *GenBank*, *EMBL*, *Staden*, *IntelliGenetics*.

Databases included in the GCG package

The GCG software package is distributed with a set of databases that include

- a full *GenBank* release,
- an *EMBL* database containing only entries that do not overlap with the current Genbank release,
- the *PIR protein and nucleic acid* database,
- the protein database *SWISSPROT*,
- a compilation of commonly used vector sequences, *VecBase*, and
- the motif database *prosite*.

In addition, several data files provide information on restriction enzymes, proteolytic enzymes, reagents, Transcription Factor Recognition sites, codon frequency tables for various organisms, translation tables for mitochondria in various species, symbol comparison tables, protein analysis data files, and energy files for the RNA secondary structure prediction program, etc.

Table 1 lists the currently-available molecular biology databases at the Human Genome Center at LBL. Sequence databases may be accessed through the provided software. The other databases as well as manuals and documentation, as provided by the distributors of the databases, can be found in

`/home/hgc/data6/DataBases/`

directory on **genome** and **UX5**

Further information

For more information on Human Genome Software and Databases please contact Manfred Zorn, x5041. I will be on travel the first two weeks in March: send e-mail and I will get back to you as soon as possible.

UNIX or
Software Tools Mail: **MDZorn@lbl.gov**
VMS Mail: **lbl::MDZorn**

TABLE 1. Databases available at the Human Genome Center as of February 1992.

Database	From	Release	Date	Entries		Description
GenBank	LANL ^a / IG ^b	70	Dec. 91	77,337,678	bases	DNA sequences
EMBL (mod.)	EMBL ^c	28	Sep. 91	1,207,427	bases	DNA sequences different from GenBank-R69
PIR-Nucleic	PIR ^d	36	Mar 90	8,128,496	bases	DNA sequences
GenPept	IG	70	Dec. 91	10,662,910	residues	Amino acid sequences translated from GenBank 70
PIR-Protein	PIR ^e	30	Sep. 91	9,697,617	residues	Protein sequences
Swiss-Prot	A. Bairoch	20	Nov. 91	7,500,130	residues	Protein sequences
Entrez	NCBI ^g	Pre-4	Oct. 91	86,000	citations	Integrated sequence information and bibliographic data
				53,000	proteins	
				35,000	nuclear seq.	
Prosite	A. Bairoch ^f	8	Dec. 91	605	patterns	Dictionary of sequence motifs
VecBase	F. Pfeiffer, W. Gilbert	3	Aug. 87	140	vector seq.	Collection of common vector sequences
REbase	R. Roberts ^h	9201	Jan. 92	1976	enzymes	Type 2 restriction enzymes with recognition sequence, supplier, and references
Enzyme	A. Bairoch	7	Nov. 91	3075	enzymes	All characterized enzymes: EC number, catalytic activity, co-factors, diseases
SeqAnalRef	A. Bairoch	22	Dec. 91	1721	references	References to sequence analysis literature
LIMB	LANL	2	Jun. 90	98	databases	List of molecular biology databases
ALU	MBCRR ⁱ	1	Oct. 88	125	sequences	Alu Sequence Database

a. LANL - Los Alamos National Laboratory, Los Alamos, NM.

b. IG - IntelliGenetics, Mountain View, CA

c. EMBL - European Molecular Biology Laboratory, Heidelberg, Germany

d. PIR - Protein Information Resource, Georgetown University, Washington, DC

e. PIR - Protein Information Resource, Georgetown University, Washington, DC

f. Amos Bairoch, University of Geneva, Geneva, CH.

g. NCBI - National Center for Biotechnology Information, National Library of Medicine, NIH, Bethesda, MD.

h. Richard J. Roberts, Cold Spring Harbor Laboratory, Cold Spring Harbor, LI.

i. Molecular Biology Computer Research Resource, J-815, Dana-Farber Cancer Institute, Boston, MA.

NEWS OF PHYSICS LIBRARIES

Werner Koellner

● GENERAL INFORMATION

Object libraries, source files, and other files and procedures thought to be useful are being maintained at varying levels. Various CERN "libraries" make up the major part of this collection. In general, the newest releases or pre-releases are offered as default versions for general use. Please let me know if some package, which may be of substantial interest, is not available.

● CERN LIBRARY PROBLEM HANDLING

Users are encouraged to report problems or questions regarding CERN libraries, by writing to one of the following discussion lists, or to me (WOKoellner@lbl.gov):

LPAW@CERNVM.BITNET(about PAW)

LGEANT@CERNVM.BITNET(about GEANT)

HEPLIB@CERNVM.BITNET
.....(about CERN Library codes)

You may also subscribe to any of these discussion lists by sending an electronic mail message containing the single line

SUBSCRIBE <list> <your full name>

(list being one of the above) to

LISTSERV@cernvm.cern.ch

Copies of the various discussion mails are available in CERN\$INFORM. Archived discussions are in

<discussion list>.LOGyymm

Recent/current discussions are in

<discussion list>yymmdd.NOTE

Your problem may be among those discussed.

● CERN LIBRARY USER LISTS

Users who wish to be alerted whenever I rebuild the default GEANT or PAW Libraries or update other CERN Libraries may register by sending me a request.

● WHAT'S AVAILABLE

Some or all of the following packages are available on the CSAcluster and on the SUN mainframes. The STARDENT machine is not actively supported at this time. For specific information displayed online, type

HELP <package name> (on CSA) or
man <topic> (on SUN or STARDENT) or
HELP @PHYSICS_UTILITIES (on CSA)

and choose the desired subtopic. Additionally, the directory area CERN\$INFORM contains latest release information in sundry <package>.HISTORY files, as well as some user manuals.

CERN LIBRARIES:

CMZ	Code Maintenance
COJETS	pbar-p Monte Carlo
DZEDIT.....	Zebra Bank Doc./Display System
GARFIELD	Drift Chamber Simulation
GEANT	Detector Design
EURODEC	pbar-p Monte Carlo
GENLIB	General Library
GRAFLIB	Graphics Interface Package
HBOOK	Histogram Package (in PACKLIB)
HERWIG	hadron Monte Carlo
HPLOT	Plotting Package (in GRAFLIB)
ISAJET	pbar-p Monte Carlo
JETSET	Lund Monte Carlo
KERNLIB	General Library
LUCIFER	Lund Monte Carlo
MINUIT	Fitting (in PACKLIB)
PACKLIB	General Library
PATCHY	Code Maintenance
PAWLIB	Physics Analysis
PDFLIB	Parton Density Functions
TWISTER	Lund Monte Carlo
ZEBRA	I/O & Memory Mgt. (in PACKLIB)

FILE CONVERSION:

HIGZCONV	Higz File Format Converter
----------------	----------------------------

FILE TRANSFER:

ZFTP.....	Transfer between Sun, VAX, IBM
TELNETG.....	HIGZ Graphics on remote hosts

OTHER PACKAGES:

CALCULATOR.....	Fancy HP Calculator
DISPLAY(5)	HBOOK/HPLOT Histogram. Manipulation
FOR_STRUCT	Source Code Structuring
EGS	e+e- Monte Carlo
JETNET	Pattern Recognition (Neural Networks)
JY411	CAMAC Drivers
MORTRAN	FORTRAN Preprocessing
PROBE	Examine Object Libraries
SWING	Directory Management
TOPDRAWER	Plot Processing
UGS	Unified Graphics Package

ON UX5

● NEWS

Active support of CERN libraries on STARDENT has been discontinued. Some reorganization of directory paths is being considered.

Updated documentation for CERN packages is now available in Postscript formatted text files in `$CERN_ROOT/import/doc/*.ps`. These files may be printed on a newer LASERWRITER with sufficient memory, like Models IIG or NTX — (e.g. AP4).

● LAST MONTH

- ✓ The support of Cern Libraries and Physics Utilities on the STARDENT computer will be discontinued unless I hear objections.

● GENERAL INFORMATION

More detailed information about the maintenance status of all libraries can be found in the CSA section.

Currently, the following man entries serve to give details about status and use of available packages:

```
man cernlib
man dzedit
man garfield
man geant
man herwig
man isajet
man jetset
man minuit
man patchy
man paw
man pdflib and
man zftp
```

The path to the CERN library area on UX5 and STARDENT begins with

```
/home/ux5/ux5c/phyd/cern
```

All files that are common to both UX5 and STARDENT are downstream from subdirectory "sun" while those unique for STARDENT are downstream from subdirectory "stardent". I suggest that you set the environment variable CERN_ROOT:

```
setenv CERN_ROOT /home/ux5/ux5c/phyd/cern
```

Then you find all files in

```
$CERN_ROOT/sun/*.
```

Versions of files that are different for the STARDENT are in

```
$CERN_ROOT/stardent/*.
```

In linking with any library, just specify

```
-l<library>
```

where <library> is one of the strings listed under "LIBRARY" below.

On Sun machines, ATC-GKS and X11 are the supported graphics interfaces for CERN programs with graphics. Information about linking with these graphics packages can be gleaned from

```
man paw or
man geant.
```

The following libraries are available in

```
$(CERN_ROOT)/sun/lib.
```

Most of these are also available in

```
$(CERN_ROOT)/stardent/lib.
```

LIBRARY PACKAGES

```
dzdoc .....dzdoc (for dzedit)
geantlib .....geane, geang, geanh, geant,
               geanx
geant315lib ....geang, geanh, geanf, geant,
               geanx
genlib .....gen
graflib .....hplot5, higz, gkspack
herwig .....webber LUND Monte Carlo
isajet .....p-p, pbar-p Monte Carlo
jetset73 .....LUND Monte Carlo
               (Jetset73 + Pythia55)
kernlib .....kerngen, kernnum
minuit .....minuit
packlib .....cspack, epio, ffreed, hbook4,
               iopack, kapack, kuip, minuit,
               zbook, zebra, zcedex
pdflib .....pdf
pawlib .....paw, comis, sigma
```



● NEWS

Updated documentation for CERN packages is now available in Postscript formatted text files in CERN\$CERNDOC:*.PS. These files may be printed on a newer LASERWRITER with sufficient memory, like Models IIG or NTX — (e.g., AP4).

Recently installed:

CSPACK	Version 1.21/07	(in CERN\$PACK_LIB)
GEN	Version 1.36/04	(in CERN\$GEN_LIB)
GEANT	Version 3.14	(new GCORR.CAR)
GEANT315	latest pre-release	
GRPACK	Version 0.99/01	(in HIGZCONV)
HIGZ	Version 1.13/09	(in CERN\$GRAF_LIB)
HLOTS	Version 5.11/02	(in CERN\$GRAF_LIB)
IOPACK	Version 3.15	(in CERN\$PACK_LIB)
KERNBIT	Version 1.07/04	(in CERN\$KERN_LIB)
KERNFOR	Version 4.31	(in CERN\$KERN_LIB)
KERNNUM	Version 3.06/02	(in CERN\$KERN_LIB)
KUIP	Version 1.67/01	(in CERN\$PACK_LIB)
PAW	Version 1.12/01	(in CERN\$PAW_LIB)
PDF	Version 2.02	
ZEBRA	Version 3.67	(in CERN\$PACK_LIB)

The following obsolete logical names (and packages) were removed:

CERN\$GEANTATC_LIB
 CERN\$GRAFATC_LIB
 CERN\$HBOOK_LIB
 CERN\$HBOOK3_LIB
 CERN\$HPLOT_LIB
 CERN\$HPLOT4_LIB
 CERN\$MINUIT_LIB
 CERN\$PACKCS_LIB
 PAW\$LIBRARY:PAW54.EXE
 PAW\$LIBRARY:PAW_OLD.EXE
 PAW\$LIBRARY:PAW_X11_OLD.EXE
 PAW\$LIBRARY:PAW54_X11.EXE
 PAW\$LIBRARY:PAW_OLDATC.EXE

● GENERAL INFORMATION

On the CSA Cluster and on LAN workstations, if the required disks are mounted you can access the Physics Utilities, including the CERN Library, the PAW (Physics Analysis Workstation) Library, and the various Physics Utilities HELP Libraries by executing the DCL command

```
@Physics$Manager:Setup_Phys
```

We recommend that you include this line in your Login.Com file.

CERN libraries are updated at unpredictable times. Changes are documented in the "Program Library

News" section of the CERN Computer Newsletter. Past, current, and sometimes future issues can be found in Cern\$Inform:PROGLIB.CNLxxx. Of particular interest are news regarding the status of obsolete routines. In some cases a previous version of an object library is saved as xxxxxx.OLD.

The recommended method to access the latest standard object libraries is to use logical names CERN\$*_LIB. For these names and other details please see the help text in

Help Cern

On the CSA cluster, ATC-GKS, X11, and DI3000 (only on CSA2) are the supported graphics interfaces for CERN programs with graphics.

● GEANT

GEANT 3.14 was released in November 1990. The default object library is always built by using newly released PATCHY correction cradles. The unmodified library is Cern\$Library:Geant314.Olb. The latest GEANT changes are noted in CERN\$INFORM:GEANT_CORR.HISTORY.

● GEANT315

A pre-release of GEANT315 with the hadron shower generator FLUKA is now available. To link with Cern\$Geant315_Lib, execute the procedure

```
@CERN$LIBRARY:GEANT315.LNK.
```

As this version is becoming more stable and bugfree, it would be very helpful to test a Geant314 application with Geant315 and forward any problem reports via mail to LGEANT@CERNVM.BITNET, so that any remaining bugs can be squashed before an official release.

The latest documentation is in CERN\$CERNDOC. Please see the file GEANT.README for information. Printing large Postscript files requires a newer LASERWRITER with sufficient memory, like Models IIG or NTX — (e.g., AP4). Release information describing the new features can be found in

```
CERN$INFORM:GEAN*315.HISTORY
```

Forward comments and questions to me at x4398, or

UNIX or
 Software Tools Mail: WOKoellner@lbl.gov
 VMS Mail: lbl::WOKoellner

THE WORKSTATION SCENE



[29.3.1]

WE'RE MOVING

There's been plenty of action on the first floor of Bldg. 50B these days—and plenty of changes. You may have noticed the gleaming new ductwork, the re-sectioned spaces; you can't avoid the plaster dust, the pounding & banging, and the smell of fresh paint. In the fullness of time (probably by the end of March or the beginning of April), the dust will have settled and the WorkStation Group will be settled into its new quarters and ready for business!

We hope you'll bear with us during the transition period. The final product, we think, will be a better-integrated, really user-friendly computing facility.



[29.3.2]

MICHELANGELO

A PC virus, named *Michelangelo*, is slated to go off on Friday, March 6th, the 500th anniversary of the artist's birthday. Although the Michelangelo virus is particularly vicious (it destroys the contents of the hard drive), there are several free utilities which can both diagnose and remove the virus. To get a copy bring a blank floppy disk to the Workstation Group Lab, Bldg. 50B, Rm. 2231. For more information refer to PC Week (Feb. 17, Pg. 45) or call Nancy Travis (x7690).



[29.3.3]

ACCESS LIMITATION

We'd like to remind you that only 25 users can access the WKSG Server at one time. Please sign off when you've completed your session with the Server.



[29.3.4]

QUICKMAIL NOTE

The latest version of *QuickMail* is v2.5. That version is compatible with Macintosh System 7. Please contact your QuickMail Center administrator for Version 2.5. You should have a recent backup on your Macintosh before doing the installation. You should also install from a standalone floppy system if possible. (Both of these precautions should be followed on any upgrade.)

(We encourage QuickMail users to read the TechMail article on Pg. 27 of this issue. . . . Ed.)



The Workstation Group Laboratory, home of several Workstation members as well as the Workstation Evaluation Library is located in Bldg. 50B, Rm. 2231. The hours are:

Mon 8 AM - 1 PM

3 PM - 5 PM

Tues - Fri 8 AM - 5 PM

You can also reach us from ICSD's UNIX machines or the VMS cluster by sending mail to:

UNIX

or Software Tools - WKSG@lbl.gov

VMS Mail - lbl::WKSG

We're here to help; please call us at x6858.



[29.3.5]

CRD LEASING UPDATE

... by WKSG member Bruce Burkhart

PowerBook Rate Change

To simplify cost recharges, the PowerBooks *will not* be leased on a weekend or weekly rate. There will be a *daily* \$30 charge (including weekends) for all PowerBook models: this rate is lower than commercial rates.

There are Printers Too!

In addition, a portable Kodak Diconix ink-jet printer will be available with a PowerBook lease, at no extra cost. For any additional information on the Computing Resources Department leasing program, contact Gayle Milligan at x4511.

Can X-rays Harm Them?

Contrary to popular belief, there is no problem letting your PowerBook get a dose of X-rays from luggage scanners at airports (X-rays don't affect magnetic media). However, there is a slight—very slight—risk that the magnetic fields from the electric motors that power the conveyor belt could possibly affect the disk. (Our thanks to "Ask David Ramsey" MacWEEK 02.03.92.)

Kodak Diconix M150 Plus Printer

In response to popular demand, this printer will, if requested, be included with a leased PowerBook. The new PowerBook bags will easily hold the computer and printer plus accessories. The printer/AC power adapter/cable package (without batteries) weighs just over 4 pounds. When traveling, pack the printer with other baggage and save the carryon weight.

To print PostScript with the Diconix models, Adobe Type Manager (ATM) must be installed.



[29.3.6]

MICROSOFT WORD TEMPLATE FOR THE ASPR

Macintosh Users: You can find a Microsoft *Word* copy of the Annual Supplement to the Professional Resume form (XBG-582 Rev. 3/88) on the WKSG20M disk server in the LBL forms folder.

IBM-PC Users: Stop by the Workstation Group lab (Bldg. 50B, Rm. 2231) with a diskette to receive a copy of the *Word* for *Windows* ASPR form.



[29.3.7]

WORD 5 HITS THE STREETS!

... WKSG member Tom Pope sizes it up

It's been two and a half years since Microsoft's last major upgrade. Now, Version 5 of MS*Word* has arrived and it's well worth the wait. While they've kept the behavior of *Word* much the same, Microsoft has retooled the menus and keyboard commands to make their *Word* processor more intuitive and truer than ever to the Macintosh interface. They've also added a host of new utilities and made much-needed improvements to many old ones.

Word's menus have been rearranged to provide more logical groupings for commands and to accommodate new features. The document menu, for instance, is no more; its commands have been divided among the View, Insert and Tools menus. So now, instead of choosing "Open Header" from the Document menu you choose "Header" from the View menu. Not a big adjustment to make and the more you use the new menus the more you'll like them.

Keyboard commands have also been given a good going-over and are much the better for it. No more of this "command-shift-B" for bold and "command-option-m" for select all; these and others have been given a rightful place on the keyboard. For those of you who are used to the keyboard commands in *Word* 4, fret not: included in the package is a settings file that preserves the old commands. Also included in the documentation is a list of all the changes that have been made to the menus and key commands.

New features are usually a big part of any major product upgrade and *Word* 5 is no exception. Included in the new version are

- an on-line thesaurus,
- a grammar checker,
- a simple MacDraw-like graphics package,
- a powerful equation generator and
- a module for creating voice annotations on suitably equipped Macs.

Also new to this release is the Ribbon, a row of buttons above the ruler that gives you quick access to many commonly-used formatting commands. The spelling checker has also been greatly improved.

Word 5 also provides excellent support for System 7, the latest version of the Mac operating system. Publish and Subscribe features are supported, allowing users to share parts of documents across a network and have them automatically updated. While users of older systems can use them as separate programs, the equation generator and other modules are available from within *Word* for users of System 7. Balloon Help is also supported.

With all the improvements and new features, there had to be a down side ... and there is. *Word* now takes one full megabyte of RAM to run, 2 megs if you use the grammar checker, and 4 megs if you use the grammar checker and System 7. *Word* also takes up a whopping 5½ megabytes of disk space if you install all the tools and filters, so you may have to do some spring cleaning on your hard disk before installing.

With Version 5, Microsoft has reaffirmed *Word*'s position as the top Mac *Word* processor. Here at the Lab, Microsoft *Word* is the de facto standard and with good reason: at a price of \$60 per copy there is no way you can get tall he features and support from any other application. Nothing even comes halfway close.

Microsoft *Word* 5 is available at the Workstation Group Lab (Bldg. 50B, Rm. 2231), for \$60. We try to keep it stocked but call first —x6858—to make sure.



[29.3.8]

SUN <-> MAC/DOS FILE TRANSFER

... Computing Resources' Darrell Davis tried it and likes it.

✓ *Common Link* from Pacific Micro. Street price: \$269.

Overview

Common-Link runs on a Sun workstation and uses the Sun 3.5 inch internal floppy drive to format, read or write a Macintosh or DOS diskette. The documentation is easy to read and comprehensive. Installation is easy

and the product works as advertised. The price may scare some potential users away, but the vendor assured me that they are willing to negotiate discount pricing for LBL.

Installation

Common-Link is distributed on a 3.5 inch high-density diskette and is installed from the Sun internal floppy drive. The installation instructions in the documentation are very comprehensive (even containing a contingency for Sun diskless clients which some Sun software vendors tend to overlook).

Operation

Common-Link runs under Sun OpenWindows and is easy to use.

The *Common-Link* window is divided into two halves. On the left is a directory listing of the Mac/DOS diskette and on the right the current UNIX directory. Buttons are provided to specify either binary or text file type, DOS or Mac diskette type, to copy the file(s), to eject the diskette, or to create/delete folders.

You can navigate the diskette and UNIX file system by double-clicking on folders or directories. Files are selected by a single click on the file icon. Multiple files may be selected by using the middle mouse button.

Common-Link recognizes 1.44MB Mac or DOS and 720K DOS formatted diskettes.

Macintosh Files

Writing Mac files using *Common-Link* is a little tricky. First, I must give some background on Mac file structure (I understand UNIX, not Mac; Mac gurus please bear with me). The Macintosh stores files in three parts: a data fork, a resource fork and finder information. The data fork contains, as you can probably imagine, the "bulk" of the file or the "data". The data fork may be in readable ASCII text or binary form. The resource fork is used primarily, only by applications, and contains binary information. The finder information contains, among other things, the file type, and identifies the application that created the file. The finder information is more interesting than the resource fork in this discussion since it is used to match the file to a Macintosh application and is most commonly used with data files or "documents".

Common-Link stores the three Mac file parts on UNIX as three separate files. The data fork is stored with the same name as the Macintosh file name. The resource fork and finder information are also stored as the same name but with a "~R" or "~F" appended to the name.

The *Common-Link* documentation suggests that you save finder information "templates" in a UNIX directory. That is, you should copy a small "sample" data file from each Macintosh application you use to a diskette, and, using *Common-Link*, transfer the sample files to a UNIX directory. In the UNIX directory, you can remove the

"data fork" portion, and rename the "finder information" portion to something meaningful. For example, you might rename an Excel finder information file to "excel~F".

Sun to Mac File Transfer Example

Suppose you have a file "foo" on your Sun workstation containing some numbers separated by tabs that you wish to read into an Excel spreadsheet on the Mac. You need the finder information for foo to specify Excel as the application. On your Sun, you would make a copy of your "Excel finder information template" (e.g., "excel~F") calling the new copy "foo~F". Then, using *Common-Link*, transfer "foo" and "foo~F" to the Mac diskette, eject the diskette, insert the diskette into your Mac and read "foo" into Excel.

It may seem like a lot of work to copy a file to the Mac, but it is not too bad once you get the hang of it and in fact it would be trivial to write a UNIX shell script to do the file renaming for you.

Sun to DOS File Transfer

Transferring files between the Sun and DOS computers is much simpler than transferring Mac files. I transferred several ASCII text files and a binary file. The text files, as expected, copied without any problems and were perfectly readable on either end. The binary (an executable) executed perfectly on the DOS computer after being transferred back and forth.

Common-Link Shortcomings

One of the shortcomings of *Common-Link* is that the file and folder names are not alphabetized which makes searching for specific files difficult. Another shortcoming is that in the UNIX window, if you click on a very high-level directory or file system, for example "/", *Common-Link* appears to scan the entire directory hierarchy into memory. I have not verified that this is exactly what is happening, but judging from the delay when clicking on a large or high level directory, this could be the case.

Conclusion

Common-Link is a useful tool for sharing data between Sun and Macintosh or DOS workstations. It is easy to install. Aside from making sure you have the Mac finder information correct, and the shortcomings above, it is easy to use. One of the major negative aspects of *Common-Link* is the price. The vendor has expressed interest in negotiating a site license or discount pricing for LBL. This product only makes good sense for users requiring very frequent data sharing between Sun and Mac or DOS workstations.



[29.3.9]

MORE ON MONITORS

... Energy & Environment's Terry Chan forwards some thoughtful addenda.

I read with some interest Bruce Burkhart's piece on PC MONITORS FOR '92 [29.2.2] in the February, 1992 issue of the LBL COMPUTING NEWSLETTER. I agree that it's vital to stress the importance of getting a good monitor to run Windows. And I appreciate the caveat to "be sure you get all the monitor and video board specifications when you are looking into a 386 or 486 computer package system". I thought I'd forward some thoughts on what specifications to look for in a monitor and (equally important) a video graphics card. Here are they are: hope you find them useful.

Bruce recommends that the "optimum video display system for Windows is a 14-inch, 256 color VGA monitor, 1024 x 768 pixels with 0.28mm dot pitch". I think there are also some significant factors affecting viewing comfort and quality and optimal performance under Windows 3.0.

Flicker

Flicker is one of the most significant problems affecting computer users. It leads to eyestrain and reduced productivity. A key goal in monitor and graphics card selection should be to minimize flicker. The Video Electronics Standards Association (VESA) recommends a monitor and graphics card that can support a vertical refresh rate of 72 Hz at the working resolution to keep flicker to a minimum. Many video cards range from 50-72 Hz and many cheap ones have refresh rates of 60 Hz or less.

Resolution

The suggested resolution of 1024 x 768 can be annoyingly small on a 14" monitor. Many typefaces and fonts are very small, and if you do not have a suitable video card, the screen redraw will be slow. Most applications really do not require 1024 x 768 and many users find 800 x 600 more to their liking, especially if they are using a 14" monitor. 16" and larger monitors are very nice and the extra screen real estate is great, but these large screen monitors cost a bit more. I would recommend that people consider buying the largest monitor they can afford.

If you only specify a monitor capable of 1024 x 768 resolution, you may have an additional problem: many graphics cards support that resolution, but only in interlaced mode. Monitors operating in interlaced modes generally have very bad flicker. The best or most expensive monitor will have a horrible display with a poor graphics card.

If you really have a desire (or are constrained) to run a 14" monitor in 1024 x 768 mode, you may wish to consider a dot pitch smaller than 0.28mm. Many of the monitors based on Sony's Trinitron tube boast a dot pitch of 0.25mm (e.g., the Sony 1304, Viewsonic 5+, Seiko 1440/1450, etc.).

Colors

The suggested number of colors (256) may not be necessary for most users and a higher number of colors can significantly slow system performance. For advanced graphical work such as CAD/CAM, a larger number of colors is certainly an advantage or even a necessity. But for spreadsheet, text, and other basic modelling work, it may not be necessary at all. As a point of clarification: it is more important to find a video card that can handle the required number of colors.

Generally, VGA refers to a standard display of 640 x 480 resolution with 16 colors—introduced by IBM. The larger resolutions of 800 x 600 and 1024 x 768 (and even 1268 x 1024) are generically referred to as Super VGA ("SVGA"). The selection of a good video card is key to the optimal performance of a system using Windows. Good, fast SVGA cards such as those based on the Tseng 4000 chipset (e.g., Diamond Speedstar, Orchid Pro Designer IIS, etc.) will optimize speed under Windows. Be sure to find out whether or not there are video drivers for Windows. The advantage of the Tseng 400 based cards is that there are many drivers available. Proper drivers can speed up a system tremendously while poor drivers can dog the best monitor and card.

The amount of memory on the graphics card will determine number of colors that may be displayed. Generally, 512K will allow one up to 800 x 600 at 256 colors. For 256 colors at the higher resolutions, 1MB will be necessary. There are also cards which use the Sierra RAMDAC chip (such as the Orchid Pro Designer IIS) which can afford up to 32K colors.

Windows Accelerator Graphics Cards

Considering the slowness of many Windows applications relative to DOS, many users using Windows 3.0 and the higher resolutions (1024 x 768) will find that Windows accelerator graphics cards may be a good investment. Co-processor cards (e.g. AT1 Graphics Ultra or S3-chip based ones such as Orchid Fahrenheit 1280) take over operations from the main CPU. Tests report increases up to 6x faster depending on the application (see, for instance, the January issue of B'YTE magazine). Price for these cards range from \$299 to \$1000+. Some, (such as the S3-based cards) may have limits on certain sized resolutions under certain conditions (e.g., 800 x 600 with 32K colors) or may not be optimal if you are running DOS programs; they are worth considering if you are working heavily with Windows and Windows-based programs.

You can also consider software drivers which claim to optimize the speed of various graphics cards under Windows. These are a much lower cost option than accelerator cards but also claim more modest increases in speed. A popular one is called WINSpeed by Panacea Inc. of Londonderry, New Hampshire.

To sum up, some important considerations in a video display for Windows:

Monitor:

1. It can support the VESA standard of 72 Hz refresh rate at the desired resolution (800 x 600, etc.) in non-interlaced mode.
2. Dot pitch should be no larger than 0.28mm. You should consider a smaller dot pitch if you are going to be operating at higher resolutions or if you are particularly sensitive.
3. If your budget can stand it, get the largest monitor possible. Your eyes will thank you for it. If you are running at 1024 x 768 or above, definitely consider a 17" or larger monitor.

NOTE: Flicker is more noticeable on larger-screened monitors, so it is particularly important to find a monitor and graphics card that supports the proper refresh rates and resolutions in non-interlaced modes.

Video Graphics Card:

1. Look for one that can support the VESA standard of 72 Hz refresh rate. NOTE: Many cards will support the VESA refresh rates in VGA and 800 x 600 resolution, but their refresh rates will go down (sometimes dramatically) when it comes to the higher resolution modes of 1024 x 768 and above.
2. The card should support the resolution you need in non-interlaced mode. Many cards will not support the highest resolutions in non-interlaced mode. See the above point.
3. Get a card that has widely available drivers for Windows 3.0 (e.g., Tseng 4000 chipset-based cards).
4. For real Windows performance, consider getting a graphics accelerator card (e.g., ATI, S3, etc.) if you have the money—or a software-based solution if you don't.



[29.3.10] TECHMAIL 2.0 E-MAIL ON MAC

... from CRD's Bill Benson

TechMail 2.0, a program for reading, sending, and managing e-mail on Macintosh, has just been released by MIT.

TechMail uses a "Post Office" metaphor for e-mail. Incoming mail addressed to your UNIX account (the "Post Office") is held there until you pick it up. Instead of logging into UNIX, however, you run TechMail to download it to your Mac.

Partitioning mail handling in this way lets each system (Mac & UNIX) do what it does best, and gives Mac users the best of both worlds.

On the Mac, you can see message status from icons, get new messages, classify, reply, forward, compose & send new messages, save drafts, use aliases ...

On the other side, UNIX provides a mail drop—like a PO Box, and mail delivery—robust and reliable mail transport to internet, bitnet, hepnnet, and beyond.

• Why use it?

- reliability and connectivity (superior to QuickMail)
- features & ease of use (comparable to QuickMail)
- TechMail is free
- TechMail (and the UNIX POP server) enjoy institutional support (MIT & UCB respectively).

• Why not use it?

The biggest barrier may be psychological. Many people have struggled with e-mail, and after having learned how to cope, would rather stick with what they know than try something new.

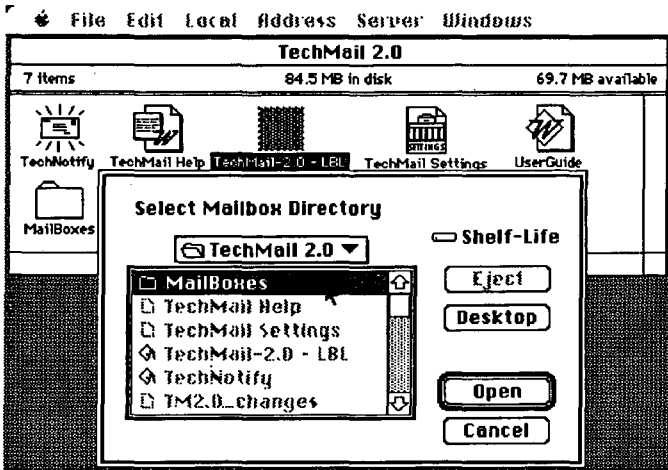
To offer an incentive, we've set up a guest account on UX1 to experiment with sending and receiving messages. The account "testpop", password "testpop" should only be used for test and evaluation (since anyone can read e-mail sent there), and will expire in a few months.

• Installation

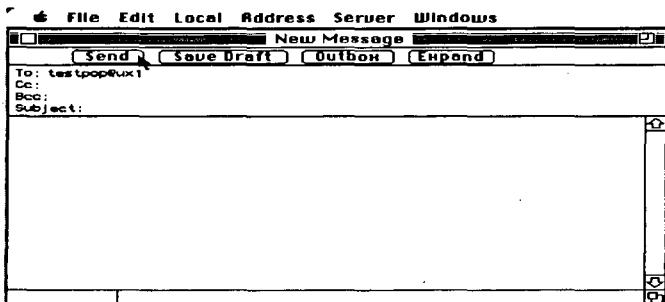
0. TechMail needs MacTCP installed, and System 6.0.3 or later.
1. Log in to the AppleShare server (WKSG Server 2 in the lbl zone. Open the WKSG 300M Disk; then the Communications folder.
2. Drag the entire TechMail 2.0 folder to your disk. The steps below assume no changes have been made to the names or folder organization.

- **Sample usage**

3. Launch TechMail-2.0 - LBL. Then Open the MailBoxes folder and click on Set in the dialog below. (To set this permanently, select User Preferences from the File menu)



4. Select "New Message" from the Local menu. Enter testpop@ux1 in the "To:" field and click the Send button. Use the seven letter password "testpop". (TechMail will remember it and not ask again.)



5. Select "Get Mail" from the Server menu to pick up mail from the POP server and download it to your Mac.
6. Check out the list of QuickMail users with "Select Addresses" from the Address menu. This list is just for illustration, and should be edited down drastically.
7. To find addresses registered in the LBL Electronic Post Office, check out the LBL X.500 White Pages server by selecting "Directory" from the Server menu.

- **Notification**

Launch "TechNotify" to receive periodic notification of mail arrival. This is a tiny program; typically you'd just leave it running. Select "Settings" from the File menu to modify the configuration. The notify interval can be set as low as 5 minutes.

Forward comments and questions to me at x5703.

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CENTRAL ELECTRONIC MAIL FACILITY
 First Initial-Middle Initial-Last Name is the standard recipient format in lab-wide mailing address
 Examples: VMS lbl::JASmith
 UNIX JASmith@lbl.gov
 Software Tools JASmith@lbl.gov

NETWORK CONTACT INFORMATION
 LBLnet New Installations & Trouble Calls
 Ted Sopher (TGSopher)4559, 5354 50B - 2266

DECnet Administration
 William Jaquith (WDJaquith)6966 50F - 146

IBM PC & Mac Network Administration
 William Jaquith (WDJaquith)4388 50B - 2231C
 Nancy Travis (NJTravis)7690 50B - 2231B

Distributed Printing/Kinetics FastPath
 administration and requests
 Bob Rendler (RERendler)5629 50F - 129
 AppleTalk & Kinetics FastPath Support5354 50F - 2215

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 Internet administration ip-request@lbl.gov
 LBL Postmaster for Lab-wide mail postmaster@lbl.gov
 Network Advisory Group (NAG) nag@csam.lbl.gov

{ IP Numbers: CSA1 128.3.254.196
 for CSA Cluster CSA2 128.3.254.197
 CSA3 128.3.254.198

ICS
ICS Access Names
 [VAX 65xx's (Generic) CSA]
 VAX 6510 (VMS) CSA1
 VAX 6510 (VMS) CSA2
 VAX 6510 (VMS) CSA3
 SUN-3/280 (UNIX 1) UX1
 SUN-3/180 (UNIX 3) UX3
 SUN-4/490 (UNIX 5) UX5
 SUN-3/180 (ISD) ISD

Dial-up Access Numbers for ICS

Incoming Baud Rate	Connect Baud Rate	Number
3/12/2400 BPS	3/12/2400 BPS	486-7930
3/12/2400 BPS	9600 BPS	486-7900
9600 BPS	9600 BPS	486-7996

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	1200 BPS	2400 BPS
Oakland	430-2900	633-1896
Walnut Creek/Concord	935-0370	935-1507
San Francisco	974-1300	543-0691
Santa Clara	408-432-3430	932-8618
Palo Alto	415-366-1092	361-8701
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