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PUB-429

# For Reference

Not to be taken from this room

Volume 24, Number 4  
April, 1987

L B L  
COMPUTING  
NEWSLETTER

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"Art upsets, science reassures."

... *Georges Braque (1882-1963)*

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Newsletter Closing Date is Thursday, April, 16, 1987 ... and no later.

Address all communications for the Newsletter to login news on UX8.

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## NAMES & NUMBERS TO KNOW

From on-site, dial <xxxx>    From off-site, dial (415) 486-<xxxx>    From FTS line, dial 451-<xxxx>

### INFORMATION & COMPUTING SCIENCES DIVISION

Head: Leroy Kerth (LTKerth) .....7474    50B - 2232E  
 Deputy: Sandy Merola (AXMerola).....7440    50B - 2232C

### OFFICE OF COMPUTING RESOURCES

Head: Ken Wiley (KGWiley) .....7083    50B - 2258E  
 Ethernet Manager: Sig Rogers (SGRogers)..6713    50B - 2258G

### ADVANCED DEVELOPMENT PROJECTS

Head: Dennis Hall (DEHall).....6053 ...50B - 3238  
**Workstation Group**  
 Group Leader: Richard LaPierre (RLLaPierre)....4692.....50B - 2239

### COMPUTING SERVICES

Head: Marv Atchley (FMAtchley) .....5455    50B - 2245  
 Asst.Head: Dennis Hall (DEHall).....6053    50B - 3238B  
 Central Office .....5871,2    50B - 2239

### VMS SYSTEM

Wayne Graves (WRGraves).....7035    50F - 146  
 VMS Cluster Manager (RBallen).....6203    50F - 116

### UNIX SYSTEM

Dave Cleveland (DHCleveland).....5336    50F - 115  
 System Manager (EHSheena).....5176    50F - 120

### DISTRIBUTED PRINTING

Bob Rendler (RERendler).....5629 ...50F - 119  
 System Manager (RJCochran).....5565    50B - 2272

### USER RESOURCES

Jerry Borges (JTBorges).....5568    50F - 144  
 Accounting .....7008    50B - 1232  
 HELPDESK .....5981    50B - 1272  
 Library/Document Sales.....5529    50B - 1232A  
 Software Evaluation & Acquisition.....5568    50F - 144

### COMPUTING FACILITIES

Connecting a Remote Terminal (ACMills)...7444    50B - 2249A  
 Graphics .....6945    50F - 126  
 Math Libraries.....4749    50F - 114  
 Network Coordinator (WDJaquith).....4388    50F - 109  
 Operations Area.....6211    50B - 1215  
 Terminal or Port Repair (PGMurray).....5354    50B - 2259

### COMPUTING APPLICATIONS

**Applications Group**  
 Head: Jerry Borges (JTBorges).....5568    50F - 144

### 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.arpa  
                   Software Tools: JASmith@lbl.arpa

### DEVELCON

#### DEVELCON Access Names

[VAX 8600's (GENERIC).....CSA]  
 VAX 8650 (VMS) .....CSA1  
 VAX 8650 (VMS) .....CSA2  
 VAX 8650 (VMS) .....CSA3  
 VAX 8650 (VMS) .....CSA4  
 VAX 8650 (VMS) .....CSA5  
  
 VAX 11/780 (UNIX4).....UX4  
 VAX 11/750 (UNIX5).....UX5  
 IS V-24            (UNIX8).....UX8

#### Dial-up Access Numbers

All Machines - 300 BPS ..... 486-4959  
 All Machines - 1200 BPS ..... 486-4979  
 All Machines - 2400 BPS ..... 486-4969

#### Local TYMNET Access Numbers for DEVELCON

	1200 bps	2400 bps
Oakland	430-2900	633-1896
Walnut Creek	938-0370	935-0905
San Francisco	974-1300	543-0691
Santa Clara	408-980-8100	980-0646
Palo Alto	415-366-1092	361-8701
Vallejo	707-644-1192	
Concord	685-6003	
Antioch	754-8222	
Fremont	490-7366	
Pleasanton	490-7336	

MFE Consulting Number is ..... 422-1544

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## COMPUTER CLASS SCHEDULE

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Jerry Borges

The following computer classes are to be offered by the Computing Division. There is no charge for these classes; to enroll, obtain your supervisor's approval and then contact Pat Bean (x7008). If you have questions about what's being offered, or suggestions for other computer-oriented topics, contact Jerry Borges (x5568).

DATE	TIME	DESCRIPTION	INSTRUCTOR
April 7	11 AM-NOON	Electronic Mail	William Jaquith
April 14, 16, 21, 23	9AM-NOON	Introduction to VAX & ISI UNIX	Dave Cleveland
April 23	11 AM-NOON	Electronic Mail	William Jaquith
May 18, 19, 20	9 AM-NOON	Introduction to VAX/VMS	Rosemary Allen
May 18, 19, 20	1:30PM-4:30PM	DEC Productivity Tools	Cliff Stoll
June 15	9AM-5PM	TELL-A-GRAF, CUECHART & TABLES	Nathan Gold
June 16	9AM-5PM	Advanced TELL-A-GRAF, including Data Connection & PINPOINT	Nathan Gold
June 17	9AM-5PM	DISSPLA with DYNAMICS	Nathan Gold

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### FOCUS NEWS

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Bert Albrecht

- **FOCUS USER GROUP MEETING**

The FOCUS User Group will meet on Tuesday, April 28, from 1 to 4 PM in Bldg. 50B, Rm. 1237 (the Training Room).

A Consultant from Information Builders, Inc. will give an on-line demo of FOCCALC.

He will also be available to answer those FOCUS questions you've been saving up.

- **BEGINNERS' FOCUS CLASS IN JUNE**

A Beginning FOCUS Class will be held in June if there is sufficient interest. Call Bert Albrecht, x6280, or

VMS Mail:        lbl::HCAlbrecht

UNIX or

Software Tools Mail:

HCAlbrecht@lbl.arpa

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### HERE'S MINPACK

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Marty Gelbaum

The MINPACK package of FORTRAN subprograms for the numerical solution of systems of nonlinear equations and nonlinear least squares problems is now available on the CSA cluster. This package is distributed by Argonne National Laboratory. Documentation is available via the Computing Services Library (x5529) and the HELPDESK (ext 5981.)

Users may contact the HELPDESK for information about online examples using MINPACK. Link your program with with the MINPACK object library by

**LINK prog, MINPACKS/LIB**  
(SINGLE PRECISION)

OR

**LINK prog, MINPACKD/LIB**  
(DOUBLE PRECISION)

Forward comments and questions to me, x4749, or

VMS Mail:        lbl::M\_Gelbaum

UNIX or

Software Tools Mail:

M\_Gelbaum@lbl.arpa

## LAB-WIDE ETHERNET NEWS

Bob Fink  
Sig Rogers

### ETHERNET ACTIVITY

The February activity map on the opposite page shows continuing packet rate growth in 51LAN, MISCLAN and CSRLAN, while the others have remained about the same.

Due to manpower shortages, not as much was accomplished in February as planned. The final removal of all non-Computing Services systems from CSLAN is only partially complete.

The Bevatron HILAC Ethernet project has progressed to where the fiber optic cable path along the beam transfer line is almost totally prepared. This has required new conduit to be installed in several places.

New Ethernet connections to the existing Lab-Wide Ethernet continue at a high rate. To date there are about 345 Ethernet connections that have been made.

### ETHERNET PLANS

The local Ethernet segment for Building 7 has been approved, and work will start soon.

Installation of the Bevatron to HILAC fiber optic cable will proceed in March and is projected to be completed in early April. This uses the cable path that was mentioned above.

### ETHERNET INFORMATION ABOUT BRIDGES

The use of MAC (Media Access Control) level bridges to interconnect LANs is becoming a widely accepted alternative to the more traditional Network protocol sensitive routers. There are several tradeoffs in making the choice of approach for interconnection of large LAN environments. Among these tradeoffs are cost, performance and protocol sensitivity.

For example, the current Digital LanBridge-100 devices cost only \$5K, pass up to 15K packets per second (i.e., the full Ethernet 10 Mbits per second) and are not protocol sensitive.

This contrasts with the use of older protocol sensitive routers (e.g., DECnet, XNS or TCP/IP only) that cost \$10K to \$20K each and have less performance.

Network level routers are becoming less protocol sensitive as fewer, more stable and widely implemented protocols are used. Also, costs are dropping rapidly and performance rates are up.

On the negative side for MAC level bridges is the "leakage" that takes place across bridges due to ill mannered protocols. This phenomenon can cause a latent background of packet "noise" that may eventually buildup to levels that limit the expansion of the Lab-wide Ethernet.

It is estimated, by various developers we have talked to, that in 5 years there will be no advantage of MAC level bridges over Network level routers for LAN or wide area network (WAN) interconnection. This will be due to standardization of protocols and faster microprocessor hardware, thus allowing faster and cheaper implementations.

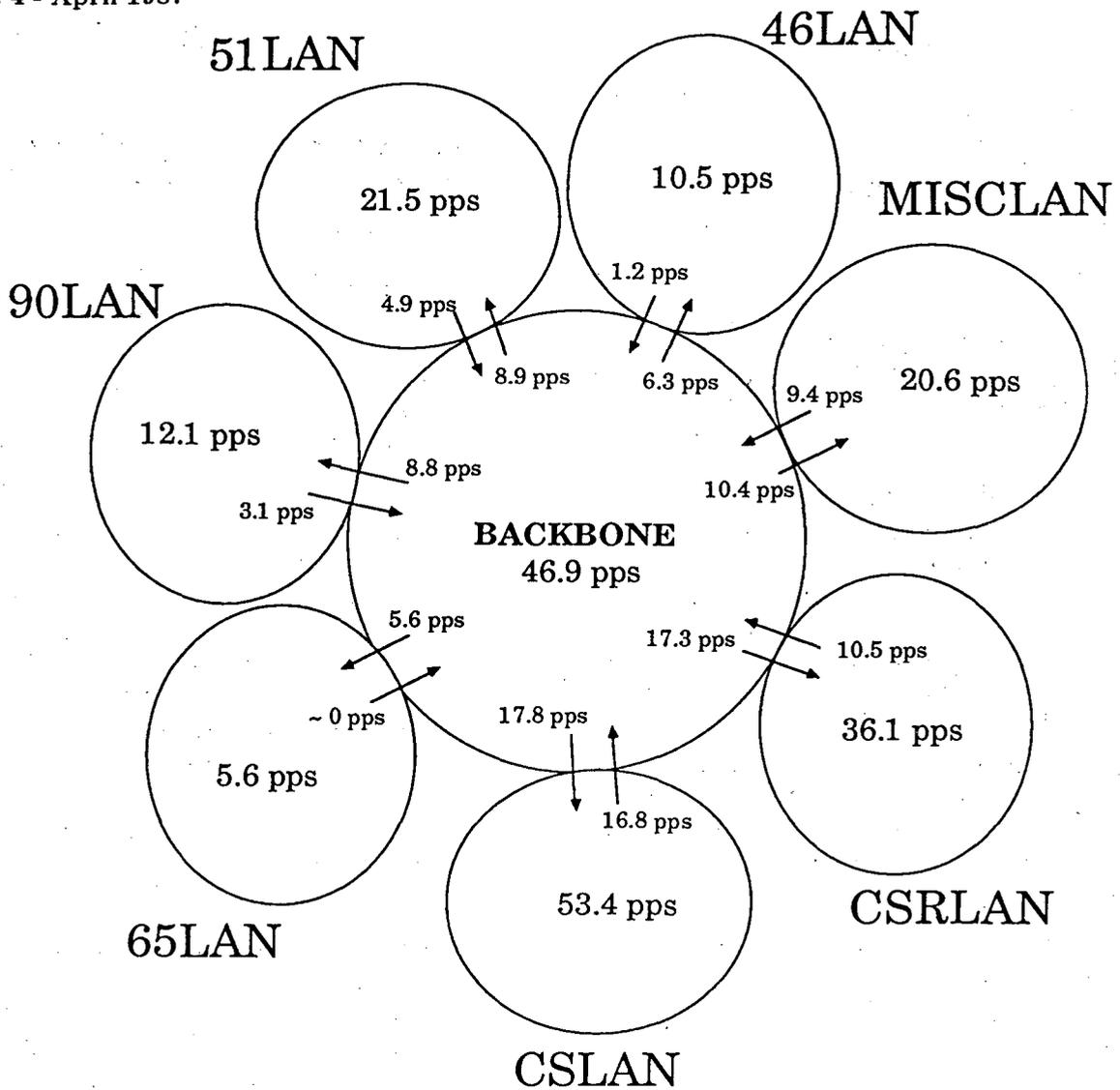
The above discussion is intended to increase awareness that building a large network requires many tradeoffs. Digital LanBridges at LBL are providing an appropriate technology for our needs now. We anticipate that alternative technologies will appear in time to forestall any problems with using MAC level bridges at LBL. These alternatives will be discussed in future Ethernet News articles.

Forward comments or queries to Bob Fink (x5692) or Sig Rogers (x6713).

VMS Mail:	lbl::RLFink
UNIX or Software Tools Mail:	RLFink@lbl.arpa
VMS Mail:	lbl::SGRogers
UNIX or Software Tools Mail:	SGRogers@lbl.arpa

"... Mighty Rome was once saved  
by the cackling of its geese"

... *Albert Einstein*



pps = packets per second; all figures are monthly averages

arrows represent packet flow through a LanBridge from one LAN to another

Note: Each ellipse shown above is a separate Ethernet that is interconnected to the others via Digital LanBridge-100 devices that provide forwarding of packets based on a learning algorithm that minimizes traffic between networks to those packets addressed to computers on another Ethernet.

## Laboratory-Wide Ethernet Activity February 1987

ICSD/OCR Fink/Rogers

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## TEX NOTES

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Maggie Morley

• "TEX FONTS AVAILABLE AT LBL (Preliminary Version)" - by Betty Armstrong of LBL's Particle Data Group - is a helpful compendium of the TEX fonts LBL users can access on the Imagen. This document can be purchased (charged against your computing account) at the Computing Library, Bldg. 50B, Rm. 1232B (x5529).

There are fewer Talaris fonts available in TEX -- and there is no catalog. But many of those fonts available in the Imagen are also available in the Talaris.

• **ALMOST COMPUTER MODERN GOES AWAY**

As announced in the February Newsletter, disk space limitations require that we make the *Almost Computer Modern (am)* fonts (running on Version 1.3) inoperable on April 1, 1987.

You must change explicit references to fonts in TEX source input files from *Almost Computer Modern (am)* to *Computer Modern (cm)* -- for instance, change the following control statement from

```
\font\f=amr10
```

to

```
\font\f=cmr10
```

to make it work properly with the new Version (2.0).

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## DATABASES AT THE LIBRARY

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Carol Backhus

The Main Library (Bldg. 50, Rm. 130) has access to several online databases that list and review hardware and software products.

- (1) The MICROCOMPUTER INDEX (TM) is a subject and abstract guide to magazine articles from 50 microcomputer journals. Included are general articles about the microcomputer world, book reviews, software reviews, discussions of applications, descriptions of new microcomputer products, and more.
- (2) Another database, THE COMPUTER DATABASE(TM), includes product evaluations, comparisons, and best buys, plus profiles and financial information on computer, telecommunications, and electronic firms.
- (3) MENU - INTERNATIONAL SOFTWARE(TM) is a database of computer software available from software vendors throughout the world. Each program listing includes a full description, date of release, compatible systems, minimum memory required, update and source code availability, distribution medium, price, and vendor.

Library staff members will be happy to search any of these files. The only charge is for the online time and the number of citations printed. The charge is minimal compared to the amount of time it would take to search manually for this information. Call x6307 for more information.

"Craft is a fool's substitute for brains."

... Oscar Wilde

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## GRAPHICS CLASSES IN JUNE '87

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Claudette Lederer

Graphics classes are being held in June for users who want to produce publication-quality graphics on the VAX/VMS cluster using ISSCO graphics. (ISSCO products are the most actively-used graphics software on the cluster). They'll be held in our Training Room, Bldg. 50, Rm. 1237. Instructor is Nathan Gold.

- **TELL-A-GRAF**

Two days of instruction will be given on 2-dimensional graphics at the conversational graphics level, which means that no prior knowledge of programming is required. Using custom-designed user workbooks, members of the class will instantly develop 2-dimensional graphs by giving English language commands. Members of the class will find this an easy learning experience, but two days are required to cover the many powerful graphics options available through the main software package, called TELL-A-GRAF.

- **DISSPLA**

One day of instruction will be given on using the 2- and 3-dimensional ISSCO graphics library called DISSPLA. This class requires a knowledge of FORTRAN, and is meant for users who need to do graphics within a FORTRAN program. Users who think they just need to know DISSPLA are encouraged to also enroll in the TELL-A-GRAF classes in order to gain insight on how the packages are integrated and when it is feasible and productive to do graphics at the conversational graphics level.

The classes will be from 9 AM to 5 PM each day. The schedule is as follows:

Mon. June 15	TELL-A-GRAF, including CUECHART and TABLES.
Tue. June 16	Advanced TELL-A-GRAF, including Data Connection and PINPOINT.
Wed. June 17	DISSPLA with DYNAMICS.

There is no charge for these ISSCO graphics classes; to enroll, obtain your supervisor's approval and then contact Pat Bean (x7008).

Forward questions or suggestions about the graphics classes to me, x6945, or

VMS Mail:           lbl::CELederer  
 UNIX or  
 Software Tools Mail:   CELederer@lbl.arpa

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## DEC'S GREAT NEW TOOLS

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Cliff Stoll

Hey kids! Here's a chance to learn how easy it is to develop programs that are faster and have fewer bugs.

Be the first on your block to learn three new tools to use when you write programs.

- (1) MMS -- The Module Management System -- lets you compile big programs fast.
- (2) CMS -- the Code Management System -- organizes your tired and huddled subroutines into dainty, discrete entities.
- (3) LSE -- the Language Sensitive Editor -- is a spiffy, easy-to-learn editor that makes programming easier: it actually knows the FORTRAN language (not to mention just about all the other VMS compilers!).

Classes on these tools will be taught by Cliff Stoll in the Training Room (Bldg. 50B, Rm. 1237) on May 18, 19, & 20 from 1:30 to 4:30 PM.

These classes are free with any boxtop; to enroll, obtain your supervisor's approval and then contact Pat Bean (x7008).

Forward questions or suggestions about the DEC Tools to me, x4111, or

VMS Mail:           lbl::stoll  
 UNIX or  
 Software Tools Mail:   stoll@lbl.arpa

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 "Overthrow: Any old stigma  
 to beat a dogma."

... Isaac Asimov

## THE WORKSTATION SCENE

[24.4.1].....

### ● WORKSTATION GROUP ELECTRONIC MAIL

Workstation Group members can now be reached from the VMS cluster or the Computing Division's UNIX machines by sending mail to

VMS Mail: lbl::WKSG

UNIX or WKSG@lbl.arpa

### Software Tools Mail:

We hope this alternative (to the telephone) will be of assistance to users who have problems or would like to forward helpful hints.

[24.4.2].....

### ● DEC PRODUCTIVITY TOOLS PRESENTATION

Representatives from DEC (Digital Equipment Corporation) will discuss DEC's productivity tools and their applications in the software development environment from 2:30 to 4 PM Wednesday, April 8 in Bldg. 70A, Rm. 3377 (the Conference Room).

Topics to be covered include

- o language editors,
- o source code cross-reference and navigation,
- o execution analysis,
- o test management,
- o source code library and application module assembly.

For additional information, contact the Workstation Group (x6858).

[24.4.3].....

### ● TIMELY TIP: SPRING AHEAD

PC users. Daylight Savings time is coming. Don't forget to Spring Ahead on April 5. If you have a standard AST Board, you run the AST-supplied program SETLOCK.COM as follows:

```
C> SETCLOCK <cr>
```

It will respond

resident DATE/TIME processor loaded

Current date is 4/05/87

Current time is 02:01:22.07

Now, issue the following DOS "Time" command

```
C> time <cr>
```

It will respond with the current time and prompt you to enter the new time.

Current time 02:02:10.04

Enter new time: 03:02 <cr>

**PC-AT Owners:** You have to run the "Setup" program to set your clock. The program is on the Diagnostics disk supplied with your system. The disk is usually stored in the rear of the "Guide to Operations" manual.

[24.4.4].....

### ● LOTUS 1-2-3 RELEASE 2.01

Since mid-1986, Lotus has been shipping 1-2-3 Release 2.01. It's to your advantage to upgrade to this new version: it has several enhancements over the older version 1-A that many LBLers are still using. Some of the new features are:

- o The installation procedure for configuring your system is much improved. It's easily modified.
- o Zero suppression is an optional feature that provides blanking of zero valued cells.
- o Ranges and columns can be hidden from the display and printout.
- o Page ejects can be embedded in the spread sheet.
- o The math co-processor chip is supported which can provide a noticeable improvement in recalculation times of large spread sheets.
- o The /system option allows you to escape to the DOS level, execute DOS commands (e.g. dir), and return to 1-2-3 with the spreadsheet intact. This eliminates the need for a /file save, /file restore operation.
- o Better print-graph and EGA graphics support are provided in Release 2.01.

You can still get your upgrade (from Version 1A to 2.01) at the LLNL's PC store. (3-3-7100). Cost: \$150.

[24.4.5].....

### ● NEW HP LASERJET PRINTERS

Hewlett Packard has released a new generation of laser printers called the HP LaserJet Series II. The new Series II printer replaces the original LaserJet and LaserJet PLUS printers offered by HP. It's fully compatible with the LaserJet PLUS. All software, font cartridges, and soft fonts that work with the original printers work the same way with the new Series II printer. Some of the key features are:

- o Improved Operator Control Panel. A 16-character LCD front control panel lets the user configure

the printer and customize the printing environment, such as the primary font, number of copies and number of lines per page.

- o Font Flexibility. The Series II comes with six internal fonts -- all accessible from the front control panel. The printer also has two font cartridge slots.
- o Improved Paper Management. The input tray holds 200 sheets rather than 100; the output tray holds 100 sheets rather than 20; and the printer now stacks the output in the correct order. The printer also has a front manual paper feed for running envelopes and odd-sized paper.
- o New Footprint. The Series II is a smaller more compact unit that is 36% lighter than its predecessor.
- o Memory Expansion. The printer comes with 512 Kbytes of memory. A single memory expansion slot allows users to plug-in either a 1, 2, or 4 Mbyte memory board.
- o New Pricing. The biggest news is the price. The new printer with 512 Kbytes of memory is available for approximately \$1500. Add another \$325 if you want to expand to 1.5 Megabytes for 300 x 300 DPI full page graphics.

HP also introduced a new 20 page-per-minute printer with the ability to handle 11" x 17" paper. (Model #2684A; beginning price approximately \$13,500). For additional information contact Workstation Group member R. LaPierre (x4692), or HP account representative Jim Manning, 3-119-460-1503.

[24.4.6].....

#### • TIPS FOR THE PROGRESSIVE PC USER

*The following article is from Constant Reader Russ Montello.*

**H**ere are some of the techniques that the pros at the Lab follow to make their PC's easier to use and their files easier to maintain.

- First, keep only the real necessities in the root directory; perhaps only **command.com**, the hidden files, and *config.sys*.
- Second, use subdirectories extensively. DOS, batch files, and each application should be in separate directories. Keeping subdirectories short and sweet makes it easier to find old files when clearing out the clutter.
- Third, use a batch file to call each program or include the programs subdirectory in your **path** command. A simple batch file such as:

```
cd\vw3
vw3
cd\
```

named **vw3.bat** will run Volkswriter 3 located in **c:\vw3** directory and return you to the root directory when you are finished. If this batch file is stored in **c:\batch** and the directory is mentioned in your **path** command, then Volkswriter can be executed by the above file regardless of your current default directory.

- Fourth, as a goal, install each application so it can be executed regardless of your default directory and drive. Simple programs are easy to call in this manner. These programs can be executed without a calling batch file by including their subdirectories in the **path** command. All DOS commands if stored on **c:\dos**, for instance will be executed by including **c:\dos** in the path string.

The **path** command provides DOS with a search criteria to use to find programs which you execute. When you enter a command to DOS, the operating system checks the command's name against the DOS internal commands (these are all stored in memory when you boot your system). Then it looks for the command in the default directory and drive, and finally it checks each of the subdirectories in the **path** command. Of course, as soon as a match is found, the search is halted and the program is executed.

Executable programs must have extensions of **.com**, **.exe**, or **.bat**. In fact the order given is the order of precedence that the command processor uses to select the program. Thus if the program name is found in a subdirectory with both **.com** and **.bat** extensions, the program with the **.com** extension will be executed.

Are you now wondering why batch files are used at all if the path string can be used to find programs? Well the search string is used by DOS when looking for a command, **not** when searching for parameters (or overlays) to a command. A command is limited to the first name given at the prompt. Since many programs need access to other files to execute properly, it is often necessary to use a batch file -- as illustrated above -- to call the program. This technique allows the default subdirectory to be changed so that the other files needed by the program can be found.

Some comprehensive programs provide for extending the use of a search string to find files needed by the program. These programs can be operated much as simple DOS commands, using the facilities of a **path** and a **set** command. What the **set** or **set environment** does is insert a string into memory for clever

programs to use. For example, an editor I use needs **configuration** and **help** files to operate. By using the **set** command in my **autoexec.bat** file, I can tell the editor where to find these files.

Nothing I have said is new, unique, or even original. Remembering where programs are located and which files are old are two of my least favorite occupations. Spending some time and thought while setting up your computer will allow it to help with these tasks.

-----

If you would like some help in starting to set up your batch files and sub-directories, call the Workstation Laboratory (x6858) for some free assistance.

[24.4.7].....

● **SIDEVIEW: AN EVALUATION**

**I**f you use a large number of batch files in starting various applications and have trouble remembering what you called them -- or if you are setting up a turnkey system for an inexperienced user and need a way to simplify DOS, you should consider a nifty program called **Sideview**. Sideview presents you with a screenful of menus allowing simple selection from a list of English-sounding (non-cryptic) names. When a selection is made, a corresponding batch file is executed. On batch file completion, you can return to the Sideview menu for another selection.

**INSTALLATION & GETTING STARTED**

Installation process is not difficult. The instruction manual is excellent. Begin in the User Mode; you need to customize the menu options to fit your requirements. The menus -- including borders and color -- can be edited quite easily. The *Edit Command Mode* lets you enter or edit DOS commands in the batch files underlying the menu choices previously entered. It also allows you to edit **AUTOEXEC.BAT**, **CONFIG.SYS**, and a Note Pad file. The editor is easy to use and allows up to 9 DOS command lines per menu option. (Multiple users on a PC can use the optional Password mode.)

Sideview is not memory-resident. It takes up space in memory *only* while executing. This means that it is most appropriate for hard disk, or file server where the loading is quite fast. It works well from a floppy disk but you must be sure the floppy is available.

Sideview is published by Keller Software, 1825 Westcliff Drive, Newport Beach, (714)854-8211. List price is \$49; it's available for approximately \$30 at the various swap meets. We will make a mass order if there is enough interest. An evaluation copy is available for loan from the Workstation Group. For more

info, contact Bruce Burkhart (x6858).

[24.4.8].....

● **HERE'S BACK-IT**

*Faithful Correspondent Jack Zelver sends us this thoughtful appraisal of a new tool.*

**B**ack-It is a program to aid backing up IBM PC Fixed Disk systems onto floppy diskettes. It has many attractive features, and may be your system of choice. Disk backup is a complex topic, however, and other considerations and possibilities should also be considered.

**Introduction**

Back-It is a program from Gazelle Systems, the makers of QDOS. It will make backing up your hard disk to floppy diskettes easier by organizing and automating the process. This program has the same easy-to-use menu style of QDOS. Directories are displayed in the familiar graphic directory tree, and selected with the cursor keys. The number of disks that will be required is estimated and displayed before you begin.

**Partial and Customized Backups**

"Include" and "exclude" screens are available to allow customizing your backup. You can, for example, backup all files except those ending in ".bak", ".com", or ".exe". Or you may wish to only backup files ending in ".dbf" or beginning with "cost".

Another possibility is to back up only those files written between a range of dates, or only those which have been modified and not backed up (as indicated by the DOS archive flag). You may also restrict the backup to certain directories of your choice.

After you have decided on a customized backup configuration, you may save it as a "pre-set". You can build as many pre-sets as you desire. This allows you to back up your system in many different ways - complete, partial, selected directories, modified files, etc. Pre-sets can be selected and loaded before you begin the backup process.

**Auto-Format**

Unformatted disks may be used for your backup. As the backup proceeds, each new disk is checked to see that it is properly formatted. When an unformatted disk is sensed, it will be automatically formatted, or the program will pause and ask you what to do, depending upon how you set this option. The system will recognize and format 180K, 360K, or 1.2M diskettes in drives A and/or B.

**Auto-Overwrite**

If you set this option, Back-It will automatically start to overwrite the diskette to which you are backing up regardless of any information on it. It won't, however, use a backup diskette that has been previously used for the backup in progress - the current backup is always protected from accidental overwrite. If this option is not set and a newly inserted diskette contains files, the program pauses and asks what you wish to do. You can check the directory of the diskette in question, or you can instruct the program to over-write the files. This prevents you from destroying valuable files accidentally, and removes the need to erase files before you perform the backup.

### Dual Floppy Usage

Back-It will allow you to alternate between drives A: and B: during the backup process. This way you can insert a diskette in B: while the system is writing to A: and vice versa. This speeds up the process; the program will begin writing on B: immediately upon finishing with A:. The time required to receive a prompt and change diskettes is not lost as when using a single floppy disk drive.

### Verification

Three verification modes are provided by Back-It: DOS, or "normal" verification uses a CRC (cyclical redundancy checksum) to check for certain errors in writing to the disk. This is generally a safe and satisfactory level of verification. Super-verification is provided which will read back into a separate part of memory the sector just written and compare it byte for byte with the original. This affords the greatest amount of safety and verification, but is a slower process. If you feel certain of the quality of your diskettes, you can elect to turn verification off completely. This is the least safe but fastest mode of backup.

### Restoring Files

It is as easy to restore files as it is to back them up. You can select just the directories you wish to restore, and restore them to any drive you like. Also, the include/exclude screens used by the backup process are displayed. You can then restore all the files backed up or modify the include/exclude criteria to restore selectively.

### Reports

One of Back-It's most useful features is its ability to selectively restore files from any backup. To do this, it is important to know which disks contain the files to restore. A report can be generated while the backup is in progress which details the disk location of each file backed up. If you've already backed up the files, a

provided utility program will generate a detailed file location report from the backup disks by quickly reading the header information on each.

### Copy Protection and System Files

Back-It was never intended to backup or copy programs that are installed on a hard disk using a copy protection scheme, nor will it back up the two system files located in the root directory. The system files should be restored with either the "format" or "sys" commands of the DOS. The copy protection files should be restored by re-installation; these files may have coded information as to their disk address, and copying them may invalidate an installation.

### Summary

The backing up and archiving of hard disk systems is a large topic unto itself, and no one system will suffice for everyone. In practice, most of us are inadequately protected against disk failure. This is because backups are time consuming and modern systems give a false sense of security in their illusion of reliability. One is tempted to argue that since the disk has had no problems this last year, it should be o.k. next year.

In reality, fixed disks are marvels of technology, very complex, containing software that talks to the software that your software talks to. The hardware is just as complex, with rotation speeds of up to 3000 r.p.m. and sensing devices to locate and read a circle of data of very small width. They do fail, and data is regularly lost. If you need proof, call the PC Techs at RTSD and ask them about it...

Because of all this, anything that encourages us to back up our files by providing an organized, simple system to use, is a positive step toward saving labor and grief. Back-It is an easy-to-use system containing many options and features making it an excellent buy at its list price of approximately 80 dollars.

A note of reality and caution must be injected here. As mentioned, no single system is suitable for everyone. If, for example, you are using a PC-AT with a 30 Mbyte fixed disk that is half full of valuable files, you would need about fifteen 1.2 Megabyte diskettes to hold the backup. If you are backing up over a previous backup and something goes awry, you can lose not only the hard disk and its data, but your backup may also be corrupted. Thus, you should have TWO sets of backup disks, and alternate them each time you make your backups. This means thirty diskettes. At the PC-Store's price of 80 dollars per box of 10, this is \$240 for your diskettes! Your labor will be much more expensive, since it'll take the better part of an hour to do the backup.

As you can see, unless you carefully organize an incremental backup scheme and follow it to the letter, the backup process can become unwieldy and costly when using floppy diskettes. If you don't use the 1.2 Mbyte disks, you would need 120 disks for the above example! Perhaps it's time to consider a tape backup system. There are a number of them in use around the hill. They end up being a good bargain and are much quicker to use for the larger systems.

The system you choose will depend on your computer, the software you use, and your work habits. However, if you aren't backing up your files regularly now in a thought-out manner, you may be in for an unpleasant surprise soon!

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## MAC NEWS

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[24.4.9].....

● **TIMELY TIP: SPRING AHEAD**

**M**AC users. Daylight Savings time is coming. Don't forget to Spring Ahead on April 5. To set your clock,

- (1) Select the Apple icon.
- (2) Select "Alarm Clock"
- (3) When the "Time" window opens, click on the flag on the right hand side of the window. That will open "Time" and "Date Set" functions.
- (4) Click on the "Clock" (not the "Alarm Clock") icon.
- (5) Change to the **new** time with the "up" and "down" arrows.

[24.4.10].....

● **MACINTOSH USER GROUP**

**A** local MAC User's Group meets on the UCB campus every Thursday at 5:30 PM in the Physical Science Lab. This group is called the **Berkeley Macintosh User's Group**. For more info, contact

Suite 153  
1442A Walnut Street  
Berkeley, CA 94709  
(849-HELP [4357])

[24.4.11].....

● **NEW APPLE MACINTOSH COMPUTERS**

**A**pple Computer introduced two new products at its Apple World Conference on March 2:

- a redesigned Macintosh Plus named the **Macintosh SE** and
- a long-awaited 68020-based "open Macintosh" (the **Macintosh II**).

The SE

The Macintosh SE, for **S**ystem **E**xpansion, is everything a Macintosh Plus is -- with these added features:

- Additional Internal disk. The Macintosh SE has internal expansion space for either a second 800 Kbyte floppy drive or a 3-1/2" 20 Mbyte hard disk.
- Improved performance. The new Macintosh SE

has improved screen drawing routines which produce a 15% to 20% speedup improvement over the Plus. Hardware improvements provide the capability for improved SCSI hard disk transfer rates up to twice that of the MAC Plus.

- o Add-on cards. The SE has space to accommodate a single 4" x 8" plug-in card. The big market for add-on cards is seen to be in the area of communications, co-processor and accelerator boards, and external video adaptor boards.

At the Apple World Conference, there was an Ethernet board and a couple of video adaptor boards for driving large high-resolution monochrome monitors. One of the video adaptor boards was equipped with a floating point co-processor chip.

AST corporation will have an 8086 co-processor board to allow the SE to run MS-DOS programs. This board includes a 5-1/4" disk controller.

Apple has an interface card for attaching an external 5-1/4" MS-DOS floppy disk drive.

- o New Keyboard. Keyboards are now sold separately for the SE. Users can choose between a slightly larger redesigned keyboard or a 105-key keyboard with separate cursor keypad and fifteen function keys.

The Macintosh SE, with all its enhancements, is more cost-effective than the Macintosh Plus at the current pricing available to the Laboratory. A dual floppy drive system costs \$1686 and a 20 Mbyte hard disk system costs \$2150.

The OPEN MAC II

The new "open Macintosh II" is essentially a 68020-based workstation that runs as a Macintosh. The basic system runs about four times faster than the Macintosh Plus. It also comes with a built-in 68881 floating point co-processor that provides increased computational power. Some of the key features:

- o Packaging. The Macintosh II is a new package that is roughly the size of the IBM PC/AT. It also has a detached display. Apple offers a 13" color monitor and a 12" black and white monitor.
- o "Open architecture". The Macintosh II has six expansion slots for which there is a published specification; there are already several third-party developers producing hardware boards.

**PC users will be envious.** The boards can be plugged into any slot without the hassle of all those DIP switches and jumpers. There are none.

- o Screen resolution. The standard video card from Apple will support a 640 x 480 pixel display with 16 levels per pixel. There are sixteen levels of gray for the monochrome display or 16 colors for a color display. An optional memory upgrade accommodates up to 256 levels of gray or 256 colors (out of a palette of 16.8 million). This resolution is a step above the IBM Enhanced Graphics Adaptor (EGA) resolution of 640 x 350 pixel display.
- o Internal disk drives. The Mac II can be equipped with one or two 800 Kbyte floppy disks and one hard disk drive. Apple offers a 20, 40, and 80 Mbyte half-height SCSI disk drive for the Mac II.
- o Memory. The basic unit comes with 1 Megabyte of memory. Plug-in memory boards will allow memory expansion to 8 Megabytes.
- o UNIX. Apple will sell a version of AT&T's UNIX System V with some BSD 4.2 extensions. It will be necessary to purchase an optional memory management unit.

WE'LL HAVE ONE OF EACH

The Workstation Group has ordered a Macintosh SE and a Mac II with a color monitor. We hope to have both systems on the hill for demonstrations by the end of April.

[24.4.12].....

● NEW MAC SYSTEM PRICING

**T**he Workstation Group has produced a data sheet showing recommended system configurations with prices and ordering info for both the Macintosh SE and the Macintosh II. To obtain a copy, contact the Workstation Lab (x6858).

[24.4.13].....

● SCHOLAR'S WORKSTATION

**T**he Scholar's Workstation, UCB's Macintosh Store, is currently located at 203 Moffitt Library. Staff and employees can make personal purchases, taking advantage of educational discounts for Macintosh hardware and software (on Apple Corp. products *only*). Call 642-8424 for pricing and availability.

Sample configurations, pricing information and ordering procedures are available from Workstation Group Member Bruce Burkhart (x6858).

[24.4.14].....

● MACINTOSH UPGRADE FOR MICROSOFT WORD

The Workstation Group is handling upgrades for MicroSoft WORD for the Macintosh. Price: \$50 if date of purchase is before October 1, 1986 -- \$25 if date of purchase is October 1, 1986 or after. We have a limited number of copies of the upgrade now available. To get your copy, contact Workstation Group member Bruce Burkhart (x6858).

[24.4.15].....

● T<sub>E</sub>X<sub>T</sub>U<sub>R</sub>E: A REVIEW

From William W.-L. Lee, Earth Sciences Division

The WorkStation Group obtained a pre-release copy, Version 0.9 of T<sub>E</sub>X<sub>T</sub>u<sub>R</sub>e, the Macintosh version of T<sub>E</sub>X. It is written by Kellerman and Smith and marketed by Addison-Wesley, (the publisher of Donald Knuth's "The T<sub>E</sub>Xbook").

I tried T<sub>E</sub>X<sub>T</sub>u<sub>R</sub>e for about 3 days, using it with a LaserWriter and now I won't do without it. T<sub>E</sub>X<sub>T</sub>u<sub>R</sub>e performs most of the functions of T<sub>E</sub>X on the LBL cluster, and, in some important aspects, performs them even better.

T<sub>E</sub>X, of course, is a text-processing system first introduced by Knuth of Stanford. It is a powerful system for typing mathematics as well as for typesetting regular book-type text. In T<sub>E</sub>X<sub>T</sub>u<sub>R</sub>e, you use the MAC to create the input file. When you invoke the **Typeset** Command, the T<sub>E</sub>X<sub>T</sub>u<sub>R</sub>e processor takes over. After processing, a third window is opened and the finished product is displayed for previewing. The preview window can display a page in various magnifications, up to 400%.

T<sub>E</sub>X<sub>T</sub>u<sub>R</sub>e lets you mix text and graphics on the same page. You can also enter sophisticated text and mathematics typesetting commands.

Surprisingly, the manual for Version 0.9 was not typeset. Upgrade to Version 1.0 is expected soon. The Apple LaserWriter does not have all the fonts available in the Imagen printers, but the typeset math is so beautiful you will want your own copy of T<sub>E</sub>X<sub>T</sub>u<sub>R</sub>e for your MAC-LaserWriter system.

The Workstation Group is trying to determine if there is sufficient interest for a site license. Forward your comments and questions to the Workstation Lab (x6858).

[24.4.16].....

● SIGN UP FOR THE NEWSLETTER!!

Attention LBL employees: If you are a new owner or user of a PC or a Mac, you should sign up to receive the Laboratory's Computing Newsletter, which has a helpful **Workstation News** section, supported by the Information and Computing Sciences Division's Workstation Group. This section offers support and helpful hints for PC users. It's also a place for you to send questions and comments.

Contact Workstation Member Maggie Morley, (x5529), to add your name to the Newsletter Mailing List.

"One never know,  
Do one?"

... F. Waller

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The Computing Newsletter, published monthly, provides much useful current information to our users and is mailed to them free, upon request.

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... Rabelais