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Volume 23, Number 3
March 1986

L B L
COMPUTING
NEWSLETTER

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Newsletter Closing Date is Friday, March 14, 1986 . . . and no later.

Address all communications for the Newsletter to login **news** on UX4.

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LBL COMPUTING NEWSLETTER

PUB-429

NAMES & NUMBERS TO KNOW

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

COMPUTING DIVISION

Head: Leroy Kerth (LTKerth)7474 50B - 2232

OFFICE OF COMPUTING RESOURCES

Head: Ken Wiley (KGWiley)7083 50B - 2258

ADVANCED DEVELOPMENT PROJECTS

Head: Dennis Hall (DEHall).....6053.....50B - 3238

Workstation Group

Group Leader: Richard LaPierre (RLLaPierre)....4692.....46A - 110

COMPUTING SERVICES

Head: Marv Atchley (FMAatchley).....5455 50B - 2239A

Asst. Head: Sandy Merola (AXMerola).....4389 50B - 2239B

Central Office.....5871,2 50B - 2239

Guest Cards & Parking Permits.....5947 50B - 2239

COMPUTING SERVICES

User Resources

Group Leader: Jerry Borges (JTBorges).....5568 50F - 144

Accounting7008 50B - 1232B

Library/ Document Sales.....5529 50B - 1245

Math Libraries.....6166 50F - 145

Graphics6945 50F - 126

HELP DESK.....5981 50B - 1272

COMPUTING SERVICES

Computer Facilities & Networks

Group Leader: Sandy Merola (AXMerola).....4389 50B - 2239B

Operations Area.....6211 50B - 1215

Connecting a Remote Terminal (ACMills)...7444 50B - 2249A

Terminal or Port Repair (PGMurray).....5354 50B - 2259

Tape Library (Steve Holcomb)6218 50B - 2249

Terminal Rental4388 50B - 1232

Network Coordinator (WDJaquith).....4388 50B - 1232

COMPUTING SERVICES

VMS System

Group Leader: Wayne Graves (WRGraves).....7035 50F - 144

VMS Cluster Manager (RBallen).....6203 50F - 116

COMPUTING SERVICES

UNIX System

Group Leader: Dave Cleveland (DHCleveland) 5338 50F - 115

UX4/ UX5/ UX6 UX7 System Manager

(EHSheena).....5176 50F - 120

COMPUTING APPLICATIONS

Applications Group

Head: Dennis Lawrence (DJLawrence).....6019 50F - 104

DEVELCON IDENTITS

COMPUTER

DEVELCON DIRECTORY NAME

VAX 11/ 780 (UNIX4)UX4

VAX 11/ 750 (UNIX5)UX5

VAX 11/ 750 (UNIX6)UX6

VAX 11/ 780 (UNIX7)UX7

IBM 3081 (UCB)CCDB

[VAX 8600's (GENERIC).....CSA]

VAX 8600 (VMS)CSA1

VAX 8600 (VMS)CSA2

VAX 8600 (VMS)CSA3

VAX 8600 (VMS)CSA4

VAX 8600 (VMS)CSA5

Dial-up Access Numbers

All Machines - 300 BPS 486-4959

2400 BPS 486-4969

o All machines - 1200 BPS 486-4979

o VA-3400 & 212A are equivalent

Local TYMNET Access Numbers

Oakland 430-2900 Vallejo 707-557-0333

Walnut Creek 938-9550 Concord 682-3851

Pleasanton 462-8900 Fremont 490-7366

San Francisco 974-1300 Antioch 778-3420

Operating Hours

All machines are available 24 hours daily.

With these exceptions.

UX4 - VAX 11/ 780Mon 3/ 24 00:30 to 8 AM

UX5 - VAX 11/ 750Mon 3/ 31 00:30 to 8 AM

UX6 - VAX 11/ 750Mon 4/ 07 00:30 to 8 AM

UX7 - VAX11/ 780Mon 3/ 17 00:30 to 8 AM

CSA1 -VAX 8600.....Mon 03/ 03 8:00 to 12:00

CSA2 -VAX 8600.....Tue 03/ 04 8:00 to 12:00

CSA3 -VAX 8600.....Wed 03/ 05 8:00 to 12:00

CSA4 -VAX 8600.....Thur 03/ 06..... 8:00 to 12:00

CSA5 -VAX 8600.....Fri 03/ 07..... 8:00 to 12:00

COMPUTER CLASS SCHEDULE

Jerry Borges

The following computer classes are to be offered by the Computing Division starting in March 1986. There is no charge for these classes; to enroll, obtain your supervisor's approval and then contact Suzzon Wilson (x5871). If you have questions about what's being offered, or suggestions for other computer-oriented topics, contact Jerry Borges (x5568).

DATE	TIME	DESCRIPTION	INSTRUCTOR
Mar 10, 11, 13	10 AM - noon	Introduction to VAX/VMS	Rosemary Allen
Apr 1	8:30 AM - 4:30 PM	DISSPLA, GKS, Dynamics	ISSCO/Lederer
Apr 2	9 AM - 4:30 PM	TELL-A-GRAF & PINPOINT	ISSCO/Lederer
Apr 3	9 AM - 4:30 PM	TELL-A-GRAF (cont.) & TABLES	ISSCO/Lederer
Apr 8, 10, 15, 17	9 AM - 11:30 AM	The C Programming Language	Marty Gelbaum
Apr 10, 11	9 AM - 5 PM	Precision Visuals Graphics - DI3000	PVI/C. Lederer
Apr 15, 17, 22, 24	1 PM - 4 PM	Introduction to VAX/UNIX	Dave Cleveland
Apr 16	9 AM - 5 PM	Software Management Using DEC/CMS and DEC/MMS	Edgar Whipple
May 5	10 AM - noon	Introduction to SPSS	Elon Close
May 19, 20, 22	10 AM - noon	Introduction to VAX/VMS	Rosemary Allen
May 27	10 AM - noon	Introduction to the IMSL and NAG mathematical software libraries	Elon Close
Jul 15, 17, 22, 24	1 PM - 4 PM	Introduction to VAX/UNIX	Dave Cleveland

TWO NEW TAPE UTILITIES

Heather Mace

There are two new tape utilities available to VMS users: Tapedisk and TapeRT.

- **Tapedisk** copies Ansi Labeled magnetic tape files into the user's directory. It translates Ascii Standard and EBCDIC IBM Standard tape files into the VMS environment and is available on all the CSA machines.
- **TapeRT** copies RT11 Ansi Labeled magnetic tape files into the user's directory and is available on all CSA machines.

To use the Utilities, define the symbols

```
tapedisk :== sy_systools:tapedisk
tapert :== sy_systools:tapert
```

in your login.com file. The tapes must be mounted with the MOUNT/FOR qualifier.

To run Tapedisk or TapeRT, type

```
tapedisk device
or
tapert device
```

where *device* is the logical name of the tape drive your tape is mounted on.

DOMAIN STYLE NAMING IN UNIX

Ken Whaley

Background:

Every host that is connected to the ARPAnet/MILnet is assigned a number through which all network communication (ARPAnet/MILnet) takes place. This number is called the host's "network address". We assign "names" to these network addresses because, for example, "telnet ux7" is more meaningful and is easier to remember than "telnet 128.3.254.17". The network programs (e.g., *telnet*, *ftp*, *rlogin*, *mail*), therefore, must have some means of translating a network name into a network address. Up to now, this was done with the help of a single file, */etc/hosts*, containing one line for every host on the network. This file represents all of the known computers using the ARPAnet/MILnet. It is quite large (and getting larger very quickly), and is maintained by a single group of people, called the NIC (Network Information Center). Whenever you want to change or add a name/address pair to the network and have this change known to the network, you have to ask the NIC folks to perform the change or addition for you. In order to stay up-to-date, one must constantly obtain the latest version of the */etc/hosts* file from the NIC. This means that a local network name change (lbl-ux4 → ux4, for example) could take a long time to appear on some hosts.

We can picture the network name space as a file system on a computer -- (e.g., all of the network names now lie in one huge directory, managed by a small group of people). This simplifies searching for a name, because all of the names are in the same place. But if you want to change your name in this directory, you must ask NIC to do it for you, and in order for others to use this name, they must copy the entire directory into their own systems. Likewise, we must copy this directory into our system in order to find out about changes made to other systems' names.

The new domain-style naming turns this single directory into a hierarchical filing system, i.e., one that uses "subdirectories", similar to the "hierarchical" filing system used on all UNIX machines. Theoretically, we can create as many of these subdirectories as we want. In each of these subdirectories we can then make many more subdirectories. Actually, we try to keep "similar" machines in the same subdirectories. For instance, all university computers, all commercial computers, all government computers, etc., are kept in separate subdirectories (called "EDU", "COM", and

"GOV", respectively; there are several other main directories, known as "top level domains"). Since each of these categories is still fairly general, we will make more subdirectories in each one of them. Looking at some examples will make this clearer.

Consider all of the machines at U.C. Berkeley: they should be under the EDU subdirectory (of all university computers; technically speaking, all UCB machines are "in the EDU domain"). But there are at least 100 different network-addressable computers at Berkeley, and hundreds more throughout the country (and in fact make up much of today's */etc/hosts* file, described above), so we will make a subdirectory in the EDU domain (called a "subdomain") called "berkeley," in which we will place all of the machines on the network at UCB. Similarly, we can put all of the machines at M.I.T. under the subdirectory "mit" in the EDU domain. Machines at Purdue go under the "purdue" subdirectory in the EDU domain, etc. One rule of the domain-style naming system is that a subdomain appear in exactly one domain. That is, we can't have the "lbl" subdomain in both the EDU and the GOV domains. Also, while there is no theoretical limit to how far this can go, having too many subdirectories can be an inconvenience when it comes to actually using the name of a computer, as we'll see shortly.

Use

The only difference that the user sees is that the name of a particular machine will change -- with the exception of local machines (within the same directory) the full network name must be used -- almost all of the network commands will remain the same (on UNIX a few of these are "rcp", "rlogin", "telnet", and "ftp"). The full network name consists of the name of the host, followed by a period, followed by the name of its parent directory, followed by a period, followed by the name of the parent's parent, etc., until we reach the "root". I.e., "ux4.lbl.doe.gov" means the machine "ux4" in the "lbl" subdomain of the "doe" subdomain of the "gov" domain. "cory.berkeley.edu" = the "cory" machine in the "berkeley" subdomain of the "edu" domain. The name reads from left to right-- from the most specific to the most general domain names. However, those of us at LBL won't have to type "rlogin ux4.lbl.doe.gov" if we are on a machine in the "lbl.doe.gov" subdomain; we need only type "rlogin ux4". Other examples are "csal.lbl.doe.gov", and "elxsi.lbl.doe.gov", which we can call "csal" and "elxsi". Everybody outside lbl.doe.gov, however, must use the full name. This means that we must use the full name every time we access a host outside of lbl.doe.gov.

Some examples:

cory.berkeley.edu	(formerly ucbcory)
monet.berkeley.edu	(formerly ucblmonet)
bitsy.mit.edu	(formerly mit-bitsy)

On UNIX, the command "help domains" will give more examples. We'll place commonly-used names there as we discover their new names. Note that, for a while, most of the old names WILL work if you follow them by ".arpa". That is, "mfe.arpa" will work. But the old names will be going away, and we'll notify you when this happens.

What makes this whole thing work is that each subdomain is independently controlled, and that it is the only one that can give out information about the machines inside it. Each subdomain has complete control over itself, so that when a change must be made, some person with the necessary authority can make the change to the subdomain. The change is then almost immediately available to the rest of the network, because nothing else needs to be updated.

Summary

This has been an attempt to introduce the basic concepts and the usage of domain style naming. This information is presented in a more precisely presented in a document called "Request For Comment 882", or "RFC882" which can be found on UX4 in the file "/usr/doc/rfc/rfc882". "/usr/doc/rfc/rfc883" on ux4 contains the technical details of implementing the domain style name system.

Note: The above refers to UNIX **only**. Domain Style Naming has not yet been implemented in VMS.

FILE TRANSFERS USING DECNET AND PROXY ACCOUNTS

William Jaquith

DECnet allows remote terminal access, file manipulation, and electronic mail. Remote terminal access (e.g., **set host ...**) requires that a user have an account and password on the remote computer. With electronic mail, you only need to know a userid at the remote computer to send mail. You can perform file manipulation on DECnet, to a certain extent, using default accounts. However, this default DECnet file manipulation has been turned off locally.

VAX/VMS does have two provisions for working without default DECnet accounts.

- (1) The first way to work without default DECnet accounts is to use **access control strings** to manipulate files. For example, to copy a file from CSA1 to LBLG, issue this command on LBLG:

```
LBLG>copy
  _From: CSA1::userid password::[DIR]file
  _To: file
```

Here's an example using the directory command:

```
LBLG> dir csa5"userid password"::[dir]
```

- (2) The second way to work without DECnet default accounts is to request **proxy access** between the remote computer and the CSA cluster. Proxy accounts enable remote users to use local accounts without having to login or to specify access control strings in commands. An example of doing a file copy from CSA1 to LBLG after proxy access has been established:

```
LBLG>copy
  _From: CSA1::[DIR]login.com
  _To: login.com
```

To establish proxy access, send mail to **networks at CSA3**. Include the remote computer and userid you wish to have access to your CSA cluster account. Note that a user on the remote computer can have proxy access to **only one account** on the CSA cluster.

Especially note the following quote from the DEC manuals mentioned below¹

the remote user receives the same privileges as the local user

In other words, the user on the remote node with proxy access to your files in your account on the CSA cluster can do the same reading, writing, purging, and deleting to files that you, the owner, can do to your files. Proxy privilege is a powerful one; request it and use it carefully.

¹ For further information refer to page 2-56 to 2-59 of *Guide to Networking on VAX/VMS* and pages 5-30 to 5-31 of *Guide to VAX/VMS System Management and Daily Operations*.

ISSCO GRAPHICS USER UPDATE

Claudette Lederer

ISSCO graphics users must choose one of two ways, depending on regular or infrequent use of ISSCO graphics, to define all the symbols required to use any of the ISSCO products.

If you are a regular ISSCO graphics user, put the following statement in your LOGIN.COM:

\$ ISSCO

For the infrequent ISSCO graphics users, it is recommended that after login, and before using any of the ISSCO products, at the CSA2 or CSA4 system prompt, type

ISSCO

Either of the above two uses of the symbol ISSCO will define all the symbols necessary to use any of the ISSCO products licensed on either the CSA2 or CSA4.

Formerly the definitions of the ISSCO graphics symbols were defined for every user on CSA2 or CSA4 at login time. As the list of ISSCO symbols grew, the login time for non-ISSCO-graphics users became unnecessarily prolonged.

The ISSCO products currently licensed on the CSA2 and CSA4 include:

- CUECHART, V 1.0
- TELL-A-GRAF, V 5.2, device interface 12
- The Data Connection
- TELLAPLAN
- DISSPLA, V 9.2, device interface 12 (CSA2 only).

Watch the BILLBOARD in the coming weeks for the ability to use the five following ISSCO product enhancements:

(1) GKS, level 1B (CSA2 only).

There are 191 routines in ISSCO's 1B implementation of GKS (Graphical Kernel System), the international standard for basic two-dimensional graphics.

New documentation available from the Computer Center Librarian:

- ISSCO-GKS Command Reference Guide (PUB.20.0(6/85/15M)).

This programmer's guide briefly describes the GKS standard, and ISSCO's implementation of GKS (listing the 191 ISSCO-GKS routines with their arguments), and includes a section that

describes the bridge between DISSPLA and ISSCO-GKS through the use of metafiles.

• Workstation Handbook.

This handbook provides the programmer with device-specific information needed to tailor applications written with ISSCO-GKS to device capabilities.

(2) CUECHART, V 2.0.

Version 2.0 has 350 new stencils that make many of the most complex and sophisticated charts and tables as easy to produce as selecting items out of a catalog. Among the new types of charts available are error-bar charts, tables, and area charts. All known bugs in version 1.0 have been fixed in version 2.0.

New documentation (to complement the CUECHART User's Guide, CUECHART Stencil Maker's Guide, and CUECHART Standard Graphs) available from the Computer Center Librarian:

• CUECHART BRIEF.

Bulletin of release information of enhancements and fixes.

• CUECHART Poster.

This new poster displays many of the new stencils available, and serves as a quick reference guide to the full power and ease of CUECHART.

(3) TELL-A-GRAF, V 6.0, device interface 12 and/or 14.¹

Version 6.0 is 30% faster than version 5.2. All known bugs in version 5.2 have been fixed in version 6.0. Significant new features include:

- QUICKFONT, which increases the speed of drawing fonts.
- new SAVE commands.
- ability to access the current date, time and userid for messages.
- new RESET command for global variables.

New documentation (to complement TELL-A-GRAF User's Manual, version 5.0) available from the Computer Center Librarian:

• TELL-A-GRAF BRIEF.

Bulletin of release information on enhancements and fixes.

• TELL-A-GRAF User's Manual Update Pages,

¹ Device interface 14 will support the IMAGEN 8/300, which is available at LBL. The current device interface 12 supports only the IMAGEN Imprint-10 in Imprint-10 mode only, which provides only preview type support for LBL IMAGENS.

with a REMOVE/INSERT sheet to aid you in updating your User's Manual from V 5.0 to V 6.0.

- (4) DISSPLA, V 10.0, device interface 12 and/or 14.²

Version 10.0 of DISSPLA includes the option DYNAMICS, which provides an interactive graphics facility from within a DISSPLA program. This version also includes several new routines that allow enhancements in mapping, metafile naming and retrieval, message alignment positioning, page borders, transformation of 3-D surface points, and unlimited color control.

New documentation (to complement DISSPLA User's Manual, version 9.2, and DISSPLA Pocket Guide, version 9.2) available from the Computer Center Librarian:

- Shrink-wrapped package containing:
 - Letter to the End User.
 - Release 10.0 Update document for the version 9.2 of the DISSPLA Pocket Guide.
 - Release 10.0 Update pages for the DISSPLA User's Manual, with a REMOVE/INSERT sheet to aid you in updating your User's Manual from 9.2 to 10.0.
- Dynamics Option for DISSPLA Users (PUB.20.0(6/85/15M)).
This updates the DISSPLA Pocket Guide by providing the new PART I Dynamics information as a separate pocket booklet. Each user of the Dynamics option should have this document.
- Workstation Handbook.
This handbook provides the programmer with device-specific information needed to tailor applications written with DYNAMICS to device capabilities.

- (5) The PC LINKAGRAF.
This is ISSCO's IBM Personal Computer Graphics Interface. It will also be available with TELL-A-GRAF 6.0 and DISSPLA 10.0. With PC LINKAGRAF, version 2.0, you can:

- Display plots created with ISSCO software.
- Use your PC to emulate four alphanumeric graphics terminals.
- Automatically connect to a modem.
- Access a full screen Help facility.
- Define up to 10 Function Keys.
- Transfer files from the CSA2 or CSA4 to the PC, or vice versa.

Currently, the following IBM PC graphics hardware is supported:

- IBM Standard Color Graphics Adapter with either a monochrome monitor or a color monitor.
- IBM Enhanced Graphics Adapter with a choice of monochrome, or high, medium, or low resolution color monitor.
- IBM Professional Graphics Adapter with color monitor.
- IBM 7371 Two Pen Plotter
- IBM 7372 Six Pen Plotter
- IBM Color Printer
- IBM Monochrome Matrix Printers

If you have already purchased PCGRAF, you can exchange it for PC LINKAGRAF. For exchange or purchase of PC LINKAGRAF, contact the Computer Center Librarian. The PC LINKAGRAF, V 2.0, package contains three program diskettes, a User's Guide, and three emulator reference cards.

The first notification of these enhancements will be made thru the BILLBOARD. Be prepared with the above resources. Following are the migration symbols which must be used (at the CSA2 or CSA4 system prompt) to use these enhancements:

SETUP_NEWTAG

will define TELL-A-GRAF V 6.0, CUECHART V 2.0, and PC LINKAGRAF.

SETUP_NEWPLA

will define DISSPLA V 10.0, Dynamics, and PC LINKAGRAF.

For the latest information on all of these enhancements (including GKS), type (on CSA2 & CSA4 at the system prompt)

PRINT 'ISSCO NEWS'

MICROVAX USERS GROUP

Mark Tincknell

I would like to form a MicroVAX local users group. Interested parties for both MicroVAX I and II, and both VMS and UNIX are welcome. Please contact Mark Tincknell (x6460), or send computer mail to MLTincknell@LBL.

² ibid

WORKSTATION NEWS

[23.3.1].....

• HERE'S THE WORKSTATION GROUP

Did you know that there is a group of people at LBL who help with all kinds of microcomputer, local area network, telecommunications, and dedicated word processing (Wang, Xerox, etc.) questions and problems for NO CHARGE?

Yes, the Computing Division's Workstation Group is supported by the Laboratory overhead and is ready to assist everyone at the Laboratory in any of the above areas. Members Richard LaPierre and Bill Brown of RTSG, Maggie Morley, Bob Rendler and Dan Van Zile of the Computing Services Department, and Buck Koonce of the Office of Computing Resources make up the group.

This group was formed in the fall of 1984, and has been promoting standardized solutions to office automation problems while keeping up with new hardware and software that might be useful to Laboratory personnel.

- (1) We help you to evaluate the available office automation solutions and configure a system for you.
- (2) We make hardware and software available for short term loan.
- (3) Each month, in this section of the Computing Division Newsletter, you will find
 - new items and old items that have been popular,
 - software reviews,
 - answers to users' questions, and
 - timely tips.
- (4) We work closely with the Purchasing Department to obtain the best prices and the latest updates for software and hardware.
- (5) Having members from the Computing Services Department allows us to keep up with the VMS and UNIX world on the Computer Center's machines.
- (6) We have public domain software (free) that runs on personal computers as well as on the Computer Center machines. This allows excellent terminal emulation and error corrected file transfer.
- (7) We also have information on training for workstation users. We let you know what-all's available, from free computer-aided training diskettes to information on the lowest cost and most comprehensive classroom training for Laboratory personnel.

Each member has a specialty, but feel free to call any of us with your questions and we will try, as a group, to get you the best solution possible.

Bill Brown	x6411
Buck Koonce	x5739
Richard LaPierre	x4692
Maggie Morley	x5529
Bob Rendler	x5629
Dan Van Zile	x5589

[23.3.2].....

• AT-STYLE PC KEYBOARD IS A GREAT SUCCESS

We have received the AT-style PC keyboard we talked about last month. We like it a lot.

At this writing, the keyboard is "in stock" (stock # 6020-69397, \$80.00) at the Livermore PC Store and we're making one available here for your short-term tryout and evaluation. Contact Dan Van Zile (x5589) or any Workstation Group member for details.

[23.3.3].....

• NEW ZENITHS AVAILABLE FOR TRIAL/EVALUATION

The Workstation Group now has two of Zenith Data Systems' newest IBM-PC compatible microcomputers which are available for LBL testing and evaluation.

- (1) A Model ZVM-148 with 2 floppy disk drives, 640Kb memory, 1 serial port, 1 parallel port and a monochrome composite monitor. (This is the lowest cost IBM-compatible available from an established second source.)
- (2) A Model ZVM-158 with 1 floppy drive, 640Kb memory, 1 serial port, 1 parallel port, 1 10Mb hard disk and a high resolution monochrome amber monitor (IBM monochrome equivalent).

Both machines will run most IBM programs at both IBM speed (4.77 Mhz) and high speed (8 Mhz). The 8 Mhz speed makes these machines about 60 per cent faster than an IBM PC or XT. With an 8 Mhz 8087 math co-processor, these machines are faster than an IBM AT for number crunching applications. Both machines (with operating systems) are available for eval/testing for up to one week. Contact Workstation Group member Dan Van Zile, x5589 for information and assistance.

[23.3.4].....

• FILEPATH PACKAGE

We've been testing a utility called "FP" v2.0 (Set File Search Directories) from SDA Associates, P.O. Box

36152, San Jose, Ca. 95158.

FP is to *data* files what "PATH" is to *command* or *batch* files.

When used with LOTUS 1-2-3 Release 1a, it allows the configuration file to be located anywhere on the disk, rather than in the default directory. Some programs do not seem to work with FP -- most notably KERMIT and PC-VI.

The documentation seems to be satisfactory, although it doesn't explain why FP will work with some programs and won't with others.

In our opinion, those of you with hard disk systems will find FP worth its modest cost (\$24.50 + \$2.00 handling). However, since it does have limitations, the potential user would be prudent to test it first. An evaluation copy is available from Dan Van Zile (x5589).

A new release, FP V3.0, is now available (\$34.50 + \$3 handling). It may correct the above-mentioned problems.

[23.3.5].....

• SUBST

If you moved to an AT with a hard disk, but some of the software that you know and love is so old it can't deal with paths, don't despair. Take a look at the "SUBST" (Substitute) Command on page 7-173 of your DOS 3.1 Manual. This handy feature lets you substitute a drive designation for a sub-directory on your disk.

If you want to use the file

"c:\dos\data\this\that\garbage\goodstuf.dat"

with a program that doesn't know about paths, you can enter

> subst e: c:\dos\data\this\that\garbage

Instead of being stuck with a long string of characters, you can now refer to the file as "e:goodstuf.dat". (example "> dir e:goodstuf.dat") Now, there is no long pathname to confuse your old and beloved programs.

As is usually the case, there are some cautions to be observed, but the DOS 3.1 manual details them quite well.

[23.3.6].....

• 3COM PC NETWORK ALERT

If you are using 3Com's PC Network software, you may be operating with a version of the EtherShare Server software that has a serious bug.

We discovered this bug while testing the server software on a 120Mbyte disc file server (120Mbyte MaxStor disks, incidentally, work very well as large-capacity file servers).

You can determine if your software is suspect by doing the following:

- Insert EtherShare /PC Server Software, Version 2.4 (No. 2 of 2) in the A:drive and check the creation date of the program CIOSYS.EXE by typing

c> dir a:ciosys.exe

DOS responds with the following

CIOSYS EXE 27447 6-14-85 4:54p

If the date is older than 6/14/85, your software has the bug. Contact Workstation Group member Richard LaPierre (x4692) for a copy of the fix.

[23.3.7].....

• EXPANDED MEMORY BOARDS

The Workstation Group has been receiving some inquiries about the new expanded memory boards for the IBM PC/XT and the PC/AT. There are two competing Expanded Memory Specifications (EMS);

- one originally developed by Lotus and Intel, and subsequently endorsed by Microsoft, referred to as the (LIM) EMS standard, and
- one from AST Research that is a SUPERSET of the Lotus/Intel specification.

Both of these specifications allow you to create very large spreadsheets using Lotus' new versions of Symphony and 1-2-3 software.

At this time most of the new products are being developed for the (LIM) EMS specification. Theoretically, all of the software developed for the LIM specification should run on the AST hardware since it is a SUPERSET. However, the converse is not necessarily true. There is also a concern about compatibility of the AST specification with future releases of Microsoft's DOS. Several articles have surfaced in the trade magazines discussing problems with some of the expanded memory boards, including the AST Rampage board.

The Workstation Group is attempting to keep abreast of what is happening in this rapidly-developing arena. If you already have a PC system up and running, our recommendation is to hold off for a while unless your application ABSOLUTELY requires the Expanded Memory features. If you are just putting together a new system, you should contact Workstation Group members R. LaPierre (x4692) or Buck Koonce (x5739) for additional information and recommendations.

[23.3.8].....

• VOLKSWRITER 3 UPGRADE

The Workstation Group has a Master upgrade disk for registered Volkswriter 3 owners. It corrects some errors that were in the initial release of Volkswriter 3. However, there continues to be a bug in the Spelling Checker. If one mistakenly hits the F2 key when a word's spelling is questioned, the misspelled word will be accepted throughout the document.

To have your original distribution disks upgraded, Please contact Dan Van Zile (x5589) (Bring him in your master disk.) There is no charge for this service.

[23.3.9].....

• HELPFUL HINTS FOR KERMIT USERS

To those of you who use KERMIT for communication and file transfer on your PC's, we offer a few hints for using macros to make life a little easier.

Macros are "packages" of commands that can be invoked with a single word or small number of key strokes. When using KERMIT, you invoke a macro by typing the word **do** followed by the name of the macro.

To create a macro, you must follow some simple conventions.

• BAUD/PARITY SETTINGS

Assume you want to set the baud rate and parity of your connection to "1200 baud/even parity" only when you are calling Tymnet and at "9600/no parity" for Develcon access to the Computer Center machines. You could define two macros, *tymnet* and *develcon*. Here's how. Type these two lines --

Define *tymnet* set baud 1200, set parity even, connect
Define *develcon* set baud 9600, set parity none, connect

- either to a file you create named MSKERMIT.INI - or
- interactively after you have the KERMIT prompt, (KERMIT-MS>)

The former is preferable because the MSKERMIT.INI file is read every time you start KERMIT and when you invoke the macro, typing either

do tymnet

or

do develcon

to switch back and forth at the KERMIT prompt (KERMIT-MS>) on your screen.

• LOG

log is a very useful KERMIT feature. It allows your PC to write to disk everything that is seen on screen during a terminal session. You invoke this command by typing the word **log** and a filename. Assume you want a copy of the mail you are reading written to your PC

disk and you want to call it "*history*", you just type

log history

at the KERMIT prompt (KERMIT-MS>). Remember that each time you do this, the old file named *history* will be written over, so if you want to save the file, simply rename it to something different.

• CAPTURE

There is no error checking when using the **log** feature. This sometimes causes characters to be lost during a session if you are at your usual 9600 baud setting. Here's where macro could be very useful. Try using a setting of 1200 baud and you will seldom lose any characters. To set up at 1200 baud, start a file called *history* with a macro named *capture* by typing

Define *capture* set baud 1200, log history, connect
in your MSKERMIT.INI file. To start this macro, you would type

do capture

and to end this logging session, either end your KERMIT session or type the word

close

at the KERMIT prompt (KERMIT-MS>).

• SELECTIVE SAVE's

A final helpful hint about log sessions. You can temporarily suspend logging by typing **control] Q** and start it up again by typing **control] R** to keep from having a lot of unwanted parts of the session written to disk.

The school of hard knocks is an accelerated curriculum.

(Menander, 342?-292? B.C.)

NEW APPLE PRODUCTS

(Many thanks to Purchasing's Mark Vega, for the following information). . . . Apple Computer Inc. announced several new products in January which affect purchasing decisions for both current and potential Macintosh users. Both Laboratory and individual pricing information for the new products are detailed below.

Part #	Description	Laboratory Price	Personal * Price
2503	Macintosh Plus Computer - 1Mb memory expandable to 4Mb. 1Mb chips expected to be available in the latter half of 1986. - 800K storage capacity - High-speed peripheral port - New 128K ROM - Does not include Macwrite or Macpaint	\$1449.00	\$1875.00
M2512	Macintosh 512K Computer - Macwrite and Macpaint are included.	999.00	1465.00
M0131	Macintosh 800K External Drive	322.00	395.00
A9P0305	Imagewriter II Printer with System Peripheral - 8 cable	412.50	450.00

Cost to upgrade a 512 Macintosh to the Macintosh Plus will vary, depending on what date the computer was purchased.

If you purchased your computer from 11/17/85 through 1/15/86 you qualify for special pricing. To take advantage of this, enclose a copy of the Apple invoice or the purchase order on which you ordered the Macintosh with your requisition. **NOTA BENE:** The special pricing offer expires 5/15/86. Pricing is as follows:

Part #	Description	Laboratory Net Price	Personal * Net Price
M2518	512K Logic board Upgrade - \$223 credit for the returned part	\$ 226.00	\$ 299.00
M2518	128K Logic Board Upgrade - \$91 credit for the returned part	358.00	499.00
M2516	Disk Drive Upgrade - \$72 credit for the returned part	103.00	149.00

If you purchased your computer before 11/17/85, pricing is as follows:

Part #	Description	Laboratory Net Price	Personal * Net Price
M2518	512K Logic Board Upgrade - \$223 credit for the returned part	\$ 376.00	\$ 539.00
M2518	128K Logic Board Upgrade - \$91 credit for the returned part	508.00	735.00
M2516	Disk Drive Upgrade - \$72 credit for the returned part	178.00	275.00
M0191	Laserwriter Plus upgrade - \$150 credit for the returned part	476.00	799.00
M2519	Keyboard	85.00	129.00

* This price is at the COMPUTER SELECTION Store, NOT at the ASUC Bookstore. (See next page).

The logic board upgrade (M2518) consists of

- a digital board with 1Mb of RAM,
- new backpanel,
- Macintosh Plus owner's guide and
- information sheet.

Note: The disk drive upgrade (M2516) must be installed before installing the logic board upgrade.

The Disk Drive upgrade (M2516) includes

- an 800k drive,
- new 128k ROM, and
- Macintosh Plus Systems Tools Disk.

Note: University (LBL) and distributor retail prices vary for selected items. LBL prices are listed throughout this handout. Two notable pricing exceptions are:

- M2518 128K Logic Board Upgrade\$799
(distributor retail less trade-in)
- M2516 Disk Drive Upgrade.....\$299
(distributor retail less trade-in)

When upgrade products arrive, RTSG will install the products and ship the replaced parts back to Apple Computer (to ensure that your account is credited). Technical questions should be directed to RTSG's Lev Pope or Jim Harvill, x6411.

If you wish to purchase an Apple Macintosh computer for personal use, **you can no longer buy through the A.S.U.C. Bookstore** for discounted pricing. The Berkeley Campus Computing Division will soon be an outlet to buy Macintosh computers. No pricing

information has been released yet. To obtain updates from the Computing Division, call (415) 643-6252.

LBL Purchasing suggests that you wait for pricing from the Berkeley campus, but if you need a computer now, your best buy appears to be in San Francisco, at **COMPUTER SELECTION**. ((415) 543-9888 - ask for John Maddock and mention to him that you are an LBL employee.) **COMPUTER SELECTION's** prices are listed under "personal price" in this handout. If you know of a store offering better prices, please let Mark Vega (x4595) know.

LBL purchases Macintosh computers through an Apple/UC agreement and LBL requesters should be aware of two constraints in the agreement.

- (1) If your order is under \$1000, LBL Purchasing will group your requisition with other requisitions until the total amount is \$1000.
- (2) There is a \$50 handling charge for any order under \$1000.

If you are buying a CPU or if the total dollar value is over \$3000., please make sure that your requisition has been approved by the Office of Computing Resources (50B-2258). If you are using "work-for-others" funds or other funds, make sure the Contracts and Grants Office approves the requisition (90-1090). If everything is not in order, your requisition will be delayed. Delivery time from the date LBL Purchasing receives your requisition ranges from 2 to 4 weeks. If you have any further questions call Mark Vega, LBL Purchasing 69-201, x4595.

REVIEW OF SCIENTIFIC WORD PROCESSORS

The scientific word-processing systems described in this article are well worth consideration. They all provide excellent capabilities for constructing expressions - including an array of special symbols. In addition, what you see on the screen is what you get on the printer. The systems support the higher-quality printers such as the Toshiba P351. They range from the fully complete professional word processor (T3) to an excellent personal low-cost system (Brit Macro). The Workstation Group has copies of these programs and can demonstrate them.

T3 REVISITED

Roy Kerth

T³ is from TCI Software Research Inc., 1190-B Foster Road, Las Cruces, NM 88001. 1-800--874-2383. Cost: \$595.00

This scientific word processing system was reviewed in the May 1985 issue of the LBL Computing Newsletter. TCI has now issued version 2.1. With this new edition comes a few bug fixes and a complete revision of the manner in which print drivers are implemented in the system.

If you are interested in scientific word processing, then you should consider T3.

T3 sets the standard by which all other systems are compared.

First -- as a word processor it is outstanding. It is a full-featured professional system. It has all of the usual editing features and each works well and effortlessly. There are no command modes to remember. Editing functions are accomplished by use of various function keys. Unfortunately, there is no on-screen help to provide the key definitions. TCI supplies a plastic card with function key assignments and other useful information. (It can be kept on top of the computer). In addition to the usual editing functions, there are some very nice features such as **tab**, **center** or **right justify** on any character. This makes tables almost a joy to type. The **search** or **search and replace** function is as powerful and as easy-to-use as any that I have seen. Marking text for moving, deleting, storage etc. is equally easy.

Documents are not created with T3. Rather, you copy an old one and revise it. Many will think that this is strange, but it's how you really do it with any word processor. You have various sample documents with no text but with margins set along with other formatting information. You just copy one of these and proceed to modify it by adding the text. TCI supplies a good selection of samples to get you started.

T3 allows automatic headers and footers, page numbering, different binding margin for odd and even pages and just about anything else you can think of. It handles automatic footnoting as well. A major

drawback: There is no spelling check or automatic hyphenation. I have been told that these features are in the works.

While T3 is a thoroughly professional word processor, it really shines with symbols and formulas. Formulas that are built-up several lines deep are treated as one. That is, symbols are typed above or below the main line by moving up or down by half lines using the **PgUp** or **PgDn** keys. A complex expression may be constructed and then pushed around to place it where you wish. This means that a formula can be centered with the center key just like any other text. Macros (i.e., key sequences) can be defined and given names. These may include formatting keys as well as text. Macros may even call other macros! You'll have to watch out -- it's possible to build an infinite loop.

Various sets of symbols are available on "keyboards" that can be called as needed. You can customize the keyboards to suit your application. In addition a font editor is included so that you may make your own characters. You generate an image for the screen as well as one for your particular printer.

The major change in T3 is the way print drivers are implemented. In the past the driver was integral to the program, making it difficult to implement new printers. Version 2.1 has moved the driver to a modular program and implemented a control program that can be modified by the user. TCI will also sell you source code for one of their drivers if you want to learn how to make your own. Drivers for most popular printers, including the Toshiba P351 and the HP Laser Jet, are available. It's recommended that you use one or the other of these printers as others are intolerably slow. The quality of these printers is quite acceptable as can be seen from the figure.

T3 is menu-driven and is relatively easy to remember how to use. It does require at least 512k of memory and would be very difficult to use without a hard disk. The documentation is good with a well-indexed reference section as well as an extensive tutorial. I have not had personal experience with their telephone support but I have been told by others that it is outstanding.

If you have heavy duty scientific word processing to do then T3 may be the answer.

T3 With a Toshiba P351

$$\nabla \times \vec{B} = \mu_0 \vec{J} + \mu_0 \epsilon_0 \frac{\partial \vec{E}}{\partial t}$$

T3 With an HP Laser Jet Plus

$$\vec{B} = \mu_0 \vec{J} + \mu_0 \epsilon_0 \frac{\partial \vec{E}}{\partial t}$$

HOCKNEY'S EGG

Roy Kerth

The EGG is a scientific word processing program written by George Hockney of the Physics Department at UCLA. It is distributed by the Peregrine Falcon Company, 2330 Marinship Way, Suite 307, Sausalito, CA 94965 (415) 331-8131. Cost: \$495.00.

In spite of its whimsical name, The EGG is an excellent system.

As a word processor it has a few drawbacks. For example, it does not have a "CENTER" command. (I have been told that this will be corrected in the next release).

The EGG is easy to learn and I found that I was quite comfortable with it after about an hour -- even having to learn some strange terms for commands (e.g., "COLLECT" to start a new document).

The EGG uses commands entered on a command line at the bottom of the screen. These commands can become quite long (each may carry a number of arguments.) For example:

"PRINT ALL MAR 12 TOSHIBA"

prints the entire document on a Toshiba printer -- with a left margin of 12 characters. To be sure, defaults can be set to shorten the command.

As with many word processors, pagination is done at print time so that one does not see correct pagination on the screen. This may be more of an assumed drawback than a real one; I found that I did not notice the deficiency while typing notes for my class. Since The EGG does show line numbers, you can keep track of where you are.

The EGG uses control characters for many of its editing functions. For example ^B deletes the character under the cursor, ^J, ^P, and ^K are the block move/delete functions. Wordstar experts will like

this.

As a scientific word processor, The EGG is very good! There are some 768 different characters that can be bold, italicized or both. The technique for finding all of these is reasonably straightforward and, with the help of tables to get started, I found that I rapidly learned where to find the ones I needed most often. If these are not enough to satisfy you there is a font editor that allows you to define your own. It is one of the easiest I have used.

Like other high-quality scientific word processors, a formula of several lines is recognized as belonging to a single line -- so that a formula (or sub- or superscript) can be moved as a unit. In fact, parts of one logical line can overlap another line and The EGG still keeps it straight as to which is which.

Installation of the system is straightforward and well-documented in the excellent manual. The manual, written by George Hockney himself -- using The EGG -- is well-written and occasionally humorous.

Over all, The EGG is an outstanding program. It works very well from floppies on a system with only 256k of memory. It is easy to learn and does an excellent job with the better printers. If you need less than the true professional word-processing bells and whistles then The EGG may be your best bet.

Hockney's Egg With a Toshiba P351

$$\nabla \times \vec{B} = \mu_0 \vec{J} + \mu_0 \epsilon_0 \frac{\partial \vec{E}}{\partial t}$$

BRIT 'MACRO TEXT'

Roy Kerth

Brit 'Macro Text' -- or MT -- is a scientific word processing system written by Robert E. Huff and distributed by Taylor & Francis, Inc., 242 Cherry Street, Philadelphia, PA 10106-1906. (1-800-821-8312). Cost: \$195.00

MT is a bit limited when compared to the others reviewed in this survey. However it costs about half as much as the others.

As a word processor it is very easy to learn. After a half an hour I was confident enough to use it to type an examination.

MT uses the cursor keys in the usual way but control characters can also be used by the touch typist. For example **^E** moves the cursor up and **^S** moves it to the left, etc. Wordstar users should appreciate this. There are help screens that can be called as needed. A message/command line appears at the bottom of the screen. There are two menus that are called with the **f8** and **f9** function keys. The **f8** menu provides for centering text setting margins and other formatting commands. The **f9** menu is for file handling such as "SAVE," "READ," "CREATE" a macro etc.

While MT is very easy to learn it does have some shortcomings as a word processor.

- The maximum line length is 78 characters.
- It does not support a block move command. You must copy the text and then delete.
- Some of the functions take several key strokes to perform. For example, it requires an **f8**, an **f1** and then the **C** key to center text.
- Tab stops are set every 5 spaces. There is no apparent way to change them.

It also gives you no indication of pagination or even what line you are on so you can't even guess!

The special character sets are very easy to access. There are three sets, each with 94 characters, in addition to the regular set. Characters from any one of these are entered by first pressing the **f1**, **f2** or **f3** key followed by a key for the character. For example **f1** followed by **d** gives you a Greek delta. Set 1 is primarily devoted to Greek characters with a set of small numbers. Set 2 contains mathematical symbols and Set 3 contains some special bold and script characters. A keyboard map for the character sets may be obtained at any time by pressing **f10**. The standard characters can be switched to italic with **f4**.

As with the other two systems in this review the cursor can be moved up or down in half line steps, in this case with **PgUp** or **PgDn**. These rows are all considered part of the same line so that formulas built up in this way can be moved around as a unit. Macros can be defined and saved to disk for future use. A nice feature of the macro capability is that the "Ins" key, entered while defining a set of key strokes for a macro, will generate a 'stop' in the macro. For example you can have the macro stop for you to enter limits on an integral sign. And then continue.

MT is an excellent technical word processing system. I recommend it highly for applications of moderate use where the minor shortcomings are less important than ease of use. It will get your job done with very little time wasted on learning how to use complicated professional features that you might use only occasionally.

Brit Macro With a Toshiba P351

$$\nabla \times \vec{B} = \mu_0 \vec{J} + \mu_0 \epsilon_0 \frac{\partial \vec{E}}{\partial t}$$

REVIEW: SPELLBINDER SCIENTIFIC

Claudia Madison
Physics Dept., UCB

Spellbinder Scientific is a scientific word-processing system distributed by Lexisoft, Inc., Box 1950, Davis CA 95617. System requirements: IBM PC or HP150 or compatible with graphics (See Figure 1 for supported hardware.) Cost: \$790.00 complete with Spellbinder and all macros and utilities. Upgrade: \$295.00 for those who already have Spellbinder Copy-protected.

That Spellbinder is not the most friendly word processing package around is well-documented.¹ But the friendliest of word processors might turn tail when the relationship gets rough. Ask it to take care of your footnotes for you or to print multi-line headers or to watch out for widows and orphans -- then you'll find out who your friend is. Spellbinder does all this and more, and its Spellbinder Scientific incarnation is more friendly than plain Spellbinder. However, I don't want to give the impression that Spellbinder in either form is a pushover; it is not the program for the timid or for those who don't need a great deal of power and flexibility from their word processor.²

SPELLBINDER SCIENTIFIC FEATURES

Among the niftiest things I've ever seen in a scientific text processing system is Spellbinder Scientific's method for handling large symbols: tell it what symbol you want in your equation -- brackets (square or curly), sigma, integral, radical -- and tell it where to put the symbol. The program constructs the symbol of the proper size all by itself.

Spellbinder Scientific has respect for theoretical physicists, apparently. Imagine one of those equations that stretches for pages. This program lets you fiddle with -- move, delete, insert, copy, or center -- any part of

¹PC Magazine, August 20, 1985; January 28, 1986.

² Spellbinder is more than a word processor. The package also includes a simple file card and list management system, merge printing program, spelling checker, grammar checker, calculator, and more.

the equation without disrupting the rest of it. Equations or their parts can be copied to or read from disk, and there is a facility to store things in RAM for quick recall.

Another winning feature is the Spellbinder Scientific font editor. The program has 1,000 characters in normal, italic, mathematics, and chemistry fonts. Most characters also come in small sizes to be used for sub- or superscripts. All characters can be modified. The macro that does this is so easy to use that I did it the first time I tried -- and I'm a person who tends to go glassy-eyed at the mere mention of pixels.

Installation of Spellbinder Scientific is as easy as 1-2:

- (1) Pick a graphics card from the menu, and
- (2) pick a printer.

Figure 1 details the entire installation process.

My final words of unqualified praise go to the Quick Start manual distributed with Spellbinder Scientific. In twenty easy pages, it goes through configuration and basic document and equation editing and printing.

In general operation, I found Spellbinder Scientific to be only slightly more difficult to manage than any other word-processor. It works almost exclusively with context-dependent function key menus. Some of the cursor keys behave in unique ways, and the program bizarrely inserts a half-screen of space in insert mode. I found all of this irritating for the first five minutes, but then it began to make sense, so either I have gone a little loony, or the program does have a kind of logic to it. The method of marking, moving, copying, and deleting text is also odd, but again, I grew accustomed.

RESERVATIONS ABOUT SPELLBINDER SCIENTIFIC

Neither in regular editing mode nor in math editing mode is there an obvious way to get one-half vertical line-spacing. Typing equations in single space makes them too spread-out for my taste. See Figure 2.

While the program has a fairly flexible way to backspace and overstrike a single sub- or superscripted character, there is no way to pile on several characters. Most scientific text processors are unable to put a vector over an upper case A and then put a dot over the arrow. Spellbinder can't do it either, but in about two minutes flat I went into the font editor and created the character.

In simple use, the program is almost, but not entirely, WYSIWYG.³ The more complex the demands made on it, the more dot commands and imbedded line commands build up to what might be alarming

proportions. (Being an unreconstructed Wordstar user, this defect doesn't bother me as much as it might others.)

Spellbinder Scientific is slow, especially in screen scrolling and running long documents through paging and formatting macros to do really fancy printing.

FINALLY...

I'd bet that there are a few scientific text processing problems that can't be solved one way or another with Spellbinder Scientific. It is not a very pretty program, though, not glamorous at all. And it's not something I would wish on an unsophisticated user. It is a system I would recommend to those IBM PC users who have come to me wanting a program that does script E's and footnotes and odd-even page-numbering. I'd just hope they had time and patience to tinker with Spellbinder Scientific. The program has the stuff to do just about anything, and, for a special breed of users, would be a true friend.

IBM GRAPHICS PRINTER OUTPUT OF SPELLBINDER SCIENTIFIC

$$\vec{A} = \sum_{i=-\infty}^N \left[\frac{A_2}{\partial^x} \right] \sqrt{\frac{|F \mp V|}{f}}$$

³ What You See Is What You Get.

Fig. 1: Configuring SPELLBINDER SCIENTIFIC

A> reconfig
A> SCONFIG /1

SPELLBINDER SCIENTIFIC VERSION 6.03 CONFIGURATION PROGRAM

This Program will create or modify the Spellbinder SBS.DAT file and create the appropriate graphics file.
To exit this program, press "CONTROL-C".

Scientific/Graphics Displays

- 1 IBM Color/Graphics Monitor Adapter
- 2 IBM Enhanced Graphics Adapter
- 3 Hercules Graphics Card (10x10 cell - for organic chemistry applications T}
- 4 Hercules Graphics Card (9x12 cell)
- 5 IBM 3270 PC (10x10 cell - for organic chemistry applications)
- 6 IBM 3270 PC (9x12 cell)
- 7 HP TouchScreen Computer (HP 150)

Enter the number for your display: #4

Scientific/Graphics Printers:

- 1 Hewlett-Packard LaserJet 2686A
- 2 Epson FX-80
- 3 Epson MX-80, FX-100
- 4 IBM Graphics Printer
- 5 Epson LQ1500
- 6 Toshiba P1340
- 7 Santer S-700

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