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PUB-489

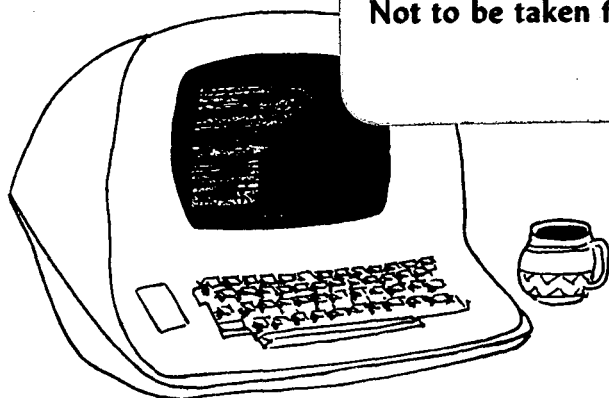
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LBL COMPUTING NEWSLETTER

Lawrence Berkeley Laboratory
University of California, Berkeley

Volume 20, Number 9

September, 1983

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To get on the mailing list for the LBL Computing Newsletter, contact Dortha Hines, 50B/1129, x6094.

Newsletter Closing Date is September 15, 1983.

Address all communications for the Newsletter to Maggie Morley, Editor, 50B/1245, (415) 486-5529; or to login **mam** on VAX and/or UNIX.

LBL COMPUTING NEWSLETTER

PUB-489

NAMES AND NUMBERS TO KNOW

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

COMPUTER POLICY BOARD

50D/106	x6722	William A. Lester, Jr., <i>Chairman</i>
50A/4112.....	x5511	Walter D. Hartsough
50B/3238.....	x5313	Paula K. Hawthorn
50A/4119.....	x5131	George L. Pappas
90 /3215	x6286	Henry Ruderman
50 /137	x7087	Mark Strovink
90 /1106	x5728	Chin-Fu Tsang
71 /259.....	x4825	Michael S. Zisman

OFFICE OF COMPUTING RESOURCES

50A/4112.....	x4764	Robert J. Harvey, <i>Head</i>
50B/2258A.....	x5739	James A. Baker
50B/2258B.....	x7344	David F. Stevens
50B/2258C.....	x7083	Kenneth G. Wiley

COMPUTATION DEPARTMENT

50B/2232E.....	x5224	Paul Rhodes, <i>Department Head</i>
50B/2232A.....	x5775	Howard White, <i>Deputy Department Head</i>
50B/2232B.....	x6287	Margaret Yamada, <i>Administrator</i>
50B/2232C.....	x6296	Everett Magnuson, <i>Budget Manager</i>
50B/2262C.....	x5455	F. Marvin Atchley, <i>Computer Operations & Networks</i>
50B/2232D.....	x5351	Eric Beals, <i>Consulting & User Relations</i>
50A/1127A.....	x5568	Jerry Borges, <i>Operating Systems & Product Set</i>
50B/2274A.....	x6019	John Colonias, <i>Applications</i>

DEPARTMENTAL SERVICES

50B/2232.....	x5871,2	Central Office Number
50B/1245A.....	x5981	Consulting Office
50B/1245.....	x5529	Computation Department Library: Maggie Morley
50B/1215.....	x6211	Operations
	x5311	Coke/Cope Operator
50B/2249.....	x6205	Expediter Services: Irene Bernal
50B/2215A.....	x6256	Keypunch Service
50B/2249.....	x6219	PSS (Program Storage System): Tape Services
50B/1245.....	x6094	GSS Tape Repair Service: Dortha Hines
50B/1245.....	x6094	Sticky Label Service: Dortha Hines
90 /3136.....	x6494	Building 90 Remote Job Entry (RJE) Station
50B/2276.....	x6310	To open or change an account, Fran Permar
50B/2232.....	x5654	Guest cards, locker space, & parking permits: Gean Broughton
50B/2249A.....	x7444	To connect a remote terminal (RJE or interactive): Ann Mills
50B/2259.....	x5354	Terminal or Port Repair: Electronics Maintenance
50B/1237A.....	x7005	UNIX System Manager: Chuck Cooper
50B/2262.....	x6720	VAX System Manager: Randall Bean
50B/2262A.....	x5234	VAX System Manager: Gil Johnson
50B/1245A.....	x5529	Introductory seminars: UNIX: Maggie Morley
50B/1245.....	x6094	WRITEUPS & HANDBOOK on fiche: Dortha Hines

PUB-429 12-82/1200

Prepared for the U.S. Department of Energy under Contract DE-AC03-76SF00098

TERMINAL SWITCH ACCESS NAMES

COMPUTER	DEVELCON DIRECTORY NAME	- - - GANDALF CLASS CODE - - -		
		300 bps	1200 bps	9600 bps
VAX Program Development Machine	PDM	na	na	na
VAX Numerical Modeling Machine	NMM	na	na	71
VAX Interactive Graphics Machine	IGM	na	na	73
PDP 11/70 (UNIX 1)	UNX1	15	na	11
PDP 11/70 (UNIX 3)	UNX3	55	na	51
CDC 6600B, 6400C	RECC	05	03	01
IBM 4341 (UCB)	CCDB	na	na	na

- (1) **na** means NO DIRECT ACCESS. However, Indirect access from GANDALF to all computers is available via DEVELCON.

GANDALF class code **67** connects you to DEVELCON.

(Then) enter **return** (<cr>) so that DEVELCON can determine your terminal speed.

DEVELCON responds with **Request**:

(Then) you enter your DEVELCON directory name and a carriage return.

(If you use this method more than occasionally, please contact Sig Rogers, x6713).

- ‡ **Note:** There are many additional hosts operated by other groups that are available on the terminal switches. To gain access, you should make arrangements directly with the appropriate group representative.

(2) ACCESS FROM GANDALF/DEVELCON

GANDALF -- with TSB[♠]

1. Turn on terminal.
2. Push button on TSB.
3. When green light comes on, hit <cr> (return).
GANDALF will prompt with an asterisk (*)
5. Enter class code (e.g., "51" for UNX3) & <cr>
GANDALF will prompt with **SERVICE XX START**
6. Another <cr> will get you the host prompt.

GANDALF -- without TSB[♠]

1. Turn on terminal.
2. Hit **BREAK** key.
GANDALF will prompt with an asterisk (*)
3. Enter class code (e.g., "11" for UNX1) & <cr>
GANDALF will prompt with **SERVICE XX START**
4. Another <cr> will get you the host prompt.

DEVELCON

1. Turn on terminal.
2. Push button on TSB[♠]. When green light comes on, hit <cr>.
3. When you get a **Request**: prompt, enter host directory name (e.g., **unx1**), followed by a <cr>.

- (3) **DIAL-UP ACCESS** to DEVELCON is available.

486-4959 -- 300 BPS

486-4979 -- 1200 BPS

VA-3400 & 212A equivalent.

... Sig Rogers, x6713

[♠] (Blue) Terminal Support Box

NEWS OF LOCAL USER GROUPS

Lab folks who are interested in establishing a Local User Interest Group on site should contact Dennis Hall, x6053.

>> DATATRIEVE LUG NEWS <<

LUG OFFICERS INSTALLED

Officers were installed at the August meeting of the DATATRIEVE Local User Group. As follows . . .

Chairperson - Noel Brown (x4387)
 (Co-Chairperson - Valerie Sherriffe)
 Program Director - Valerie Sherriffe
 Membership Chairman - Brenda Butler (x6585)
 Newsletter Editor - Dortha Hines (x6094)
 Steering Committee
 Virginia Sventek (x5216), Dick Shaw (x5998),
 George Towns (x5020), Bruce Bagnoli (x6011)

The next meeting of the Datatrieve User Group will be held at 1:30 PM Monday, September 19, in the Bldg. 70A Conference Room (70A/3377). For more information, contact LUG facilitator . . .

. . . Valerie Sherriffe, x5362
 or x4460

=====

>> GRAPHICS LUG NEWS <<

FIRST LUG MEETING AT LBL

The first meeting of the GRAPHICS Local User Group will be at 10 AM Friday, September 23 in the Bldg. 50A Conference Rm., (Rm. 5132.) Representatives from ISSCO (Integrated Software System Corp.) will give an instructional software presentation covering TELL-A-GRAF, (conversational interactive graphics), CUECHART, (prompting system of stencil-driven charts) DATA CONNECTION (database, file, report, interactive program connecting to graphics), TELA-PLAN, (a project management & planning charting system). There will be an on-line demonstration of the IBM Personal Computer (IBM PC) interface with TELL-A-GRAF. A Computer Graphics Survey Questionnaire, vendor documentation, reference cards, pocket guides, 3D Slide Viewers, color video presentations, and 'Getting Started' documentation will be available. For more info, contact . . .

. . . Jim Miller, x6255
 (JMILLER on IGM)
 . . . Bill Bagot
 . . . Nick Armstrong

>> RT-11 LUG NEWS <<

NO SEPT. RT-11 LUNCH BUNCH MEETING

The RT-11 User (Lunch) Group meets on the first Thursday of each month at noon in the Bldg. 46A (RTSG) Conference Room. Modern software engineering techniques were discussed during the June and July meetings.

THERE WILL BE NO SEPTEMBER MEETING

Meetings will resume in October. For more info, contact . . .

. . . Mike I. Green, x4607

=====

PERSONAL COMPUTER LUG

After the recent IBM PC (extended) and APPLE LISA demonstrations, several users expressed interest in forming a Personal Computer Local User Group.

The contact person at UCB for pricelists and discount packets is Penny Gee, 642-5205; the contact person at LBL is Kathleen Handron, x5474.

Those interested in initiating an organizational meeting should contact Maggie Morley, x5529 (mam/MAM on unx/VAX) or . . .

. . . Jim Miller, x6255
 (JMILLER on IGM)

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VAX LUG NEWS

The next meeting of the VAX Local User Group, will be held at 3 PM Tuesday, September 20, at the Director's Conference Room, Bldg. 50A, Rm. 5132. For more information, contact LUG facilitator . . .

. . . Nancy Deerinck, x4691
 or x6411

=====

RSX LUG NEWS

Users interested in attending the September meeting of the RSX Local User Group should contact . . .

. . . Everett Harvey, x6411

>> SICBIG NEWS <<

CARPOOL TO SICBIG

SICBIG, the Special Interest Committee on Large High-Speed Computers (established in the Golden Gate Chapter of the Association of Computing Machinery) meets on the first Wednesday of each month. . 0. Those who would like to participate in a carpool to the meeting should contact Frank Olken (LBL, x5891)

For more info, contact Frank or

Mary Fowler
Technology Development of America,
Advanced Computation Facility,
233-3 NASA Ames Research Center
Moffett Field, CA 94035

(415) 965-6515

ACM DINNER MEETING

Dr. David Redell (Xerox) will speak at the September Dinner meeting of the San Francisco Peninsula Chapter of the Association for Computing Machinery. His topic: *The Clearinghouse: Resource Location in a Distributed Computer System*. (This is a discussion of the Xerox 8000 network system -- workstations and servers communicating via ethernet -- and its directory service, the Clearinghouse.)

Particulars: **Location** -- Mariani's, 2500 El Camino Real, Santa Clara. **Schedule** -- 5 PM, Council Meeting. 6 PM, No-host Cocktails. 7 PM, Dinner. 8 PM, Speaker. **Cost for the dinner**, \$13.50/members -- \$14.50/non-members. (No charge to hear speaker). To reserve, call (408) 739-9882 before Tuesday, Sept. 6. For more info, contact Mary Fowler (415) 965-6515 or

... Frank Olken, x5891

VAX CLASSES IN SEPTEMBER

VAX user classes will be given in September from 10 AM to noon in the NRCC Conference Room, Bldg. 50D, Rm. 116.

Wednesday	September 14
Friday	September 16
Wednesday	September 21
Friday	September 23

The number of participants is limited, and advance registration is required. To register, please contact Lisa Long, x5947.

... Noel Brown, x4387

APPLICATIONS GROUP NOTES

Periodically, I receive micro-computer systems for evaluation. Very recently, I received an **OSBORNE EXECUTIVE**, which I have in my office. I'm presently experimenting with this "portable" computer and next month I will report some of my findings.

I would be happy to set up a demonstration for anyone who would like to see this system in operation.

Contact . . .

... John Colonias, x6019
Bldg. 50B, Rm. 2274A

CHARACTER BUILDING

A font-editing program, allowing easy modification of existing **Versatec** character sets, will soon be available for use by the Department's **UNIX** text processing staff. As soon as it is, we will begin to clean up the Versatec's somewhat messy character sets, improving its output quality.

There are many little (and some not-so-little) corrections to be made, so we will be making lists of characters to "tune up." If anyone has any suggestions for any Versatec character corrections or tune-ups, please let us know. Be sure to include the **font name** and **point size**, and the character's **Troff name**.

... Ken Whaley, x6363
whaley on UNX3
... Marty Itzkowitz, x5893
marty on UNX3

"...pay close attention to ... tiny chips of silicon that engineers call "integrated circuits." Like the industrial revolution that extended the influence of man's muscles, the electronics revolution will extend the influence of his mind, enabling him to reach new levels of mastery and control. ... The revolution is spreading through our society. Many of you will contribute directly to the new technology...I urge you to be bold and imaginative. Replace the old with the new when circumstances so dictate. Think in unconventional ways. Create uses never before possible. Invent completely original technologies."

... Harry J. Gray

ARPANET/MILNET

On October 4, 1983, the ARPA Network will be restructured into two networks, **ARPANET** and **MILNET**. ARPANET will provide an environment for experimental networking, while MILNET will be a stable operational network. The Numerical Modeling Machine will be located on MILNET and will continue to be known as LBL-NMM. Mail service is the only currently planned link between ARPANET and MILNET.

As the entire ARPA Network will be logically reconfigured on October 4, some negative short term user impact is anticipated. In order to minimize these effects on our user community, we ask cooperation in accomplishing the following items.

All MILNET TAC users will be *REQUIRED* to register with a network host in order to continue to access hosts on MILNET. TAC users of LBL-NMM will be asked to register during the month of September. Temporary guest passwords will be made available for those who have not registered by October 4.

All non-TAC users will be *REQUESTED* to register with a network host. Users of MILNET, who originate at LBL-NMM, will be asked to register during September. Users of MILNET, who use LBL-NMM as a remote host, will be asked to register with the machine from which they access MILNET.

Users of the ARPA Network may want to ascertain that hosts which they access and/or TACs which they use will also be moving to MILNET. A list, showing how the existing ARPA Network Users will be split, is available through the Computer Center Library. This list is also available on-line at SRI-NIC, filename `<NETINFO>MILNET-ARPANET.LIST`. Any LBL NMM-MILNET user who has a need to access machines which will be located on ARPANET and NOT on MILNET should contact me (nmm-merola) at their earliest convenience.

... Sandy Merola, x4389
merola on NMM

"Nobody roots for Goliath."

... Wilt Chamberlain

GRAPHICS AT LBL's COMPUTER CENTER

The Computation Department supports a number of graphics software packages on the CDC and VAX computers. These packages will drive a large variety of different graphical devices, including various Tektronix terminals, the AED512 color raster terminal, the IMLAC Series II vector list processor terminal, various styles of plotters and the DICOMED D48 film recorder. Additionally, a GRINNELL color frame buffer is available through the Interactive Graphics VAX. The remainder of this article presents a brief overview of the currently supported graphics software and hardware. Visit the graphics rooms (Bldg 50B, 2265-67) or type **'help @grafhelp'** on a Computer Center interactive VAX computer for further information.

GRAPHICS SOFTWARE

- o DI-3000, CONTOURING, GRAFMAKER, GRAFEASY
- o GRAFPAC, IDDS
- o MOVIE.BYU
- o SDL/SGL
- o TELL-A-GRAF, CUECHART
- o UGS, HBOOK, HPLOT, DISPLAY
- o GRINNELL SOFTWARE PACKAGES

SUPPORTED COMPUTER GRAPHICS SOFTWARE

DI-3000

DI-3000 is available on the Interactive Graphics VAX. It is a commercially developed package, and is based on the ACM/SIGGRAPH 'CORE' recommended standard. DI-3000 provides 2D and 3D primitives, color capability, graphic art quality text, general 3D projections (perspective, orthographic, and oblique viewing), and polygon fill and patterning. DI-3000 is fully interactive, and contains the capability of dealing with image segments, that is, the ability to break up a picture into pieces and to be able to manipulate them separately. It contains drivers for the IMLAC Series II, Tektronix 4014, AED 512 and ADM3A-Retrographics terminals, the ZETA 1453 plotter, the DICOMED D48 and a device-independent Metafile generator and translator. Some 38 other vendor-supported device drivers can be made available. It does not contain drivers for the VARIAN plotter or the GRINNELL color frame buffer. (The product includes **CONTOURING**, **GRAFMAKER** and **GRAFEASY**).

GRAFMAKER

GRAFMAKER is a set of subroutines developed by the DI-3000 vendor, Precision Visuals, for use in preparing pie charts, line graphs and bar graphs. Application programs are written which call GRAFMAKER subroutines to specify the appearance of a picture to be output to one or more graphics devices. To initialize and control the graphics display device(s), GRAFMAKER calls subroutines in DI-3000. The GRAFMAKER user is generally isolated from DI-3000. However, DI-3000 subroutine calls may be included in a GRAFMAKER application program to utilize interactive input with graphics cursor or light pens. DI-3000 also may be used to add to a picture images not supported by GRAFMAKER, such as logos or other customized symbols. DI-3000 Metafiles may be created using GRAFMAKER. These libraries of pictures may be processed later using the Metafile Translator. At that time the pictures may be drawn on any supported graphics display device.

GRAFEASY

GRAFEASY, a set of FORTRAN subroutines based on GRAFMAKER, allows you to generate charts with only a few calls. Relying on defaults set to popular values, you can define pie charts, line graphs, and bar charts with minimal effort. In GRAFEASY, picture space and chart space are identical. This means that you may have, at most, one chart per picture. GRAFEASY automatically sets the aspect ratio to use the maximum view surface of your device. You cannot mix GRAFMAKER and GRAFEASY calls within an application program because GRAFMAKER uses a picture storage area that is not accessible to the user.

CONTOURING

The Precision Visuals Contouring system is a collection of routines that provides grid generation and contouring capability. DI-3000 subroutines are used to generate the graphics. A rich set of options allows extensive control of map characteristics. Each option is set to a reasonable default initially, allowing the user to produce attractive maps with minimum effort.

GRAFPAC

GRAFPAC is available on all Computation Department VAXes and the CDC 6000s and 7600. It is a locally-developed package, and provides generalized lettering and the ability to draw lines and points, fill areas, etc., in two dimensions. GRAFPAC provides full color and interactive capability (although it is not truly interactive), and contains drivers for many different graphic devices available at LBL. It has a Metafile generator and translator, and AED512 and IMLAC drivers are available through DI-3000 integration. The IDDS, MOVIE.BYU and SDL/SGL graphics packages utilize the device independence and device driver capabilities of GRAFPAC.

IDDS

A complete version of IDDS is available on the CDC 6000s and 7600, and a limited version on the VAXes. IDDS was originally developed at NCAR, and provides the ability to produce simple 2D plots, polar plots with non-linear radical coordinates, perspective representations of complex 3D solids, surface and contour plots of 2D scalar fields, streamline plots of 2D vector fields, iso-surface plots of 3D scalar fields, etc. The full range of GRAFPAC-driver devices is available; there is full color but no interactive capability. The VAX version provides the simple 2D plots and limited 3D capabilities.

MOVIE.BYU

A limited version of MOVIE.BYU is available on the VAXes. MOVIE.BYU was originally developed at the Brigham Young University to provide shaded pictures for engineering application; it has evolved into a generalized 3D geometrical package for the display and manipulation of data representing mathematical, architectural and topological models whose geometry may be described in terms of n-sided polygons and solid elements, or contour lines. MOVIE.BYU can display the 2D or 3D descriptions of objects as either line drawings or continuous-tone images, clip and cap the image of the object to expose internal surfaces, have its geometry modified, make additions to the images to convert complex contour line definitions into polygonal element

mosaics, and update the geometry file format. It contains color and interactive capabilities. The section and mosaic modules of MOVIE.BYU have not been implemented in our version.

SURFACE DISPLAY/SURFACE GRID LIBRARIES (SDL/SGL) is a commercial package which is available on the CDC 7600. SDL generates surfaces in the form of contour maps, perspective views of contour maps, and mesh plots; SGL accepts surface height data at scattered points and produces a continuous representation of the surface on a rectangular grid. A VAX version of SDL/SGL may become available soon. The full range of GRAFPAC-driven devices is available; there is no interactive or color capability.

TELL-A-GRAF

TELL-A-GRAF (available on the Interactive Graphics VAX) is a conversational computer graphics system that produces publication quality charts and graphs; it may be run in time sharing or batch mode. The user creates graphics using English-like commands. He needs to enter only a few basic instructions to produce a fully designed chart, as TELL-A-GRAF supplies values for any unspecified features. Or, he may design complex charts and store them for a less sophisticated user to access at another time. Both the computer novice and the experienced programmer will find TELL-A-GRAF an effective tool for the timely creation of professional-looking graphics. Device drivers are available for the AED767, Tektronix 4010 series, ADM3A-Retrographics, AED512, VT125 and GIGI terminals, ZETA 1453 plotter, various HP series devices, and numerous other vendor supported device drivers can be made available.

CUECHART

The CUECHART system sets a high standard for user-friendliness in computer-aided chartmaking. It is designed to be used immediately by persons with little or no computer experience; you select the CUECHART number (pie, bar, line, etc.) you want from the back of the manual, answer a few questions about data and names of data and then the chart is ready to be produced. Once you have completed the CUECHART question and answer session, the chart information is available in proper format to be sent to TELL-A-GRAF, the companion graphics product, which actually does the drawing of the chart; and then the PLOTSEND command will query you for process and label information for the output.

Unified Graphics System (UGS)

HBOOK, HPLOT, DISPLAY

The Unified Graphics System (available on all Computation Department VAXes) is a collection of FORTRAN routines which are designed to run on a number of computers and control almost any line drawing graphic device. The system also supplies an interface to creating pictures on various site-specific graphic devices that are supported at the scientific institutions where UGS is installed. This picture creation interface means that programs can be written which will run with a wide variety of graphic devices at various specific sites. At the same time, this system allows a programmer to take advantage of many of the special features of a specific graphic device. In taking advantage of these feature, though, the programmer may limit the number of graphic devices that the program can use.

HBOOK is a FORTRAN-callable histogramming facility, whose purpose is to define, fill and edit histograms, scatter plots and tables. The quality of HBOOK line-printer output is usually not good enough for publication purposes. To provide for this, the HPLOT package may be used.

HPLOT is a FORTRAN-callable facility for giving HBOOK output on devices other than the line printer. Its main design objective is to be able to produce drawings and transparencies of a quality suitable for talks and publications. The HPLOT output is, of course, not restricted to the line printer or character size. HPLOT can utilize the Unified Graphics System (UGS) to produce output on a number of devices (Versatec printer/plotter, Grinnell color and black-and-white display monitors, Tektronix 4010-series graphics terminals, etc.)

DISPLAY is an interactive program which uses HPLOT and makes histograms or scatter plots on the Versatec printer, Grinnell displays, Tektronic 4010-series, or an ADM3a equipped with Retrographics.

GRINNELL Software Packages

Software presently available (on IGM) for the GRINNELL frame buffer work station includes a FORTRAN-callable software package (written by GRINNELL system), which provides full user access to all possible GRINNELL display functions. Some tools have been developed at LBL which use the package. These tools do some specific image digitizing tasks and serve as an example of how to initialize the workstation, save and recall digitized images, and simple use of the digitizing camera.

GRAPHICS DEVICES

A wide variety of graphic devices are supported including various terminals, plotters, and film recorders. The terminals listed below and the hardcopy printer are located in the Computer Center graphics rooms 2265-67, Building 50B. The plotters and film recorders are located in the Computer Center Operations area, Bldg. 50B, Rm. 1215. The Phototypesetter is located on the second floor of Building 90 in the Technical Information Department, and is included here for completeness.

o DEVICES

- AED 512 color terminal
- IMLAC Series II display list processor terminal
- Grinnell frame buffer and digitizing camera
- Tektronix 4014 series terminals
- Tektronix 4631 hardcopy printer
- ZETA 1453 4-color pen plotter
- ZETA 3600 4-color pen plotter
- Varian 9211 electrostatic plotter
- DICOMED D48C film recorder
- SC4460 COM recorder device
- Summagraphics Bit Pad One

o OTHER PRINTER/PLOTTERS (Used for text)

- VERSATEC V-80 electrostatic plotter
- Phototypesetter APS-Micro 5 (TID)

SUPPORTED COMPUTER GRAPHICS HARDWARE

AED-512

The AED512 color raster display terminal supports 8 primary colors (white, red, green, yellow, blue, magenta, cyan, black) with vector and area-fill imagery. The raster size of 512 x 512 pixels is capable of displaying 256 simultaneous colors (out of 2²⁴ possible) of variable hue, saturation and lightness. The AED's have a joystick, programmable cursor, pan and zoom features, and Summagraphics graphics tablet and stylus.

IMLAC Series II

The IMLAC Dynographics/series II calligraphic display terminal is a vector display list processor with the ability to display 2500 one-inch flicker-free vectors on a 2048 x 2048 point grid. The screen size is a 19 inch diagonal measure with 11-inch square viewing area. This vector refresh terminal allows you to selectively move, change or erase a segment without erasing & redrawing the whole segment. The IMLAC has a 92-key keyboard unit, light pen, programmable cursor, and Summagraphics graphics tablet & stylus. The storage tube emulator provides a command set and graphics capabilities similar to a Tektronix 4014 terminal.

GRINNELL FRAME BUFFER

The Grinnell Frame Buffer, with a high-resolution digitizing camera from COHU, Inc. is available with joystick, programmable cursors, pan and zoom. A frame buffer is used for reasonably fast display of raster (digitized) images. Our Grinnell system is a GMR 274

Image Processing System with 512 x 512 visible resolution (30 Hz interlaced, 559 line format) on a 19" Mitsubishi color monitor. There is a control terminal adjacent to the monitor specifically for the Grinnell user.

The camera, mounted on a 14" x 17" light table, can record front-lighted opaque surfaces and back-lighted transparent surfaces. The image can be viewed on the Grinnell's 19-inch monitor, in order to adjust the camera control settings, focus, and lighting. With the monochromatic television camera, the Grinnell workstation is capable of digitizing live images.

TEKTRONIX 4014 (4010 Series)

The Tektronix terminal consists of a storage CRT, a keyboard, & two thumb-wheels for controlling the cursor. The terminal sends and receives 8-bit ASCII characters. The storage scope is a device for retaining a picture by means of a stored charge directly on the face of the tube. An erase cycle removes the stored charge from the entire screen and subsequent commands cause characters, points, and lines to be drawn on the screen. Each character is drawn on the screen and the device behaves as a teletype until a control character causes it to enter plot mode or cursor mode. In plot mode, subsequent characters are interpreted as coordinates to draw vectors. (A point is a zero length vector.) An escape character returns the terminal to character mode. The graphic software uses these two models to draw characters, points, & lines on the screen. The plotting area

used by the graphic software is a 12-inch square on the right side of the screen. This gives a square plotting surface and leaves the left side of the screen free for messages in the usual teletype format. The terminal has 4 sizes of hardware characters, 5 hardware line-styles & 4096 addressable points available.

TEKTRONIX 4631

The Tektronix 4631 copier provides permanent dry hard-copy 8 1/2 x 11 inch size, 3M dry silver-type paper copies of information displayed on a terminal screen. Image is 6" square, centered on the page, & is oriented top to bottom along the 11-inch dimension. The printer is multiplexed to make copies from the Tektronix 4014's and IMLAC Series II terminals.

ZETA-1453

The Computer Center's Nicolet ZETA Model 1453SX hardcopy, digital drum plotter is attached to the IGM VAX. It uses 4 colored liquid roller pens (black, red, green, blue) and a plotting area of 11 inch by up to 144 feet on a sprocket-hole translucent white paper. Acetate film, for overhead projected viewgraphs (used with nylon tip pens) is available as is translucent 8 1/2 x 11-inch fanfold, and a high quality bond paper. A switch-selectable line resolution of 0.001 inches is available.

ZETA-3600

This ZETA-3600 plotter is a 34-inch incremental pen plotter. It has four software addressable pens (black, red, blue, green) and four hundred steps per inch. ZETAs presently are the only color pen plotters at the Computer Center and this is the device with the highest addressable resolution. The x-direction can be up to 120 feet long (the length of the roll of paper). The y-axis height can vary up to about 34 inches. The ZETA-3600 can produce a 10-inch high plot for 8 1/2 x 11 inch report size. It has a resolution of 400 points per inch (13,600 addressable points in the y direction).

VARIAN-9211

The Varian-9211 plotter is an electrostatic plotter. It uses an electrostatic charge to deposit a black toner on the paper instead of using pens as the ZETA plotters. The Varian is used for fairly high-quality monochromatic pictures with quick turnaround at lower cost. The plotting area available is 10.5 inches in the y-direction and 54.5 feet in the x-direction with 200 points per inch resolution (2,112 addressable points in the y direction).

DICOMED

The DICOMED D48C is a high resolution, gray-level film recorder which includes color capability on various types of film, including 35mm, 16mm, microfiche, 4x5 inch sheet, or Polaroid. It can be used as either a vector-drawing or raster device. The physical device addressa-

bility is 32,000 by 32,000 (the resolution is 4,000 by 4,000). Density is implemented using both intensity and line width on the DICOMED (unlike most other devices).

SC4460

Computer output on microfilm is produced by a modified Stromberg-Carlson SC4460 microfilm system equipped with a microfiche camera capable of recording 48x or 24x microfiche, a 35-mm camera, a 16-mm camera, a teletype for operator communication, and an on-line interface to both 6000 computers. All COM operations are performed on-line; that is, files destined for COM are collected in queues, and at the appropriate time the data is translated into COM hardware instructions by the 6000's, and sent to the SC4460 via the on-line interface. The COM system has four character sizes, four line widths, five line-styles, and a resolution of 4096 by 4096.

SUMMAGRAPHICS BIT PAD ONE

Bit Pad One converts graphic information into digital form suitable for entry into a computer. Just touch the pen-like stylus to any position on a map, diagram, menu or other graphic presentation, & the coordinates of that position are transformed into their digital equivalents. You may select a marking ball-point stylus, a dry non-marking stylus, or a four-button cursor to digitize with the Bit Pad One. The cursor contains a crosshair sight which permits the user to enter data with the full accuracy of the data table.

VERSATEC V-80 Printer/Plotter

Presently, this graphic device is used mostly as a UNIX text editor 'previewer' to allow preliminary drafts of output, in various character fonts, destined for TID's phototypesetter. The V-80 prints 1000 lines/minute and produces up to 200 point/inch resolution on 1000 continuous electrographic fan-fold type 11 x 11 inch paper sheets. The image size, usually controlled by VTROFF (TROFF) text formatting, can be 10 1/4 inches square (200 dots/inch) and can be oriented in either direction to produce 8 1/2 x 11 inch reports.

PHOTOTYPESETTER

The APS-Micro 5 is a CRT phototypesetter that supports various hardware options and has its operation tailored to the Technical Information Department report requirements. A wide variety of character fonts are typeset photographically (formed on a CRT and simultaneously recorded on film), which results in exposures in a galley of set type used in normal printing processes. It is connected to the UNX2 computer and images are usually controlled by UNIX TROFF text-formatting and are of higher publication quality than the VERSATEC.

. . . Jim Miller, x6255

UCLBL Computer Center

PM Schedule

Effective SEPTEMBER 1, 1983

7600 (CDC) Mondays
 CDC 0500 - 0800

Thursdays
 CDC 0600 - 0800

6600B (CDC) Tuesdays
 CDC 0500 - 0800

6400C (CDC) Mondays
 CDC 0500 - 0800

UNIX1 Saturday, September 10
 RTSG 0030 - 0600

UNIX2 Saturday, September 17
 RTSG 0030 - 0600

UNIX3 Sunday, September 18
 RTSG 0030 - 0600

Monday, September 19
 RTSG 0030 - 0600

IGM Thursday, September 22
 RTSG 0030 - 0800

NMM Sunday, September 25
 RTSG 0030 - 0800

PDM Monday, September 12
 RTSG 0030 - 0800

ATL Thursdays
 Maint ... 0600 - 0800

COM Tuesdays
 Maint ... 0700 - 0900

PSS Wednesdays
 CDC 0600 - 0800

SYSTEMS PERFORMANCE

IN JULY/1983

7600
 Systems Availability 96.01%
 Median Service Interval 29.00 (hrs)

6000B
 Systems Availability 96.53%
 Median Service Interval 42.17 (hrs)

6400
 Systems Availability 98.56%
 Median Service Interval 58.08 (hrs)

UNIX1
 Systems Availability 94.73%
 Median Service Interval 23.97 (hrs)

UNIX3
 Systems Availability 90.36%
 Median Service Interval 15.42 (hrs)

PDM
 Systems Availability 98.28%
 Median Service Interval 114.92 (hrs)

NMM
 Systems Availability 97.98%
 Median Service Interval 143.37 (hrs)

IGM
 Systems Availability 98.30%
 Median Service Interval 36.25 (hrs)

 Total No. of Jobs Processed: **55,594**
 6000's - **22,726** : 7600 - **32,868**

7600 TURNAROUND TIME

% of RUSH jobs returned
20 min 2 hrs 4 hrs
 90.35 98.91 99.81

% of ALL jobs returned
20 min 2 hrs 4 hrs
 82.26 92.37 95.37

% returned, CU limit = 100
20 min 2 hrs 4 hrs
 89.34 97.54 98.36

% returned, CU limit = 500
20 min 2 hrs 4 hrs
 87.46 97.29 100.00

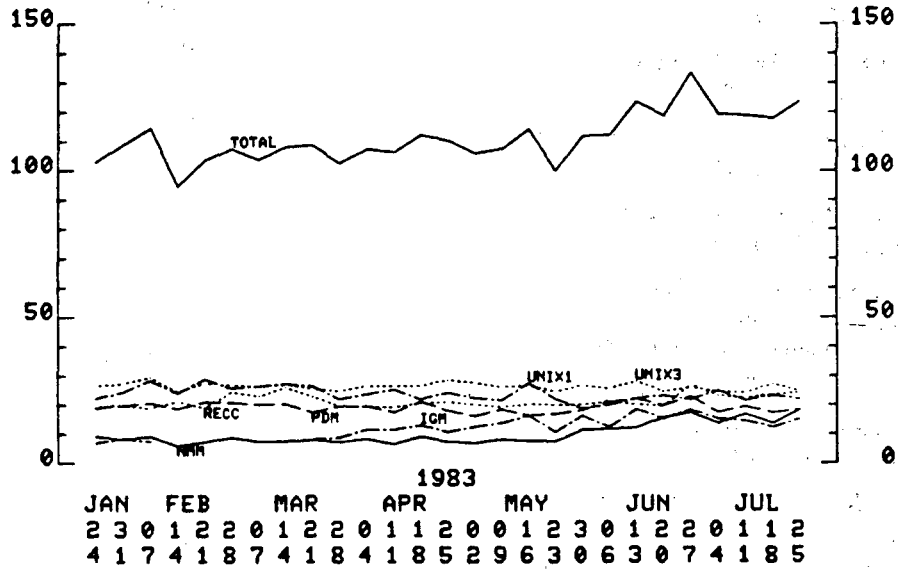
% returned, CU limit ≥ 1000
20 min 2 hrs 4 hrs
 38.72 63.88 72.58

INTERACTIVE STATISTICS

LBL COMPUTER CENTER
PERFORMANCE MEASURES

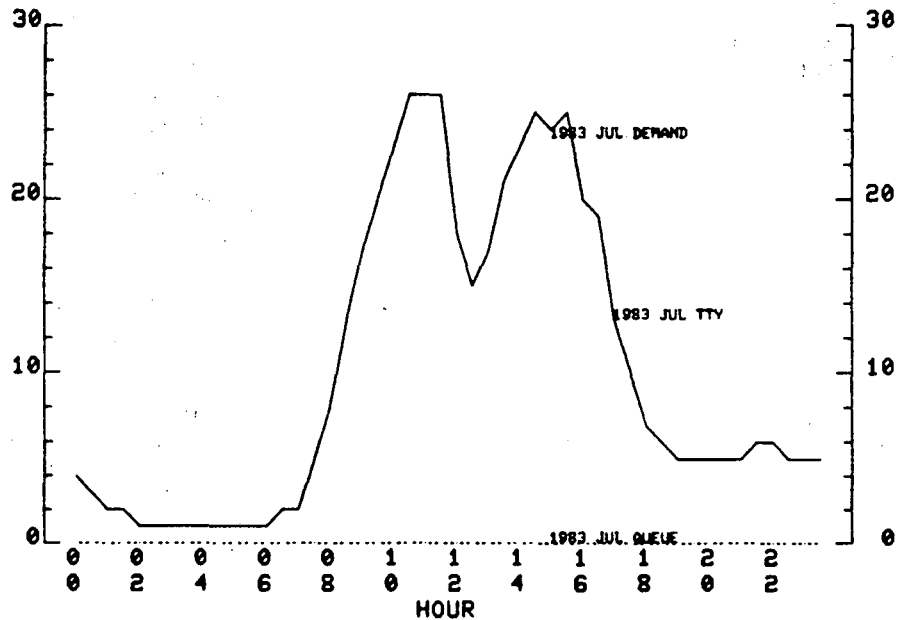
INTERACTIVE TERMINAL ACTIVITY

AVERAGE NUMBER OF TERMINALS CONNECTED
SAMPLED AT HOURLY INTERVALS, PRIME USE PERIODS, WORKDAYS



RECC CONNECTIONS AND UNSATISFIED DEMAND
6600 AND 6400 COMPUTERS

JUL 1983 WORKDAYS



Computation Department Library
Bldg. 50B, Rm. 1245
Lawrence Berkeley Laboratory
One Cyclotron Road
Berkeley, CA 94720