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LBL COMPUTING NEWSLETTER

Lawrence Berkeley Laboratory
University of California, Berkeley

Vol. 20, No. 12

December, 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 December 16, 1983.

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

PUB-429

NAMES AND 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.....6531 50 - 137

OFFICE OF COMPUTING RESOURCES

Head: Ken Wiley.....7083 50B - 2258

ADVANCED DEVELOPMENT GROUP

Head: Dennis Hall.....6053 50B - 3238

COMPUTATION DEPARTMENT

Central Office.....5871,2 50B - 2262
 Guest Cards & Parking Permits.....5947 50B - 2262

COMPUTATION DEPARTMENT

Operating Systems & Product Set

Head: Jerry Borges.....5568 50C - 106
 BKY.....5589 50C - 116
 RSX.....5176 50B - 4224A
 UNIX.....5336 50C - 110
 VM/CMS.....5629 50C - 113
 VMS.....5093 50B - 2272A
 Graphics.....6380 50C - 114
 Math Libraries.....6166 70A - 2218
 Products.....4749 50C - 100C

COMPUTATION DEPARTMENT

Applications Group

Head: John Colonias.....6019 50B - 2274A

COMPUTATION DEPARTMENT

User Services

Head: Eric Beals.....5351 50B - 4224C
 Accounting.....6310 50B - 4224B
 Library/Document Sales.....6094 50B - 1245
 Short Courses, VAX.....5947
 Short Courses, UNIX.....5529 50B - 1245
 Consulting.....5981 50B - 1245A
 GSS Tape Repair Service.....6094 50B - 1245
 Sticky Label Service.....6094 50B - 1245

COMPUTATION DEPARTMENT

Computer Operations & Networks

Head: F. Marvin Atchley.....5455 50B - 2262C
 Assistant Mgr: Sandy Merola.....4389 50B - 2262C
 Operations Area.....6211 50B - 1215
 Cope/Coke Operator.....5311
 Connecting a Remote Terminal.....7444 50B - 2249A
 PSS (Program Storage System).....6219 50B - 2249
 Bldg 90 RJE.....6494 90 - 3136
 Terminal or Port Repair.....5354 50B - 2259
 UNIX System Manager.....7005 50C - 2276
 IGM System Manager.....6720 50B - 2276
 NMM, PDM System Manager.....5234 50B - 2262A
 Expediter Services.....6205 50B - 2249
 Magnetic Tape Library.....6219 50B - 2249
 Keypunch Service.....6256 50B - 2215A

Dial-up Access to Develcon

300 BPS.....486-4959
 1200 BPS.....486-4979
 VA-3400 & 212A are equivalent

Operating Hours

All machines are available 24 hours daily.
 With these exceptions.

6000's, 7600.....M.....7 AM to 9 AM
 7600, ATL.....Th.....7 AM to 9 AM
 COM.....T.....7 AM to 9 AM
 PSS.....W.....7 AM to 9 AM
 UNX1.....Sat 12/10.....12:30 to 6 AM
 Sun 12/11.....12:30 to 6 AM
 Mon 12/12.....12:30 to 6 AM
 UNX2.....Sat 12/17.....12:30 to 6 AM
 UNX3.....Sun 12/18.....12:30 to 6 AM
 IGM.....T 12/20.....12:30 to 8 AM
 NMM.....T 12/27.....12:30 to 8 AM
 PDM.....Th 12/8.....12:30 to noon
 F 12/9.....12:30 to noon
 Sat 12/10.....12:30 to 8 AM

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**FORMATION OF THE
COMPUTING SERVICES
ADVISORY COMMITTEE**

Roy Kerth

A major duty and responsibility of the Computing Division is to supply high-quality computing services to the various programs of the Laboratory. This responsibility can only be met when there is an effective channel for communication between the computer services administration and the users. To provide this channel of communication, I have established the Computing Services Advisory Committee (CSAC). This committee will advise me on all aspects of computer services. It is made up of one member of each division of the Laboratory, chosen from a list of candidates supplied by the Division Heads. I am pleased that the committee membership represents those most knowledgeable about the needs of computing in the various Laboratory programs. Professor Lane Johnson of the Earth Sciences Division and the UC Department of Geology & Geophysics has agreed to serve as committee chairman. The members are listed below.

Now, more than ever before in the history of computing at LBL, we need adequate input and inter-

change of information between those responsible for supplying computing services and those who need computing services to carry out their Laboratory programs. Major issues that need to be addressed over the next year are

- replacement of the CDC 7600
- recharge algorithms
- improved networking facilities
- improved interactive computing
- text processing.

I will depend on the advice of the CSAC to determine the specifications, directions and priorities for all services supplied by the Computing Division. Determining the appropriate balance between computing services provided by a central facility and those located and maintained by the programs of the laboratory is a particularly difficult issue in these times of rapidly changing technology. Tasks that once could be carried out only by a central facility are now available at reasonable cost on devices that sit on a desk. It is necessary that the committee and the administration of computing services remain constantly vigilant for changes in technology that will change the role or the balance between the services supplied by the central facility and those available to users at their own discretion.

I look forward to working with CSAC and developing a plan for the future of computing services at the laboratory.

CSAC MEMBERS

Chairman.....	Lane Johnson	Earth Sciences Division
	Bill Bagot	Administration Division
	Bill Carroll	Applied Science Division
	Beverly Hartline	Planning & Development
	Harvard Holmes	Computing Division
	Ronald Huesman	Biology & Medicine Division
	Van Jacobson	Engineering & Technical Services Division
	Sung-Hou Kim	Chemical Biodynamics Division
	Ed Lee	Accelerator & Fusion Research Division
	Stewart Loken	Physics Division
	Steven Louie	Center for Advanced Materials Division
	James Symons	Nuclear Science Division
	Allan Zalkin	Materials & Molecular Research Division

PROJECT UNDERWAY TO IMPROVE COMPUTING AT LBL

Ken Wiley

It has been evident for some time that computing at LBL suffers from the too long continued use of expensive and outdated equipment which cannot supply first-class interactive service. The initial announcement of the Laboratory's intention to replace the CDC 7600 and its associated equipment appeared in the March, 1983 Newsletter. In this article, the first of several that will appear over the next few months to keep you abreast of our progress in the procurement effort, we outline some of the structure that has been established to ensure that the procurement will meet LBL's needs.

The procurement process for a major computing system is a complex and lengthy one. Its major components are the definition of user requirements, the development of a functional specification based upon those requirements, a competitive solicitation of bids, and an objective evaluation of the bids submitted. At two stages in the process – the completion of the formal request for bids and the selection of the winning bid – it is necessary to secure approval from DOE-SAN and DOE-HQ before proceeding to the next step.

The successful execution of this process will depend upon the active participation of the user community as well as the technical community. This will be accomplished through two groups:

- The first of these is the newly formed Computing Services Advisory Committee (CSAC); it will have the essential and difficult job of representing the respective Divisions in defining user needs and resolving the conflicting demands that inevitably arise. (See "FORMATION OF THE COMPUTING SERVICES ADVISORY COMMITTEE" on Page 3 of this issue, which announces the formation and membership of the CSAC.)
- The second is an ad hoc **task force** formed to act as the technical staff for this project.

Translating the desires of a diverse user community into the language of a large competitive procurement document is a difficult task. To facilitate this translation, an initial product of the task force will be a set of papers describing the types, qualities, quantities, and costs of services LBL users could expect from some alternative approaches to the problem. These papers will be available to LBL staff through their CSAC representatives.

An obvious question is: When will the new system arrive? The largest timing uncertainties in the process are reaching consensus on user requirements and the two approval cycles through DOE-SAN and DOE-HQ. All this will take, at minimum, a year. However, LBL staff will know the selection made and thus be able to make plans at least six months before the new system becomes operational and the 7600 is turned off.

Additional information will be published as it becomes available in order to keep LBL staff fully informed on the progress of this project. The staff for the project follows:

TASK FORCE MEMBERS

Project Leader	Ken Wiley	Office of Computing Resources
Buyer	Dick Lanzit	Purchasing
Task Force Leader	Dave Stevens	Office of Computing Resources
Members	Jim Baker	Office of Computing Resources
	Eric Beals	Computation
	Jerry Borges	Computation
	Doug Brainard	Computation
	Bob Fink	Advanced Development Projects
	Dennis Hall	Advanced Development Projects
	Marty Itzkowitz	Computation
	Bill Johnston	Computer Science
	John Lynch	Advanced Development Projects

UNIX NEWS

TEXT PROCESSING UPDATES

Marty Itzkowitz

(The following article reflects some of the recent work performed by Steve Lewis, Bob Rendler, Arlene Spurlock (TID), Edna Williams, Don Zurlinden, and the author.)

1. Printing: *iprint* and *qprint*

A new command, *iprint*, has been installed on the three Computer Center VAX/VMS systems and the two Computer Center UNIX machines. It is designed to allow printing on the IBM printer attached to the Central facility's 4331, without any involvement of the CDC complex. For further information, see the appropriate on-line documentation on the various systems.

On the UNIX machines, *iprint* is a specific instance, the default actually, of a more general command *qprint*, which takes a device argument, *-D...*, specifying the output destination. Currently available destinations are:

- DIBM* The IBM printer
- Dccv* Computer Center Versatec (UNIX-3)
- Ds9v* A Sun Workstation (experimental)

The experimental Sun workstation is borrowed from Computer Science, and drives a Versatec plotter borrowed from Applied Sciences, with a Versatec Controller board supplied by the Advanced Development Group. Some preliminary feasibility studies have been performed as of this writing, and further experiments will be performed by press time. One experiment involves temporarily moving the Sun to Building 90 for trial use as a remote hardcopy output station.

If user demand warrants, we can extend the VMS version of *iprint* to allow device specification and extend both UNIX and VMS versions to other devices, such as the Dicomed. We would also be happy to discuss the feasibility of extending access to central devices from other LBL computers, as well as the use of remote output devices from the central facility.

2. A New UNIX Command: *qroff*

As part of the effort to relieve the pressure on the UNX1 and UNX3 cpus, a new command, *qroff*, has been installed. It takes arguments similar to *vtroff* and

will seem blindingly fast by comparison: all of the work of typesetting will be performed after the input files are queued. Rather than have multiple user *vtroff*'s compete for the cpu, only one *qroff* process will be started on each machine. We believe that the serializing of these cpu-intensive processes should improve response time for people editing during the busy times of the day.

qroff uses the new versions of *tbl*, *deqn* and *ditroff* described below. A typesetter definition argument, *-T...*, describes the device: Currently available typesetter definitions are:

- Tvers* Versatec (default)
- Taps* APS μ -5 typesetter -
for simulation on versatec

The output device is specified by a *-D...* argument. Currently available destinations are:

- Dccv* Computer Center Versatec (default)
- Ds9v* The Sun Workstation (experimental)

A manual page is available.

Work is in progress to install the APS μ -5 phototypesetter as an output device; when available, it will be announced.

If any users are interested in acquiring a local workstation, we would be happy to assist them in installing it. We would also be happy to discuss the feasibility of extending *qroff* to other UNIX or VMS systems around the hill.

3. Other UNIX Text Processing

Device Independent Troff. A version of device-independent *troff*, which is called *ditroff*, has been installed, along with its accompanying equation preprocessor, *deqn*, on UNX1, UNX2, and UNX3. A major extension of the user interface allows the use of additional fonts within a document. Although, for the Versatec, we currently support only the default (Hershey) font, we intend to extend it to six fonts. Three of the fonts, **R**, **I**, and **B**, are the (serif) Hershey fonts on the Versatec and the Times fonts on the phototypesetter. The other three, **HR**, **HI**, and **HB**, are the (sans-serif) Nonie fonts on the Versatec and Geneva (Helvetica) fonts on the phototypesetter. Other fonts will be installed as requested by users.

Macro Packages. The latest versions of *-me*, *-ms* and *-mvgrind* from campus have been installed on UNX1, UNX2, and UNX3. We have also installed the locally developed *-mb* package and TID's local extensions to *-me* on each of these machines.

refer. The current version of *refer*, a bibliographic reference processor, from campus has been installed. The macro packages described above contain the necessary macros for its use.

checkeq. A preprocessor to check the syntax of *eqn* constructions has been obtained from Computer Science and installed. Unfortunately, no manual page is available (existing documentation merely references the *eqn* manual page.)

tbl. The latest version of *tbl* from the Bell Device-Independent Troff distribution tape has been installed.

pic and ideal. Two graphics preprocessors, *pic* and *ideal*, that came with the *ditroff* tape have been investigated, but unfortunately, cannot be used at this time. They draw all of their pictures by generating a very large number of overlapping dots. On the phototypesetter, they cause a degradation of a factor of ten or more in output speed; on the Versatec, they require more memory to sort the output characters (so that they are plotted from left to right on the page) than is addressable on the PDP-11's. We are investigating the possibility of implementing them for the Versatec by designing "graphics" pseudo-characters that would be drawn at output time.

vtroff and vprint. A minor change has been made to *vtroff* and *vprint*: files will be queued in the directory */usr/spool/nft*. Output will have an additional summary page added, but should otherwise be identical to the earlier version.

Eventually, we intend to replace *vtroff* and *vprint* with *qroff* and *qprint*, respectively. To convert to the new *qroff*, simply replace "*vtroff*" with "*qroff*".

If you use any font arguments ("*-F*" or "*-1,2* or *3*"), remove them from the command line.

If your files have ".so" lines in them, replace: "*vtroff*" with "*soelim file(s) | qroff*"

RECHARGING TO BEGIN FOR UNIX VERSATEC USAGE

Eric Beals

Beginning on January 1, 1984, we will start charging for the use of the UNIX Versatec Electrostatic Printer Plotter. Breakdown is as follows:

Handling charge:

- \$0.50 per queued output file processed on weekdays:
- \$0.25 per queued output file processed on the week-ends.

Supplies usage charge:

- \$0.08 per foot of Versatec plot paper
- \$0.01 for each 6 blocks (2880 characters) transferred. (This rate is the same for the Varian Electrostatic Printer Plotter).

LBL users will be charged against their divisional allocations.

G R A P H I C S N E W S

DI3000 GRAPHICS SOFTWARE TOOLS

Vivian Morgan

DI3000, a product of Precision Visuals, Inc., is an integrated system of graphics software tools. DI3000 has been implemented in ANSI FORTRAN as a library of FORTRAN-callable subroutines. An application program calls DI3000 subroutines to generate graphics images on one or more graphics devices.

DI3000 and its associated packages, GRAFMAKER (including GRAFEASY), CONTOURING, the Metafile translator, and a preliminary version of GRAFMAS-TER, are available on the IGM VAX.

DI3000

The DI3000 features include full 3D viewing, 3D projections, graphic arts quality text, temporary and retained segments, color capability, polygon fill and patterning, image transformations, and Metafile creation.

GRAFMAKER

GRAFMAKER, which is run with the DI3000 general-purpose library, is a set of FORTRAN subroutines designed for use in application programs to easily create pie charts, line graphs, bar graphs, and needle graphs.

GRAFEASY

In addition to its basic subroutines, GRAFMAKER includes GRAFEASY, a set of subroutine calls that simplify GRAFMAKER even further for quick and easy graphic presentation of data.

CONTOURING

The CONTOURING System is a collection of routines that provides grid generation and contouring capability. DI3000 subroutines are used to generate the graphics. An extensive set of options are available to control map characteristics.

The following device drivers are available for the user:

- IMLAC Series II terminal
- Tektronix 4014(ADM3A with Retrographics) terminal
- AED 512 terminal
- VT125 (GIGI) terminal
- ZETA 1453 4-pen plotter
- DICOMED D48 film recorder

Other drivers that will soon be available:

- HP2647/48 terminal
- HP7221 8-pen plotter
- Tektronix 4105 terminal
- CALCOMP 84 8-pen plotter

GRAFMASTER

GRAFMASTER, an independent program based on GRAFMAKER, is designed for the novice or experienced user and can produce both simple and sophisticated presentation charts including line graphs, bar charts, pie charts, scattergrams, and text charts. It is designed with formatted screens, called "panels" A group of panels is used to interactively create, display, and refine pictures on a variety of graphics output devices.

GRAFMASTER requires a panel driver and a graphics driver. The preliminary version of GRAFMASTER includes panel drivers for the HP2623 and VT100(or look-alike) and graphics drivers for the HP7221 and VT125. VT125 users who can use the VT100 panel driver and the VT125 graphics driver are encouraged to try the product. GRAFMASTER graphics drivers are not compatible with the current version of DI3000, and conversely. However, new versions of all the PVI products are expected soon and the drivers will then be interchangeable.

DI3000, GRAFMAKER, CONTOURING, and GRAFMASTER User's Guides can be purchased through the Computation Department Library. Contact Maggie Morley X5529, Bldg 50B/1245A.

More information can be found by typing

HELP @GRAFHELP DI3000 ^

"Man is a slow, sloppy and brilliant thinker; the machine is fast, accurate and stupid."

... William M. Kelly

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 DECEMBER LUG MEETING

Valerie Sherriffe (x4460)

The next meetings of the ~~DATATRIEVE~~ User Group will be held from 2 to 3:30 PM on December 7 in the Bldg. 50B Conference Room (50B/4205). Bert Albrecht will discuss Procedures.

LBL HARDWARE DEMONSTRATION AT NEXT LUG MEETING

Jim Miller (x6255)

The fourth meeting of the **GRAPHICS** Local User Group will be at 2:30 PM Friday, December 9 in the Bldg. 50A Conference Rm., (Rm. 5123.) Demonstration tours with small groups in the Graphics Lab, Grinnell Frame Buffer area, I/O Plotter area, and DICOMED Film Recorder area, will be given by members of the Graphics Group.

The results of the recent Computer Graphics Survey Questionnaire, and "Getting Started" documentation will be available.

For the GUG information service, type **GUGNEWS** (or **GUG**) on the IGM VAX.

DECEMBER VAX LUG MEETING

Nancy Deerinck (x4691)

The next meeting of the **VAX** Local User Group, will be held at 2 PM Tuesday, December 6, in Bldg. 50B, Rm. 3228.

ACM DECEMBER MEETING

LLL's George Michael, a co-founder of **SICBIG**, will be the featured speaker at the December 7th Meeting of the San Francisco Peninsula Chapter of the Association for Computing Machinery. Program commences at 7:30 PM at Stanford University's Skelling Auditorium. Maps and further information can be obtained from Mary Fowler (415) 965-6515 or Frank Olken, x5891.

MEETING OF RT-11 LUNCH BUNCH

Mike I. Green (x4607)

The **RT-11** User (Lunch) Group will meet at noon Thursday, December 1 in the Bldg. 46A (RTSG) Conference Room. Randy Michelson will present a taped seminar (including slides) from the fall DECUS meeting. Title: "ACCESSING MEMORY ABOVE 56 KBYTES FROM FORTRAN" by Ron Trellue of SANDIA National Labs.

SECOND MEETING OF PC USER GROUP

Jim Miller (x6255)

The second **PERSONAL COMPUTER** Local User Group meeting will be at 12 noon Thursday, December 15 in the Bldg. 70A Conference Rm. (3377).

At the behest of LUG members, the agenda will include an informal discussion of current personal computer topics, LBL projects, & survey results - preceded by a short organizational meeting.

DECEMBER RSX-11 LUG MEETING

Everett Harvey (x6411)

The **RSX-11** Local User Group will meet at 2 PM on December 15 in the Bldg. 46A Conference Room. Members will give reports on the Fall DECUS Meeting.

Each meeting has a topic (**SYSGENs**, etc.), but there are also general discussions open to whatever people need. Come and find out what these meetings are like.

SICBIG NEWS

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. Those who would like to participate in a carpool to the meeting should contact Frank Olken (LBL, x5891) or Mary Fowler (415) 965-6515.

LAWRENCE BERKELEY LABORATORY IS LOCATED IN THE HILLS ABOVE THE U.C. BERKELEY CAMPUS. THE (CHOCOLATE-COLORED) BUILDING 50 COMPLEX IS LOCATED ACROSS FROM THE (RED & WHITE SHUTTLE) BUS STOP. YOU CAN GET A FREE RIDE TO THE LAB ON THE SHUTTLE BUS : PICKUP POINT IS AT SHATTUCK & CENTER IN DOWNTOWN BERKELEY.

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Attention: **DORTHA HINES**

You may have noticed that our folksy drawing on the front page has disappeared. We plan to replace it with a logo that reflects the spirit of the new division. It will be unveiled in the January, 1984 Newsletter.

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

If you would like to have it sent to you, simply fill out the form inside and your name will be added to our mailing list.

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