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SEPTEMBER
1992

LB COMPUTING NEWSLETTER

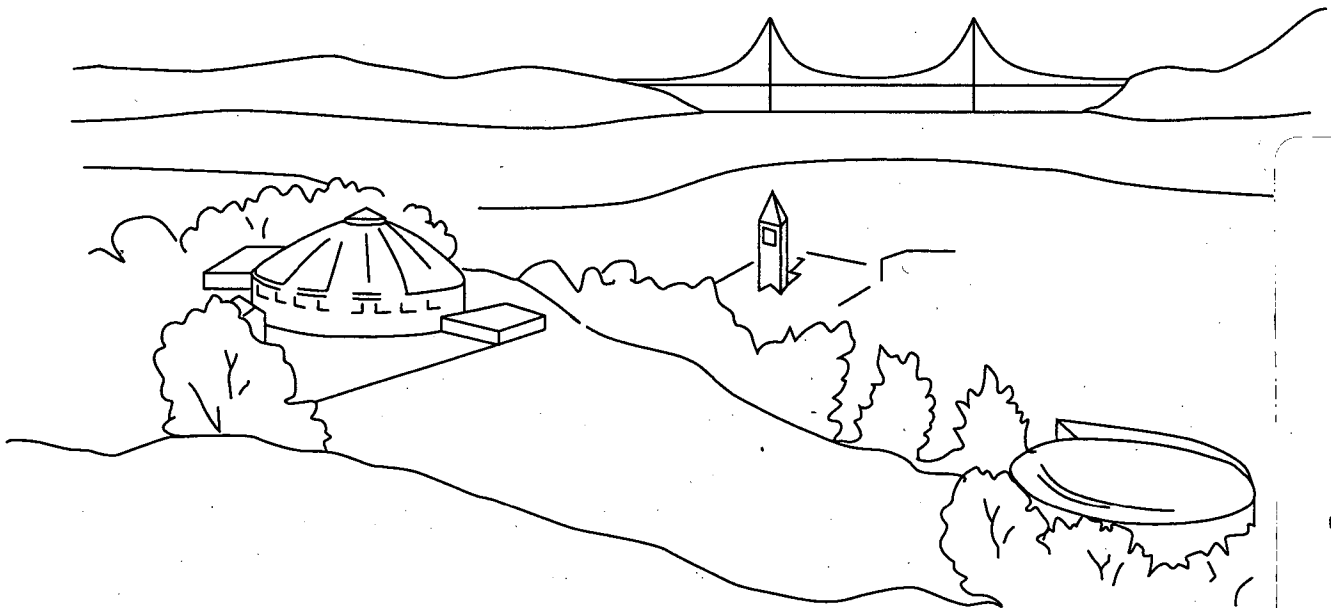
AVS ON THE CRIMSON Pg. 8

KHOROS Pg. 10

MORE ON MODULES Pg. 25

PC GRAPHICS HARDWARE Pg. 35

Don't Forget
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BERKELEY, CALIFORNIA . . . 94720

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Pub-429 Vol. 29 No. 8

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Newsletter Closing Date is Monday, September 14, 1992

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

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LBL COMPUTING NEWSLETTER

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ICSD TRAINING SCHEDULE

September - October, 1992

To enroll in the C Programming course, the UNIX classes or the Electronic Mail Survey class please contact Rita McLean, (x5872). You do not need a VMS/CSA login for the AVS class.

To enroll in the IBM-PC or Macintosh training classes, contact Gayle Milligan (x4511). The Basic Macintosh noon time classes do not require enrollment.

To enroll in the FOCUS training classes, contact Esther Schroeder (x5036).

<i>Introduction to UNIX</i>	Sept. 4, 9, & 11 Oct. 5, 7, & 9	9:15 AM - 12 Noon	50B/1215
<i>UNIX for Programmers</i>	Sept. 22, 23, & 24 Oct. 19, 21, & 23	9:15 AM - 12 Noon	50B/1215
<i>Electronic Mail</i>	Sept. 23 Oct. 21	1:30 - 3 PM	50B/1215
<i>C Programming</i>	Sept. 22, 23, 24, & 25 Oct. 20, 21, 22, & 23	2 - 4 PM	50B/1215
<i>AVS</i>	Sept. 30 Oct. 16	9:15 AM - 4:30 PM	50B/1215
<i>Advanced AVS</i>	Oct. 2	9 AM - 12 Noon	50B/1215
<i>Introduction to Khoros</i>	Sept. 14	1:30 - 4:30 PM	50B/1215
<i>Introduction to FOCUS (102)</i>	Sept. 16-18	9 AM - 4 PM	50B/1215
<i>Intermediate FOCUS (125)</i>	Nov. 16	9 AM - 4 PM	50B/1215
<i>Intermediate FOCUS (126)</i>	Dec 7-8	9 AM - 4 PM	50B/1215
<i>Introduction to PC-DOS</i>	Sept. 8 & 10 Oct. 6 & 8 Nov. 10 & 12	2:30 - 4 PM	50B/1215A
<i>Introduction to Windows (PC)</i>	Sept. 8 & 10 Oct. 6 & 8 Nov. 10 & 12	9 AM - 10:30 AM	50B/1215A
<i>Introduction to Networking (PC)</i>	Sept. 29	9 - 11 AM	50B/1215A
<i>Beginning Word 5.0 (Mac)</i>	Sept. 15, 16, & 17 Oct. 13, 14, & 15 Nov. 17, 18, & 19	1 - 3 PM	50B/1229
<i>Introduction to FileMaker Pro (Mac)</i>	Sept. 29 & Oct 1 Nov. 3 & 5 Nov. 17 & 19	10 AM - 12 Noon	50B/1229
<i>Introduction to Networking (Mac)</i>	Sept. 17 & 18 Oct. 22 & 23	9 - 11 AM	50B/1229
The Workstation Group also offers the following noon-time classes. No enrollment is required.			
<i>Basic Macintosh</i>	Sept. 9 Oct. 7 Nov. 11	12 Noon - 1 PM	50B/1229

DEPARTMENTAL MATTERS

NEW CHARGES

Marv Atchley

Effective October 1, 1992, the Computing Resources Department will be charging \$10/hour for classes taught by CRD personnel. We regret this charge, but due to decreasing overhead funding, we need to recover part of the expense for providing classes. This charge affects classes taught by the Workstation Group, the UNIX Group, and the VMS Group.

An electronic version of the ICSD Training Fees can be found on the Macintosh WKSG Server 2, (LBL Zone), 300M disk, in a folder called "Classes/Schedules" (the file name is "ICSD Training Fees").

Refunds will be given to students who cancel their class at least five working days before it starts. Substitution of class attendee will be permitted.

The informal drop-in seminars (e.g., Basic Macintosh and Intro to System 7) taught by the Workstation Group staff members will still be free.

Forward comments and questions to me at x5455 or

UNIX or

Software Tools Mail: FMAatchley@lbl.gov

VMS Mail: lbl::FMAatchley

HOUSEKEEPING

Maggie Morley

We are updating our mailing list, weeding out the names of readers who no longer wish to receive the LBL Computing Newsletter.

If you want to continue to be on our mailing list, you must fill out the form on Page 41 and return it to

LBL Computing Newsletter

Rita McLean - MS 50F

Lawrence Berkeley Laboratory

Berkeley, CA 94720.

before the end of the month. If we don't hear from you, we'll presume you have moved on to a sweeter situation and we will remove your name from our mailing list.

Forward comments and questions to me at x5529 or

UNIX or

Software Tools Mail: MAMorley@lbl.gov

VMS Mail: lbl::MAMorley

Platform	Class	Hours	Price
UNIX	Introduction to UNIX	8.25	\$82.50
UNIX	UNIX for Programmers	8.25	\$82.50
UNIX	Electronic Mail	1.5	\$15.00
UNIX	C Programming	8.0	\$80.00
UNIX	AVS	7.25	\$72.50
UNIX	Advanced AVS	3.0	\$30.00
UNIX	Introduction to Khoros	3.0	\$30.00
PC	Introduction to PC-DOS	3.0	\$30.00
PC	Introduction to Windows	3.0	\$30.00
PC	Introduction to Networking	2.0	\$20.00
PC	CC:Mail (PC-DOS Users)	2.0	\$20.00
PC	CC:Mail (PC-Windows Users)	2.0	\$20.00
Mac	Beginning Word 5.0	6.0	\$60.00
Mac	Introduction to Filemaker Pro	4.0	\$40.00
Mac	Introduction to Excel 4.0	6.0	\$60.00
Mac	Introduction to Networking	4.0	\$40.00

GENERAL NEWS

PUBLIC CENSUS DATA ON CD-ROM (UPDATE)

Deane Merrill

The Comprehensive Epidemiologic Data Resource (CEDR) and Populations at Risk to Environmental Pollution (PAREP) projects, of the LBL Information and Computing Sciences Division (ICSD), are using public socio-economic and geographic data files which are available to CEDR and PAREP collaborators via LBL's computing network. At this time, 67 CD-ROM diskettes (approximately 35 gigabytes) are on-line. Via NFS, the files can be mounted for direct access by any computer on the Internet. Continued shared access in the future is not guaranteed if costs become prohibitive.

Since the latest announcement (see Pg. 16 of the July/August 1992 LBL Computing Newsletter) the post-census release of the 1990 Census TIGER geographic base map file (44 CD-ROM diskettes containing 24 gigabytes of data) has replaced the older pre-census version.

More detailed information is available in a 12-page document:

Merrill, D.

Public Census Data on CD-ROM at Lawrence Berkeley Laboratory,
Report LBL-32165 (Rev. 1), revised July 1992.

The latest version of the same document is available via anonymous FTP from:

Internet node:cedr.cbl.gov (128.3.196.16)

directory: /data1/merrill/docs/cedr

DOS WordPerfect 5.1:cdrom1.wp5

PostScript:cdrom1.ps

ASCII text:cdrom1.asc

The same document in Macintosh MicroSoft Word 5.0 format is in

LBL AppleTalk zone: icسد, Public Folder: DWMerrill, File: Census Data on CD-ROM.

Future revisions of the document will be stored in the same locations and will be announced in the LBL Computing Newsletter.

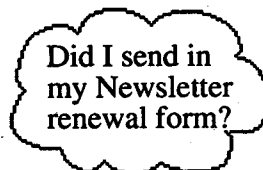
The CD-ROM diskettes are mounted in cedr.cbl.gov in the directory /cdroms. Due to the size of the files, access via NFS is preferable to anonymous FTP.

Forward comments and questions to me at x5063 or

UNIX or

Software Tools Mail: dwmerrill@lbl.gov

VMS Mail: lbl::dwmerrill



GRAPHICS NEWS

AVS INTRODUCTORY COURSE

Wes Bethel

An introductory course on the use of the Application Visualization System (AVS) will be held from 9:30 AM to noon & 1:30 to 4 PM on Wednesday, September 30, in Bldg. 50B, Rm. 1237.

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

In the class, users will learn how to create complex images of three-dimensional data using the powerful visualization tools built into AVS. Participants will

- create and transform (rotate, scale, etc.) objects in three-space,
- assign object properties such as color,
- adjust virtual lighting parameters.

Students will also be introduced to the fundamental principles of scientific visualization, such as the use of color in images. The class will apply a number of different visualization techniques to multiple three-dimensional scientific datasets.

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

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

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

Another Introduction to AVS class
is scheduled for Friday, Oct. 16, 1992.

AVS ADVANCED COURSE

Wes Bethel

An Advanced course on the use of AVS will be held from 1:30 to 4:30 PM on Friday, October 9, in Bldg. 50B, Rm. 1237.

Topics covered in the Advanced AVS class include module writing, performance optimization, and animation.

There will be an introduction to the built-in animation capabilities in AVS which consist of "coroutines" in data flow networks as well as image "flipbooks" in the Geometry Viewer.

Prerequisites are

- the Introductory AVS Class (or permission from the Instructor)
- a working knowledge of AVS,
- programming experience, preferably in the C programming language.

Registration is limited to 6 people, and is on a first-come basis. Please contact Rita McLean at x5872 to register for this class.

Forward comments and questions to me at x6626 or

UNIX or

Software Tools Mail: EWBethel@lbl.gov

AVS ON THE CRIMSON

Wes Bethel

The Graphics Group is pleased to announce that AVS 4.0 is now available for use on the Silicon Graphics Crimson workstation located in the Visualization Laboratory, Bldg. 50B, Rm. 1275.

The Silicon Graphics Crimson is a 50Mhz MIPS 4000 workstation with 144 Mbytes of memory and an Elan graphics accelerator. Silicon Graphics' statistics on this machine are:

- 50 mHz MIPS R4000 CPU
- 16 Mflops, 70 Specs, and 85 Mips
- 1280 x 1024 display
- 24-bit color
- 4 Geometry Engines
- Hardware Z buffer
- 1 million 3D vectors/sec
- 250K Triangles/sec
- 100K polygons/sec

Anyone who has a UNIX account may use this workstation, and may also use AVS.

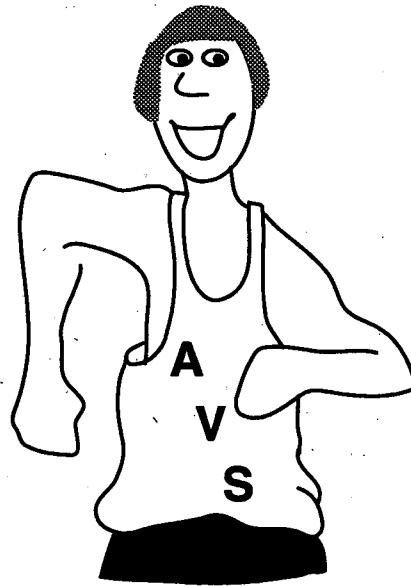
All of the features of the Sun-based AVS are available on the SGI. The graphics accelerator on the SGI provides a dramatic performance increase when manipulating geometry than when using the software renderer over the network from UX6.

A couple of idiosyncrasies of this implementation are worth noting.

- ✓ First, if a user wishes to run over the network, using the SGI as a compute server (thus not taking advantage of the local graphics capabilities of the SGI), he must first execute the "normal" steps to run AVS over the network, then start AVS with a special command line flag.

From your local workstation:

- make sure that X-windows is running (usually started with an "xinit" command).
- type
% **xhost wimsey.lbl.gov**
(allows the SGI to display on your workstation)
- type
% **rlogin wimsey.lbl.gov**
- on wimsey, type
% **setenv DISPLAY workstation:0**
(where "workstation" is the name of your workstation).
- on wimsey, type
% **avs -nohw**



The "-nohw" flag tells AVS not to use the hardware renderer. The need for using this flag is somewhat inconsistent with other implementations of AVS. If this flag is omitted, AVS will crash after generating several error messages.

- ✓ Second, if a user is using AVS from the SGI console, AVS will appear to be in 8-bit mode (as if running over the network). However, if the user has "display image" or "geometry viewer" modules, then the resulting images will indeed be 24 bits in depth. There are no command line arguments required when using AVS at the SGI console.

All of the locally written AVS modules are available on the SGI, and are accessed using the "select module library" button in the network editor (under "module tools").

Forward comments and questions to me at x6626 or

UNIX or

Software Tools Mail: **EWBethel@lbl.gov**

KHOROS CLASS

Wes Bethel

The Computing Resources Department is offering an introductory course on the use of the Khoros system. It will be held from 1:30 to 4 PM on Friday, September 11, in the Sun Training Room, Bldg. 50B, Rm. 1275.

Khoros is a computing environment created for the research of techniques and the development of software in the area of image processing. It provides a rich toolkit of image-processing software, including spatial and frequency domain filters, morphological operators, and miscellaneous GIS functions (such as image warping).

The Khoros package was created and is maintained by the Khoros Project at the University of New Mexico. The package is available free of charge via anonymous ftp, or for a nominal fee via regular mail. Currently, Khoros is available for use on UX5/6, as well as the Silicon Graphics Crimson located in the Graphics Workstation Laboratory.

Khoros runs as an X-client application and so may be run on a local workstation or on a compute server with a remote display.

Khoros also provides several standalone applications including

- 1- and 2-variable "plotting" and graphing,
- a visual programming environment to the software toolkit,
- a CASE tool for generating user-interface code for user-written modules, etc.

In the introductory class, we will cover the basics of using Khoros, and contrast Khoros to AVS.

The class curriculum includes

- setting up the user environment,
- using the command-line and graphical user interfaces to various Khoros utilities and
- visual programming in the Khoros environment.

Experience with AVS and some programming experience are recommended. Experience using the X window system and UNIX are required.

Registration is limited to 6 people, and is on a first-come basis. Please contact Rita McLean at x5872 to register for this class.

Forward comments and questions to me at x6626 or

UNIX or

Software Tools Mail: EWBethel@lbl.gov



WHAT IS KHOROS?

Wes Bethel

In this article, we will provide an overview of Khoros and its features, and compare it to AVS, another visualization tool in use at LBL

Khoros was developed by the Khoros Project at the University of New Mexico to provide an environment for research in image processing. This includes a set of fundamental algorithms for image and signal processing; one- and two-variable plotting applications; an interactive image display/editor; and a software development and maintenance environment.

- Khoros is extensible via the addition of user-written modules. The steps are quite similar to those required to write AVS modules: user- and system-interface code is automatically generated by a CASE tool and added to a user-written computation kernel.
- Khoros runs in the X-windows environment, and uses the Athena widget set (ugly, but free).
- Khoros, at present, DOES NOT perform any geometric modeling, light source or camera manipulation (more on that later in this article).
- Khoros provides a rich set of image and signal processing tools, probably better than any such toolkit available for purchase from vendors.
- Khoros is free.

The Khoros Project provides e-mail support for installation, maintenance and usage questions. There is also a netnews newsgroup called "comp.soft-sys.khoros" which is a shadow of the mailing list.

—For more information about the mailing list, send mail to

khoros-request@chama.eece.unm.edu

—To post to the list, send mail to

khoros@chama.eece.unm.edu

—To obtain the khoros distribution, use

anonymous ftp to **pprg.eece.unm.edu**

Khoros utilities may be executed in one of two ways.

—First, all utilities are available from the visual programming environment called "cantata".

—Second, all Khoros utilities may be executed directly from the command line: the user has the responsibility for providing command line arguments.

For some Khoros utilities, such as the 2D and 3D plotting applications, you can start the application from the command line and set the options using the graphical user interface built into the application. Not all Khoros utilities have a graphical user interface.

Since Khoros is free and is supported on a wide variety of hardware platforms, the worldwide estimated user base is about 9,000. The Khoros Project supports the following platforms:

Vendor	Model	OS & Compilers
Apollo	DN1000	OS10.3, Fortran 10.8, cc 6.8
Cray	YMP,XMP,II	Unicos 6.0, 6.1
DEC	5000/3100	Ultron 4.2, MIPS cc 2.0, DEC f77 3.0-2
DEC	VAX 3600	Ultron 4.1, cc 1.37.1
HP	9000/*	HP-UX 7.05, HP-UX 8.05
IBM	RS/6000	AIX 3.1
NeXT	68030,40	MACH 2.0, gcc 1.37, Absoft f77 2.0, Pensoft X
SGI	All	OS 3.3.2, OS 4.0, X11 1.2, f77 3.3
SUN	Sparcs, Sun4	SUN OS 4.1.1.2, f77 1.4.5
SUN	Sun3	SUN OS 4.1.1, f77 1.3.1, gcc 1.39,2.0
Convex	C220	OS 8.1, non-ANSI C: scc
Apple	Mac II	A/UX 2.0.1, gcc 1.39
Intel	386/486	Interactive UNIX

Comparison of Khoros to AVS

The largest difference between Khoros and AVS is that Khoros, at present, provides no facility for creating, manipulating or viewing three-dimensional geometry. In many other respects, they are similar.

Feature	Khoros	AVS
Extensible	yes	yes
Code Generator	yes	yes
Online Help	yes	yes
Price	free	\$5k/seat
Tool level command line interface	yes	no
Shared Memory	yes	yes
3D Geometry	no	yes
Supported Color Spaces	8	2

However, in the visual programming environments, Khoros is superior to AVS in many respects.

Feature	Khoros	AVS
Conditional flow (if/then)	yes	no
Looping Structures	yes	no
Upstream Data	yes	yes
"Stop executing NOW" button	yes	no
Module parameters auto-reset	yes	no
Parallel path execution	yes	yes
Remote/distributed modules	yes	yes

KHOROS APPLICATIONS

Khoros offers many standalone applications as part of the distribution.

Cantata

This is the visual programming environment. In this environment, users construct a "program" of data-connected "modules". Data flows through this network, and is operated upon by the modules. It is a click-and-point interface.

Xprism2/Xprism3

These are the traditional plotting tools for one and two variables. These can process files of data (like xy pairs) or the user can enter a function directly, such as $y = \sin(x)$. (Sample graphs on pp. 8 & 9 were produced using the Xprism3 tool).

EditImage

An image display, examination and manipulation tool. EditImage can perform color quantizing, display of subimages from huge images, image zoom, colortable

manipulation, overlay of bit images onto byte images, adding of annotation to images, clip/crop of images and support of shape masks. At present, EditImage is limited to 8 bits of display.

Animate

This is an interactive image sequence display tool. Forward and reverse sequencing, variable sequencing speed, etc.

WarpImage

This is an application for interactive image "warping" by creating "tie points" in source and target images. The source image is warped using a second order polynomial or bilinear interpolation.

ViewImage

This is an interactive imagery/elevation display package that combines the capabilities of the Xprism3 and EditImage packages. The main purpose is to take an image and "drape" this image over the elevation provided by another set of data.

Concert

This is a "collaboration" program used to allow many people to execute a Khoros package; the specified application will appear on multiple workstations. Master/slave mode or equal participant modes are supported.

Miscellaneous Khoros Utilities

There are really too many to mention, but for a few: image/signal information and statistics, 1d peak/trough detector, image/signal creation: sinusoidal, constant, impulse, gaussian or poisson noise, fractal; structure/type conversion: complex $\leftrightarrow$ real, extract/combine scalar, rectangular to polar; color space transformations between any of the eight supported color spaces; arithmetic: unary, binary, logical or matrix algebra: invert, transpose, singular value decomposition, eigenvalues/eigenvectors, multiply, simultaneous equations, differential equations; image processing: spatial filters, morphological operators, 2D transforms, frequency domain filters, histograms, geometric manipulation; signal analysis: classification and clustering, segmentation and feature extraction, stereo images; signal processing: normalize, shift, mirror, subsample; 1D time filters, frequency filters, linear operators, spectral estimation; Remote and GIS: surface manipulation, image draping, find/remove tilt.

LBL Support of Khoros

At LBL, we have downloaded the Khoros distribution and have compiled Khoros on the Sun Sparc/sun4 and SGI architectures. You must have /graphics_export mounted to your machine to use Khoros.

USING KHOROS

There are three steps required to use Khoros (NOTE: these may be done explicitly, or using the "modules" utility, except for the last step which must be done manually).

- ✓ First, the environment variable **KHOROS_HOME** establishes the base location of the local Khoros installation. At LBL, put the following line into your .login file:

```
setenv KHOROS_HOME /graphics_export/khoros
```

- ✓ Second, include the directory containing the Khoros executables in your path. In your .cshrc file, add the following to the line where the path is set:

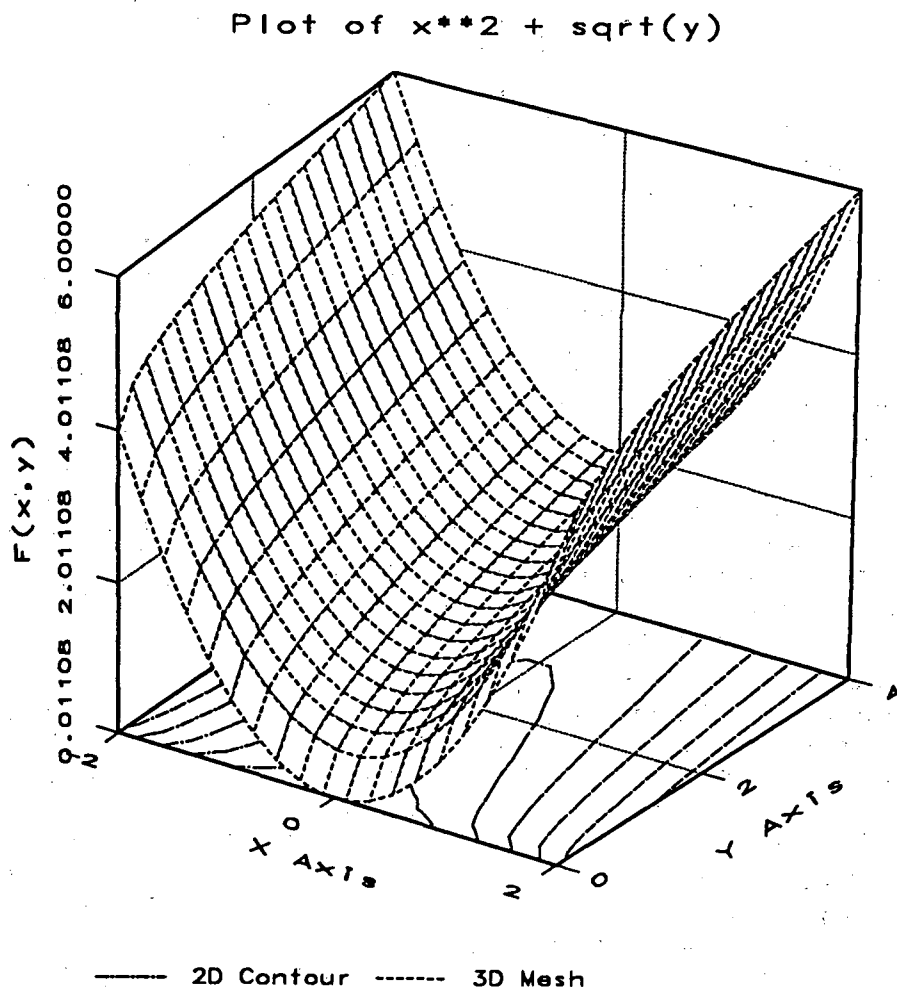
```
set path = ( ./bin /usr/bin .... $KHOROS_HOME/binsun4)
```

for the SUN architecture, or

```
set path = ( ./bin /usr/bin .... $KHOROS_HOME/binsgi)
```

for the Silicon Graphics architecture.

- ✓ Third, if you're going to use cantata, the visual programming utility, you need to include the contents of \$KHOROS_HOME/dotfiles/Xdefaults into your .Xdefaults file in your home directory. Note that this last step is required only once, and is not available through the modules command.



Graph 1. This graph was produced using the Xprism3 tool. It shows one way to visualize a single function.

To use the Modules facility to access Khoros (effectively replacing the first two steps above), type:

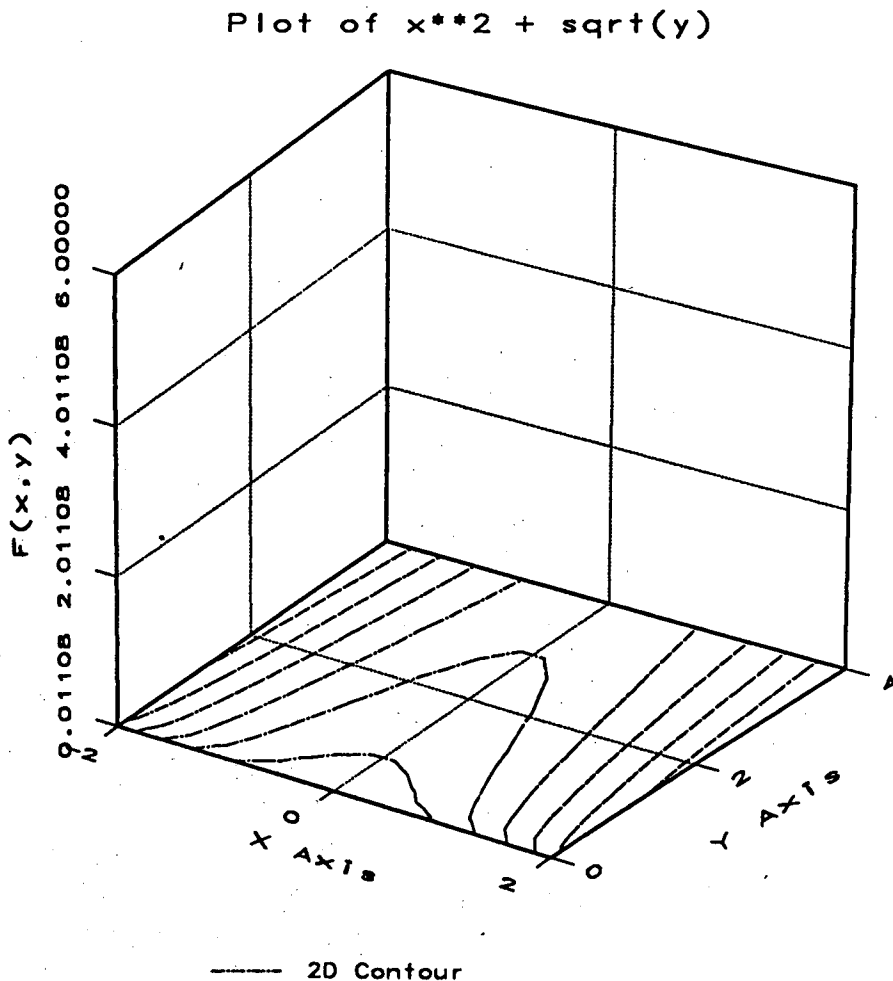
```
module load khoros/sun4
```

for the Sun4 version, or for the SGI version, type:

```
module load khoros/sgi
```

Khoros has its own built-in man facility, called "vman", which is used exactly like UNIX man. For example, to find out about FFT's, type "vman -k fft," which produces the following output:

```
dfft1d (1)  - Forward 1D Discrete Fourier Transform.
diff1d (1)  - Inverse 1D Discrete Fourier Transform.
vfft (1)    - Computes the two dimensional Fast Fourier Transform (FFT)
ldfft1d (3) - Forward 1D Discrete Fourier Transform.
ldiff1d (3) - Inverse 1D Discrete Fourier Transform.
lvfft (3)   - Computes the two dimensional Fast Fourier Transform (FFT)
```



Graph 2. This graph was produced using the Xprism3 tool. It shows one way to visualize a single function.

Khoros Courses

The Computing Resources Department will be offering courses covering the use of Khoros starting this month.

Documentation

Documentation for the Khoros package is available in the form of user-printable PostScript files. All of these PostScript files are located in \$KHOROS_HOME/manual. When printed, they form three manuals, each about three to four inches thick. Volume I is the User's Guide and is probably of most relevance to the user community. The other volumes focus on programming in Khoros and system-related tasks.

The Future of Khoros at LBL

Currently, LBL is collaborating with the University of New Mexico in a project to bring 3D Geometry and Visualization to Khoros. Many of the features available in AVS will be available to Khoros users sometime early next year.

The example on these pages shows how Khoros can be used to solve a traditional image-processing problem of region identification.



Fig. 1. This is the original image.

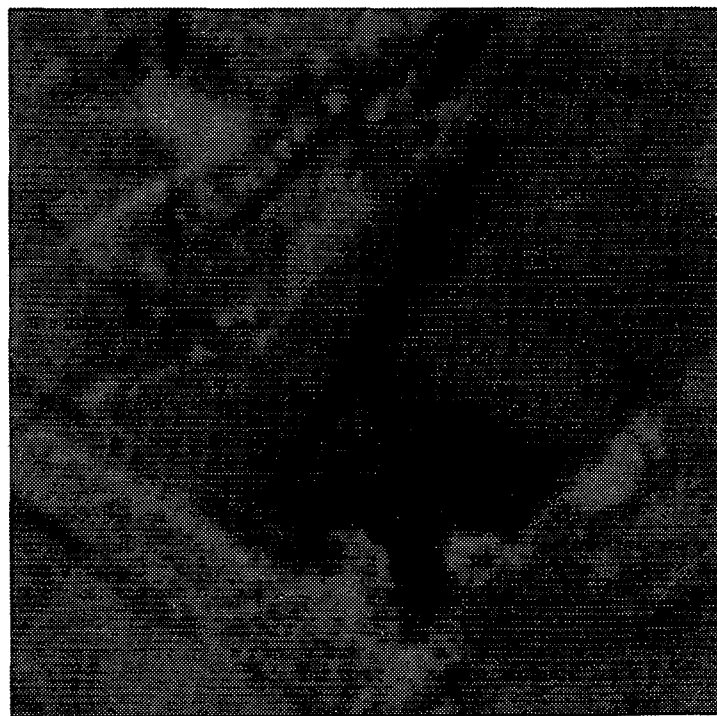


Fig. 2. First, we use a frequency domain low-pass filter on the image after using a 2D fft. This image shows the result after applying the low-pass filter.

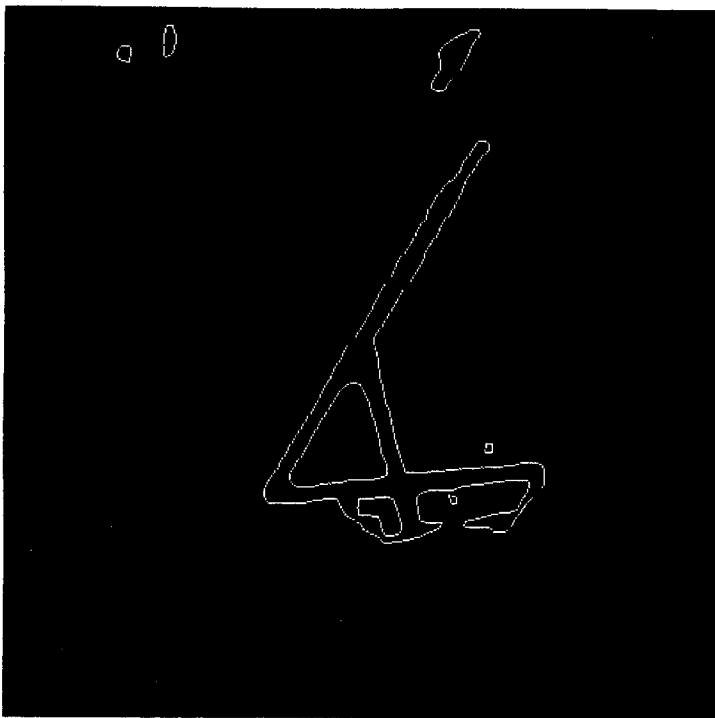


Fig. 3. "Edges" coincide with gray-level transitions and are detected in this case using a first derivative or gradient operator. We have cheated, though: we applied a threshold filter first to produce a binary image prior to the edge-detection process.

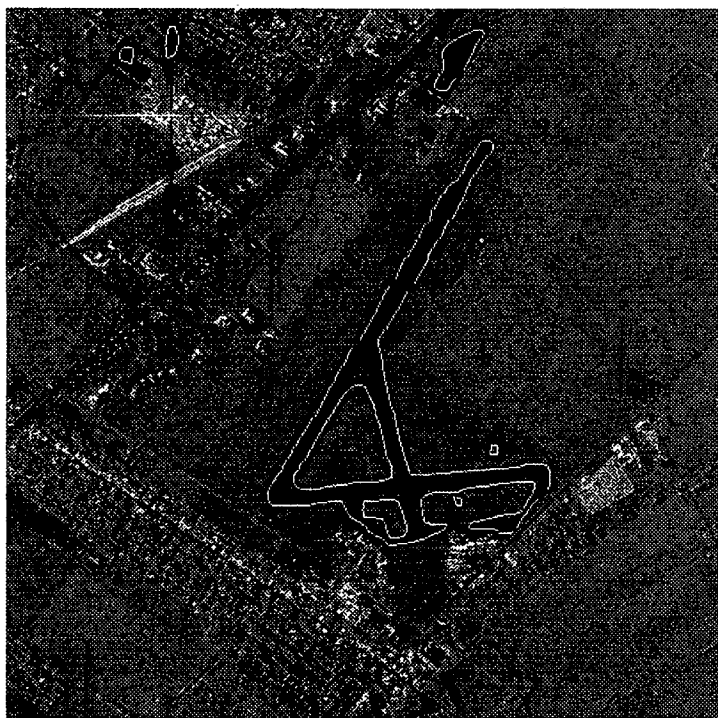


Fig. 4. Finally, we compute the logical "or" of the original image and the image containing the detected edges.

GRAPHICS SOFTWARE UPDATE

Nancy Johnston

NCAR

Version 3.1.3 of NCAR is ready for testing on UX5 & UX6, Sun clients, and workstations that mount `/graphics_export`. This new version—to become the default—will be loaded on Monday, September 14, 1992. Before that date you can try out the test version in `/graphics_export/ncar.new/lib_sun4`. Unless there is demand, a Sun 3 version will not be available with this release. Version 3.1.3 fixes various problems in CONPACK, AREAS, EZMAP, etc.

The VMS version will be updated at the next NCAR release.

IDL

IDL, which has been upgraded to Version 2.3.2, is now available on both Computer Resources' compute servers: UX6 (new) and UX5. Also, two sets of user-contributed IDL procedures—the IDL Astronomy User's Library (`../user_contrib/astro`), and the Fermi JHU/APL User's Library (`../user_contrib/jhu`), have been updated.

GNU PLOT

Gnuplot has been updated to Version 3.2 on the Sun UNIX machines (UX5, UX6, and their clients) and VMS. In addition, executables for *gnuplot* are now available for Silicon Graphics computers.

Version 3.2 has a significant new feature: hidden line removal is now supported for explicit 3D surfaces. You can try out this new feature within gnuplot by doing:

```
% load '/graphics_export/gnuplot/demo/hidden.demo'
      on UNIX
```

```
load 'sy_graphics:[gnuplot.demo]hidden.demo'
      on VMS
```

Other new features include a number of new "set" options for surface, isosamples, view, contour, cntrparam, and mapping. All tic/label/range settings for x and y axes have been extended for z as well.

IMAGE DISPLAY PACKAGES

Two X Window-based image display packages—*xv* and *ImageMagick*—are available for Suns and Silicon Graphics machines. Both packages can handle a variety of formats and will decompress the files first, if necessary.

Display

Display—part of the *ImageMagick* package (from cristy@dupont.com)—can display images in GIF, JPEG, PPM, Sun rasterfile, TIFF, VICAR, X Bitmap, and X Window Dump format; it also has some image-processing capabilities, and is easy to use. With *display* you can scale, rotate, enhance, apply gamma correction, reflect, etc.

Here are three of its niftier capabilities:

- **Zooming.** This is done with the right mouse button, which brings up a separate window that contains the zoomed image.
- **Quantizing the image to match the X display.** When *display* is executed, it first determines the hardware capabilities of the display workstation. If the number of unique colors in the image is less than or equal to the number the workstation can support, the image is displayed in an X window. Otherwise the number of colors in the image is first reduced to match the color resolution of the workstation before it is displayed.
- **Annotation.** You can add text to your image with a choice of fonts and colors.

Check the *man* article for a more detailed listing.



Remember to fill out that "RENEW" form on Pg. 41 and return it to us.

Xv

Xv, written by John Bradley at the University of Pennsylvania, can handle GIF, JPEG, TIFF, PBM, PGM, PPM, X11 bitmaps, Utah Raster Toolkit RLE, PDS/VICAR, Sun rasterfile, and PM formats. Like *display*, *xv* will read compress-ed versions of these files. *Xv* can do most of the same things *display* does, but won't annotate the image or display 24 bits on 24 bit workstations. It has a few additional features:

- with *xv* you can edit the color map with a very nice graphics user interface tool;
- when an image is displayed, *xv* allocates the color map so that color flashing is virtually eliminated as you change windows.

PBMPLUS

Pbmplus is now also available on `/graphics_export` for Silicon Graphics machines. To access it, add the following directory to your path in your `.cshrc` file:

```
/graphics_export/pbmplus/binsgi.
```

The manual pages are in

```
/graphics_export/pbmplus/man.
```

ACCESSING GRAPHIC SOFTWARE

The best way to make sure you have the latest version of *gnuplot*, *xv*, and *display* for Sun workstations is to use the **module** command in your `.cshrc` file. (See "Here's the New Modules Package," by Darrell Davis in the May, 1992 Newsletter for information on Modules.) For example, to add the above to your search and man paths, add the following to your `.cshrc` file after your "set path" command (described in the May, 1992 article):

```
module load graphics/tools
```

If you are on an SGI machine (or do not use modules on the Suns) add the following to your `.cshrc` file:

```
set path (<your current path info.> /graphics_export/bin_sun4 \\  
/graphics_export/gnuplot/bin_sun4)  
setenv MANPATH \\  
${MANPATH}:/graphics_export/gnuplot/man:/graphics_export/man
```

Forward comments and questions to me at x5093 or

UNIX or

Software Tools Mail: NEJohnston@lbl.gov

VMS Mail: lbl::NEJohnston

KODAK PRINT DRIVER UPDATE

Wes Bethel

A new print driver for the Kodak is scheduled for installation on Friday, September 4, 1992. This new driver fixes many of the bugs and shortcomings of the previous version.

Improvements include:

- **Clear Error Messages**
Instead of the cryptic "GPIB Interface error: 2" messages, along with an apology for the arcane nature of the diagnostics, an English description of the problem will be returned. Now, you can expect to get messages like "Out of paper", "Ribbon error" and "Printer door is open."
- **Support for Run-Length Encoded Sun Rasterfiles**
Many of you have requested better support for run-length encoded Sun rasterfiles. With this driver
- **Automatic gamma correction**
You are no longer required to wrestle with the "gamma correction" parameter. After empirically computing the response of the print heads (see the graph below), the necessary correction is now performed without user intervention. A hook is provided to disable correction completely.
- **More Command Line Options**
Various features of this printer are made available through additional command line options. These include background fills and having a time stamp printed on the image. A display illustrating the various options has been constructed and is located for user reference in the Graphics and Workstation Lab in Bldg. 50B, Rm. 1275.

Here is the usage information from the new driver:

Lawrence Berkeley Laboratory Kodak XL7700 GPIB Driver

```
usage:  kodak_d -i type [-h] [-p] [-c] [-p11 | -t8 | -t11]
        [-s xscale yscale] [-c] [-f filename] [-n numcopies] [-e edge_enhance_level]
        [-bg grayvalue] [-bc red green blue] [-ts] [-nocorrect]

-i type  : (required) type of raster file to print. <type> must be either "avs", "sun", or "ps".
-p       : print image in portrait mode.
-h       : display usage information.
-c       : automatic print centering.
-n N     : print N copies of the image.
-s x y   : scale image by x in width and y in height. Limits are 0.5 <= scale <= 4.0 .
-e N     : set edge enhancement level (0=none, 1-4 for prints, 5-7 for transparency).
          Larger numbers sharpen edges.
-p11     : print on 11x11 inch paper media.
-t8      : print on 8.5x11 inch transparency media.
-t11     : print on 11x11 inch transparency media.
-bg gray  : set print background to <gray>. A value of 0 (zero) gives a white background;
          a value of 255 gives a black background.
-bc r g b : set print background to a color defined by the r g b parameters.
          These specify the amount of red, green and blue in the background.
          Values should be in the range 0..255.
-ts      : causes a time stamp to be created and printed with the image.
-nocorrect : disables automatic image "correction"
          performed (this is done to compensate for the print heads
          on the kodak which tends to darken images.)
```

Omissions

Among the omissions (things present in the earlier driver and not in this version) are the deletion of the "icc", "plc", "plm" and "rif." file formats. With the deletion of the "plm" format, the "-d <x> <y>" command line option is no longer needed. The three supported formats are "avs" (AVS image files), "sun" (Sun raster files), and "ps" (PostScript). Tools are available to convert from other file formats to one of these three. Note that the "-g1" and "-g2" command line options are no longer present.

Some New Features

✓ Background fills

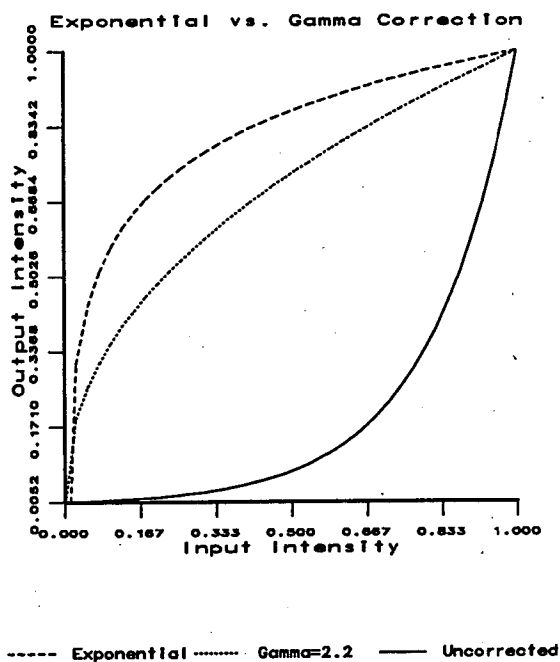
The entire page, outside of the user image, can be filled with a particular color value (up to 1/2 inch from the edge of the paper; a limitation of this particular printer). You have two choices:

- First, you can fill the background with a shade of gray by using the "-bg" option. The numeric parameter which accompanies this option is a value between 0 and 255, where 0 corresponds to a black background fill, and a value of 255 corresponds to a white background fill.
- Alternatively, you can fill the background with a value specified using an RGB-tuple by using the "-bc" option. The three accompanying numeric parameters refer to the levels of red, green and blue in the background shade. Thus, specifying "-bg 255 0 0" will result in a red background; "-bg 0 255 0" a green background; "-bg 0 0 255" a blue background; "-bg 255 255 0" a yellow background; "-bg 128 128 128" a gray background.

✓ Time stamp

You may request that a time stamp be included in your print. The time stamp shows the printer's notion of time and date, and appears in the lower right corner of the image (about 3/8 inch high by 3/4 inch wide), regardless of whether the image is printed in landscape (the default) or portrait orientation.

The graph below contrasts the difference between gamma correction and the new exponential correction built into the driver. Note the uncorrected response of the printer and how images printed would tend to be "too dark" The conversion necessary to produce linear output from linear input is shown as the "exponential" curve. Gamma correction is inadequate for small values of gamma. (Thanks to Greg Ward, Lighting Group, E&E Division for computing this curve).



Forward comments and questions to me at x6626 or

UNIX or

Software Tools Mail: EWBethel@lbl.gov

VMS Mail: lbl::EWBethel

NOTES FROM TROUBLE MAIL

Martin Gelbaum

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

MESSAGE

What is the name of the program to convert TROFF to TeX?

RESPONSE

It's called TR2TEX: it takes a troff source file and outputs a LaTeX source file. HELP TR2TEX tells how to define it, run it, etc.

MESSAGE

When using to UX5:/usr/ucb/mail to read my mail, how can I have it pause every 24 lines when it displays a long message? Thanks,...

RESPONSE

Put the line
`set crt=23`
 into the file named "mailrc" in your UNIX home directory. This makes mail pipe messages having more than 23 lines through the command specified by the value of the PAGER variable (the "more" program by default). Use `set PAGER= shell-command` to use "shell-command" as the filter for paginating output, along with any options to be used. See "man mail" for more information.

MESSAGE

Subject: `xxgdb` vs. `gdb`
 Hi, I have been using the GNU debugger `gdb` to debug some code on a SPARC station. I was told about the XWINDOWS version `xxgdb`, and have tried that. However, it cannot find my source (FORTRAN) files, even if I explicitly tell it what path to search using the `DIRECTORY` command. Running `gdb` in exactly the same works fine. Now I guess that the GNU software is not officially supported here, but has anyone had this type of problem before, or does anyone know where I could get hold of documentation for `gdb/xxdbg`? The manual entry for `xxgdb` doesn't say much, and I haven't found one for `gdb`. Thanks in advance for any help you might be able to give.

RESPONSE

Spoke directly to the user.
 "man `xxgdb`" points out various restrictions, making it clear that `xxgdb` just does not provide some of the functions of `gdb`. Did build some documentation for `gdb` for this user; gave him a copy of the "reference card", a

two-sided summary of `gdb`. Will also provide this through the Help Desk. Also told him the location of the complete `gdb` manual (`gdb.dvi`, which is clearly in DVI format): `UX5:/usr/local/GNU/doc`. The reference card in DVI and PostScript format is also in that directory. Since he clearly has access to an X11 display, he was quite happy to be able to "xdvi" this file, which is about 170 pages long. He was also quite agreeable to printing whatever parts of that file he wanted using "lpr -d" and other flags to pick out sets of pages. (See "man tex" subsections `PRINTING` and `PRINTING_OPTIONS` for details.)

MESSAGE

I was wondering how I could get a general UID. Thanks.

RESPONSE

Send e-mail to "uid@lbl.gov" with a message body using the following format:

Assign uid for user <first last> with login <login_name> and group <group>

For Example:

Assign uid for user stan smith with login smith and group math

MESSAGE

Could you please explain me, how can I find out the priority of my VMS subprocess?

RESPONSE

The command `SHOW PROC` shows the BASE priority of the process. A process has a base priority and a current priority. The Scheduler boosts a process's current priority when certain events (e.g., I/O completion) happen. The `SHOW SYSTEM` command shows the process's `CURRENT` priority.

MESSAGE

Subject: `xv` version 2.20 sparc binary
 I just FTPed `XV` version 2.20 Sparc binary. It has some new features and seems a heck of a lot better than Version 2.00. Let me know if you are interested.

RESPONSE

Thanks for your offer. The graphics group maintains `xv` on `/graphics_export` and we are currently running Version 2.21 for the Suns. If you don't want to continue to maintain your own version you can use the modules package and load `graphics/tools`. This also gives you ImageMagick's `display` which is another nice image display program. `Display` has a nicer zoom feature than `xv` and handles 24 bit displays. `Xv` is better on color quantizing 24 bit images to 8 bits for display and handles

the X color map better. Thanks again for your offer; we are always looking for neat graphics packages.

MESSAGE

Subject: File character substitution

Is there anything like TB available in the VMS environment?

RESPONSE

Called the user; turns out he was trying to find out about "tr"; suggested that he try the following to use "tr" on CSA. Sample usage:

```
$ type/nopage zz.zz
```

```
AAABBB
```

```
$ mcr st_bin:sh
```

```
% tr A-Z a-z <zz.zz > aa.aa
```

```
% logout
```

```
$ type/nopage aa.aa
```

```
aaabbb
```

Thus, "tr" converted all upper-case letters in the file zz.zz into their lower-case equivalents and put the result into file aa.aa. "man tr" on CSA gives details.

MESSAGE

I'm using two lengthy .COM files that define e-mail addresses for a lot of people with whom I correspond. This works all right in my LOGIN.COM on CSA, but when I execute them on XYYZ, I get the error message "SYSTEM-F-INSMEM insufficient dynamic memory" for which the VMS System Messages and Recovery Procedures Manual has one of those cryptic explanations. Can you explain what I need to do to fix the problem. (Maybe I need to know how to increase the size of logical name tables: maybe NETALIAS.COM has gone into some kind of loop.)

RESPONSE

I asked the local system manager to increase the size of the sysgen parameter CTLPAGES. The user was defining a bunch of process logical names. CTLPAGES on that node was 50. I asked him to increase it to 100. CTLPAGES determines the size of the process allocation region in P1 space. Process logical names are stored there.

MESSAGE

Do we have IDL (not the demo version) installed on UX5/UX6?

RESPONSE

We have a license version of IDL for UX5. Run /usr/local/IDL/idl_setup from UX5 to access it. Be sure to have enable UX5 to plot to your workstation before you access idl from UX5. That is, do a "xhost +UX5.lbl.gov" or "xhost +".

MESSAGE

I'm working on a VAX Station 3100; and would like to know whether I can increase the size of the characters on the screen. Any clarification would be appreciated.

RESPONSE

User is using DECwindows on his 3100. You can select CUSTOMIZE, then select WINDOW and select BIG FONT.

MESSAGE

RN has trouble deleting groups that have names that are too long. In the following list, I unsubscribe each day to no avail. Note that all names are truncated. I believe if you changed the number of characters read in the program then the problem will be solved.

RESPONSE

The name field of group struct was too small. I increased it. The problem has been fixed. Thanks for reporting the problem.

MESSAGE

I'm using an HP-730 and when I telnet to CSA I am having trouble getting CSA to recognize my window. It is especially bothersome when I try to run the Vi editor and Vi cannot figure out how big my window is. I set up windows with both XTERM and HPTERM. The HPTERM windows seem useless on CSA and the XTERM windows do better but Vi still has problems. Any ideas? Thanks,

RESPONSE

Please look at the files in the directory setup_newuser, a subdirectory of sys_utilities. The file is there: a login.com, and a couple of other command procedures show exactly how to setup Vi on xterm on CSA. They let one use Vi quite happily on CSA in an xterm window: CSA currently supports 24, 40, 42, and 48 line xterm windows with vi.

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

trouble <return>

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

We encourage new users to include their names and phone numbers in the exchanges; this way we can help them resolve those "startup problems" right away.

THE CONSULT SERVICE

Martin Gelbaum

We announced the CONSULT forum in the May Newsletter. We've received a large volume of questions and comments since then. Following are some typical exchanges.

MESSAGE

You recently answered a user's question about using Versaterm over an ADI box and using AppleTalk only for printing. You suggested switching to Telnet, as if this program offers any advantages over Versaterm. Your information is a little out of date. Versaterm now supports telnet-type connections over AppleTalk and ethernet and you can have multiple sessions open at the same time. It supports FTP file transfers and a host of other transfer protocols. ...

RESPONSE

You're right: VersaTerm now supports multiple sessions, though I think that wasn't a feature till the very latest release.

I think that both VersaTerm and NCSA Telnet are excellent programs. VersaTerm has had superior graphic capabilities all along, and certainly has a wealth of features. The downside is that, for some people, this may make VersaTerm harder to use, especially if they don't need all those features. Were there other areas in which you were disappointed in Telnet?

The ADI box, as mentioned, makes sense if you want to use AppleTalk Remote Access (it's cheaper than buying a modem, not to mention the ongoing rent for an analog phone line).

Thanks for your comments and for correcting the record.

MESSAGE

Someone wants to receive mail on another VMS node off the CSA cluster. Is it safe to copy all of her mail files from one machine to another? Aren't there system files that interact with the user's personal mail files?

RESPONSE

You can move the mail files from CSA to another VMS system.

MESSAGE

I'm having a problem connecting to Melvyl (the UC Berkeley library database program) from NCSA Telnet. ...

RESPONSE

In this case (when connecting to melvyl via Telnet from LBL), it goes without saying that you need to use the full domain name —**melvyl.berkeley.edu**—and you must declare your terminal type, when asked by melvyl, as vt100. Hope this helps.

MESSAGE

Is there someone who could give me a half hour to hour tutorial on the VMS Performance Coverage Analyzer?

RESPONSE

Documentation is available on the bookreader, and it has many examples. Let us know if you need help on a specific problem.

MESSAGE

The "ghostview" previewer seems to have almost no buttons that work. Am I doing something wrong? I would understand if it is unsupported and cannot reasonably be made to work correctly.

RESPONSE

Fixed ghostscript so that all the buttons seem to work fine except the "File" selection menu. If you use ghostview by

```
% ghostview file.ps
```

and then use the Page, Magstep, Orientation, and Media menus and any part of the File menu except the Open button, all seems to go well.

The "Open" dialogue box usually does not work; there may be a bug in it. It seems happiest when started in a directory with very few files in it. However, it is simply not reliable at this point. P.S. The comments above refer to the version of Ghostview (1.2) accessed via module load graphics/preview.

MESSAGE

I need some help setting up a PC on Ethernet in Rm ##. Who would be the best person to help me do this? .

RESPONSE

For hardware problems, call CSE (x5354 or 7554). For software (etc.) difficulties, call the Workstation Group, x6858. Thanks for your patience and cooperation.

MESSAGE

Is it possible to run a Sun-dependent program on an HP-terminal (such as **openwin** or **Sunview**)?

RESPONSE

Try these commands, while logged into your HP running X11 (the HP is somehp.lbl.gov):

(1) type `xhost ux5`

This permits UX5 to write onto somehp's bitmap—that is, to use somehp as its X server.

(2) `rlogin` to UX5 and identify the terminal type as `xterm`.

The terminal identification part is probably not critical, just correct. After logging into UX, type

(3) `setenv DISPLAY somehp:0` to tell X11 applications (including OpenWindows applications) to use somehp as their X server. P.S. SunView applications cannot display across a network.

MESSAGE

Could anyone tell me what a "suitcase" (as in font suitcase) is and how one uses it on the Mac to reduce the number of fonts that show up in the various format menus?

RESPONSE

On System 6:

Run the application called "Font/DA mover" (looks like a suitcase); this will allow you to remove fonts from the system.

On System 7:

Open the "system folder", then a folder called "system" (looks like a suitcase). This folder contains all the installed system fonts and sounds. Drag the unwanted fonts from this folder onto the desktop. The unwanted fonts can be stored in a folder, thrown into the trash, or reinstalled by dragging back to the "system folder".

MESSAGE

Is there a VMS program that can display a file as a hex/ascii dump with 16 chars/line in hex and in ascii, similar to the numerous programs available on the PC? Thanks again for your help...

RESPONSE

The DUMP program does that. You read the hex display from right to left. You read the ASCII display from left to right.

MESSAGE

I received a program as a tar file. After I execute "tar xvf tarfile.tar" to extract the files, should "tarfile.tar" then be discarded? Or would there be something additional left in it requiring that it be kept around? I don't want to throw away anything valuable. Thanks.

RESPONSE

"tar xvf tarfile.tar" should have extracted all the files in it. I usually keep the tarfile itself around in case of disaster, until either the tarfile itself or the files extracted from it have been archived on some other media.

MESSAGE

Do we have this package called LAPACK, a public domain package to replace LINPACK and EISPACK?

RESPONSE

(Response 1): If you are wondering about the availability of LAPACK as part of the CERN Library Math routines, I can tell you that the LAPACK routines will likely be available in the not-too-distant future (see CERN COMPUTER NEWSLETTER No. 207 - CERN\$INFORM:CERN_CN207.PS).

(Response 2): Got the complete LAPACK package from xnetlib today. It is quite big: some 25 megabytes of source code. I will try to get it installed on our UNIX and VMS systems sometime fairly soon.

MESSAGE

I know how to use xhost to grant X window display privilege on my screen to a remote X client. How can I make that setting permanent, so the display permission will be restored every time I reboot my work station? Should I just invoke xhost in my .login file?

RESPONSE

You can invoke "xhost" from your .xinitrc file. Invoke it as you would from an xterm, but direct the output away from the console, (e.g., `xhost ux5.lbl.gov > /dev/null`)

If you seek information on subjects that are not time-critical (e.g., DOE/LBL/Divisional computing policy matters, projected services, training issues), you should consider the CONSULT service an appropriate forum for your computing questions. Forward messages to

`consult@lbl.gov`

If you're on a Computing Services machine, just send mail to

`consult`

FROM THE HELP DESK

A NOTE ON GHOSTSCRIPT DOCUMENTATION ON CSA

Martin Gelbaum

Question:

I find dvips and gs to be useful new tools. Is there any available PostScript documentation on gs? (for VMS use, of course).

Answer:

For a short summary of its usage, type
`gs -help`

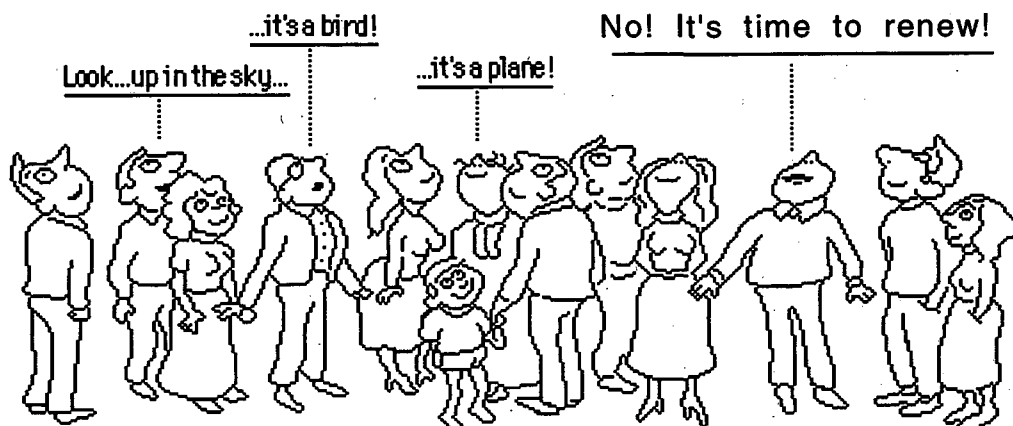
Please look at the PostScript file
`sys_utilities:gs_man.ps`
which is an enhanced version of the UNIX manual page for gs.

There are more detailed documents;
to find them:

```
$ set default sys_utilities:  
$ set default [.gs.docs]
```

Forward comments and questions to me at x4749 or

UNIX or
Software Tools Mail: `martyg@lbl.gov`
VMS Mail: `lbl::martyg`



SOME FREQUENTLY-ASKED QUESTIONS ABOUT USING MODULES

Case Larsen

Question:

What do I put into one of my *. files (e.g., .login . . . which file is best?) to execute "module load . . . " ?

Answer:

- (a) Please see the Newsletter article: May, 1992, Pp. 8-9.
- (b) Put the **modules** command in your .cshrc file.
- (c) Here are a couple of examples of setting up modules:

For the C-shell:

```
if (-e /usr/local/Modules/init/csh) then
    source /usr/local/Modules/init/csh
    if (! $?LOADEDMODULES || "$LOADEDMODULES" == "" ) then
        module load local openwin/3.0 graphics/preview
    endif
endif
```

For the Bourne shell:

```
if [ -d /usr/local/Modules ]; then
    . /usr/local/Modules/init/sh
    module load local openwin/3.0 graphics/preview
fi
```

Question:

How can I use modules in Makefiles

Answer:

For individual shell command sequences, you can execute a module load command which takes effect for those commands. Notice how all the module commands are part of the same command sequence using the "\" continuation character. Note that we run the Bourne shell (/bin/sh) to load modules in Makefiles.

Here is an example of using Modules in a Makefile:

```
tree :
    /bin/sh -c ". /usr/local/Modules/init/sh; module list;\
    module load island;\
    module list"
```

If you want the environment set up by the module command to take effect for the entire make, you can SPAWN a new make process as part of the command sequence. Notice that the island module remains loaded for the spawned make process. Thus, the new Makefile.

all:

```
/bin/sh -c ". /usr/local/Modules/init/sh; module list;\
module load island;\
make tree;\
echo \"make done\";\
module list"
```

tree :

```
@echo "make begun"
/bin/sh -c ". /usr/local/Modules/init/sh; module list;\
module load khoros;\
module list"
```

Forward comments and questions to me at x5455 or

UNIX or

Software Tools Mail: CTLarsen@lbl.gov

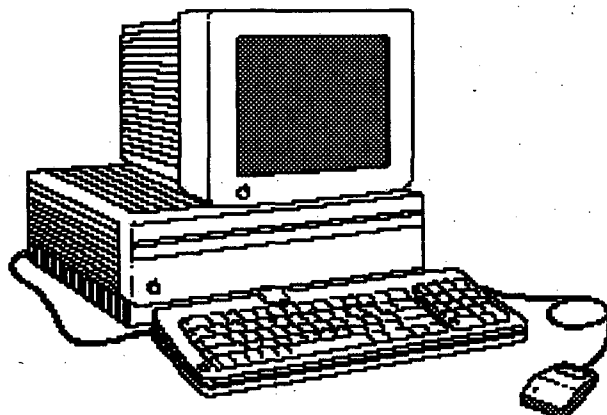
VMS Mail: lbl::CTLarsen

NEWS OF PHYSICS LIBRARIES

Werner Koellner

● GENERAL INFORMATION

A large collection of advanced software in support of current work in HEP and related research is being maintained on the CSA VAX (VMS) cluster and on the SUN (UNIX) platforms. In all cases, object libraries and executable (image) files are built on the local systems from local or imported source codes. Software developed and maintained at CERN represents the major part of this collection. In general the newest releases or pre-releases are offered as default versions for general use with updates and rebuilds occurring at unpredictable times. In most cases HELP library entries or man pages are provided to assist users in selecting or using some particular software package. Please let me know if some package, which may be of considerable interest is not available.



● WHAT'S AVAILABLE

CERN LIBRARIES:

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

FILE CONVERSION:

HIGZCONV	Higz File Format Converter
RTOA	RZ to Zebra Alpha Export Fmt
RFRA	Zebra Alpha Export to RZ
RTOX	RZ to Zebra binary Export Fmt
RFRX	Zebra binary Export to RZ

FILE MERGING

MERGERZ	Merging of ZEBRA Histogram Files
---------------	----------------------------------

FILE TRANSFER:

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

OTHER PACKAGES:

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

● COMPUTING ENVIRONMENT

To create the appropriate computing environment for smooth access to the maintained software, as well as the definition of standard symbols and logical names, execute the following:

ON CSA	ON SUN
It is best to put this line into your login.com. PHYSICS\$MANAGER:SETUP_PHYS	The following lines must be in your .cshrc <pre>if (-d usr/local/Modules) then source /usr/local/Modules/init/csh endif</pre> Then type <pre>module load physics/cern (CERN) module load physics/phys (Misc. Phys.) module load physics/sdcshell (SDC Simulation) module load physics/www (World-WideWeb)</pre>

● HELP AND DOCUMENTATION

For the appropriate HELP entries or man pages, type—

ON CSA	ON SUN
HELP @PHYSICS_UTILITIES	man physics

to display some general text which will lead to more specific HELP entries or man pages. (Except for man pages, most files are available only on CSA.) Eventually the specific HELP libraries or man pages can be displayed directly.

A growing collection of CERN User Manuals are available on-line as PostScript files on both CSA and SUN in the following areas:

ON CSA	ON SUN
CERN\$CERNDoc	\$CERN_ROOT/sun/import/doc

Miscellaneous information files are in CERN\$INFORM, among them:

FILE NAME	CONTENTS
*.HISTORY	Release and bug-fix histories
*.DOC, *.MAN	Additional Users Manuals
*.NOTE	Notes from CERN discussion lists, Bulletins
*.LOGyymmdd	Archived notes from discussion lists
CERN_CNL#.*	(Pre-)prints of the CERN Computer Newsletter
CPC_LIB_mmyy.*	Quarterly indices of the CPC Library
PAW.NEWS*	PAW Release Bulletins

Some *.HLP files, imported from CERN are in CSA::CERN\$CERNHLP.

ON UX5

● NEWS

Release 92b of the CERN Library Software has been installed. Details and new arrivals are listed below under NEW THIS MONTH.

OSF/Motif has been installed on the Suns. To establish the Motif environment, type

```
module load motif/1.1.4
```

You may also need to type

```
module load X11/R4
```

To access an experimental PAW/Motif (Version. 3.14), type

```
pawm <cr>
```

An experimental version of GEANT/Motif is

```
$CERN_ROOT/sun/demo/geantm
```

● LAST MONTH

Use the command

```
module load physics/cern
```

to set up the CERN computing environment, and

```
module load physics/phys
```

to access miscellaneous physics libraries. See "Computing Environment" above and the May 1992 LBL Computing Newsletter.

● GENERAL INFORMATION

- * CERN Software files are located in a directory tree beginning with

```
$CERN_ROOT = /home/ux5/ux5c/phyd/cern
```

- * Miscellaneous PHYSICS Software files may be found in /home/cs2/u3/phys/.

- * Files appropriate for the SUN are in directories beginning with

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

(The \$CERN_ROOT/stardent/ branch is no longer actively maintained).

- * In linking with any library, just specify

```
-l<library>,
```

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

- * On SUN machines, ATC-GKS and X11 are the supported graphics interfaces. Information about linking with these graphics packages can be gleaned from man paw or man geant.

The following libraries are available in

\$(CERN_ROOT)/sun/lib.

LIBRARY	PACKAGES
dzdoc	dzdoc (for dzedit)
geantlib	geanf, geang, geanh, geant, geanx
geant314lib	geane, geang, geanh, geant, geanx
genlib	gen
graflib	hplot5, higz, gkspack
herwig	webber LUND Monte Carlo
isajet	p-p, pbar-p Monte Carlo
jetset73	LUND Monte Carlo (Jetset73 + Pythia55)
kernlib	kerngen, kernnum
minuit	minuit
packlib	cspack, epio, fatmen, ffreed, hbook4, iopack, kapack, kuip, minuit, zbook, zebra, zcedex
pdflib	pdf
pawlib	paw, comis, sigma
geanxmlib	for Geant/Motif
kuipmlib	for Paw/Motif and Geant/Motif
pawmlib	for Paw/Motif

Forward comments and questions to me at x4389 or

UNIX or

Software Tools Mail: **WOKoellner@lbl.gov**

VMS Mail: **lbl::WOKoellner**

ON CSA

● NEWS

Release 92b of the CERN Library Software has been installed. Details and new arrivals are listed below under NEW THIS MONTH.

● LAST MONTH

VAXNEWS, a networked bulletin board/message-handling program with a MAIL-like interface, may be of interest to your collaboration. Contact me for details.

● THE WORLD-WIDE WEB

The WORLD-WIDE WEB merges the techniques of information retrieval and hypertext browsing to provide an easy but powerful global information system. It encourages physicists to share information using wide-area networks. W³ has been developed by participants from CERN, UCB, DESY, SLAC, MSEN, and others. On the Sun, the elegant "viola" hypertext browser is used, while on CSA, the program works only in line-mode. To access it on CSA, type

```
WWW & <cr>
```

On the Sun, type

```
module load physics/www <cr>
```

then just type "www &" to run the program in the background. Besides the excellent on-line information, some documentation can be found in

```
$WWW_HOME/doc
```

This is still experimental. We'd appreciate any feedback, or suggestions about what other features/kinds of information you'd like to have available. Forward comments to WOKoellner@lbl.gov.

● THE CERN CONNECTION

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

```
LPAW@CERNVM.BITNET .....(about PAW)
```

```
LGEANT@CERNVM.BITNET .....(about GEANT)
```

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

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

● GENERAL INFORMATION

Imported and generally-used software is in the hep_utilities directory tree. Other locally-maintained software, or software specific to a particular project, is stored in the PHYS\$LIB directory area.

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

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

single line

```
SUBSCRIBE <list> <your full name>
```

(list being one of the above) to

```
LISTSERV@cernvm.cern.ch
```

● CERN LIBRARY USER LISTS

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

● NEW THIS MONTH

Most active libraries have been rebuilt for Release 92b. Among the new releases are:

```
CERN$JETSET_LIB ..... Version 7.03  
with PYTHIA ..... Version 5.60
```

```
CERN$GRAF*_LIB  
CERN$GEN*_LIB  
CERN$KERN_LIB  
CERN$PACK_LIB  
CERN$PAW_LIB ..... Version 1.14  
CERN$PDF_LIB ..... Version 3.10  
CERN$GARF_LIB ..... Garfield ..... Version 4.06
```

User manuals (in CERN\$INFORM or \$CERN_ROOT/sun/import/doc):

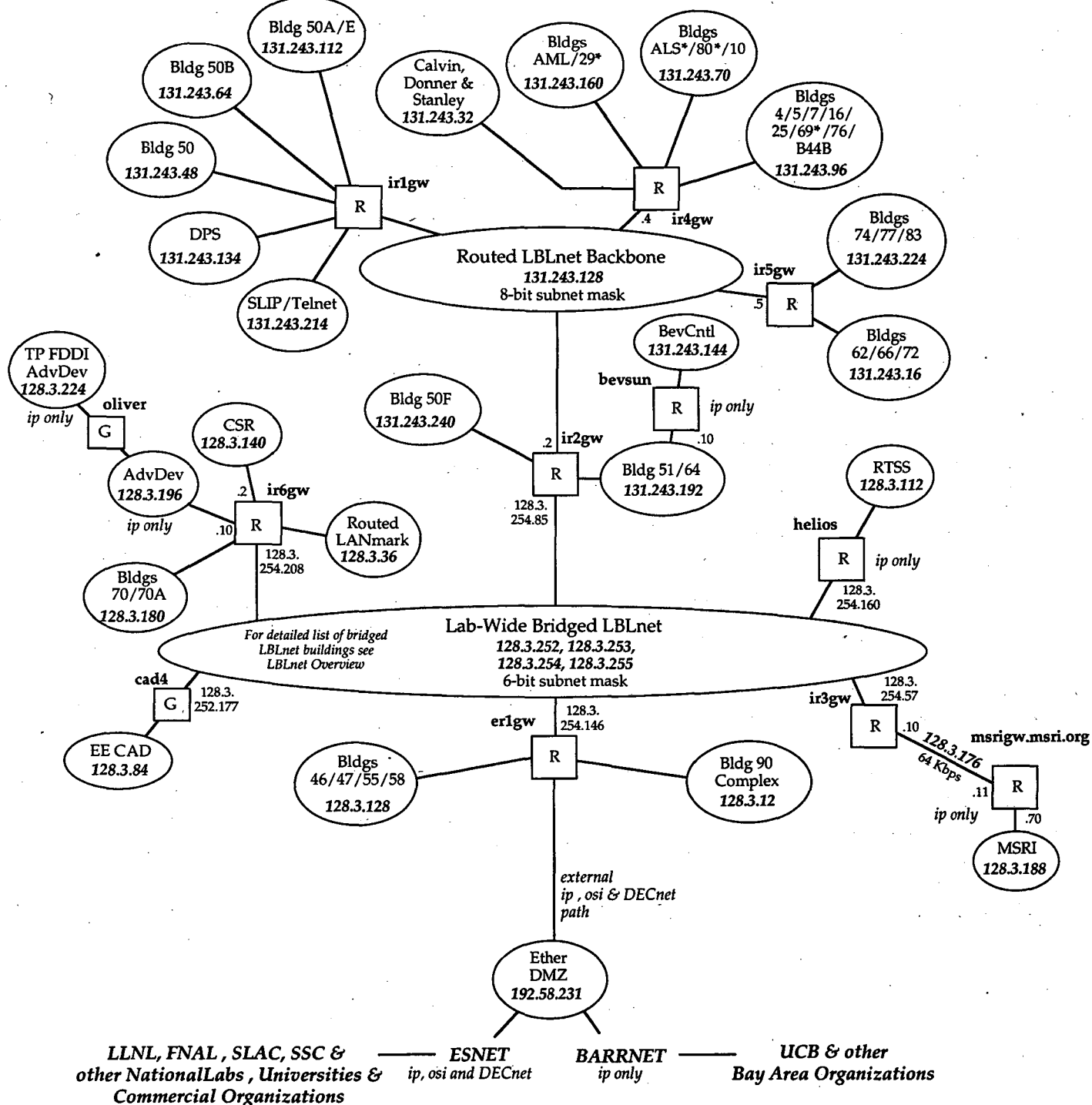
```
cspack.ps  
fluka.ps  
hbook.ps  
higz.ps
```

Executables:

```
paw ..... Version 1.14  
paw_x11  
PAW_DI3000 (on CSA2)  
zftp
```

LBLnet NEWS

* Not installed yet



LBLnet Subnet Overview

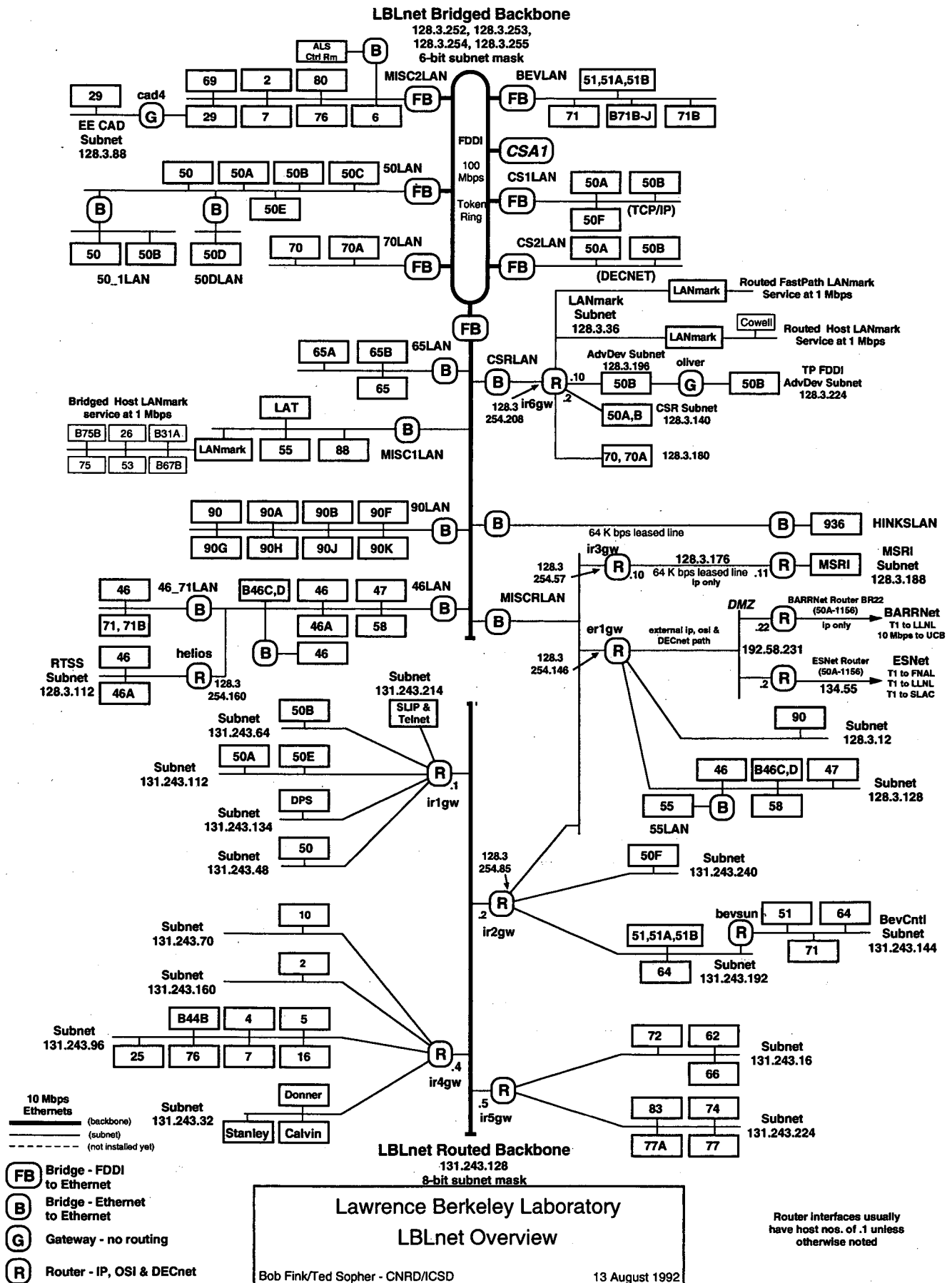
R = IP Router, G = Gateway w/no routing
Circles Represent Routed Ethernet Subnets

Bob Fink/Craig Leres/Ted Sopher

13 August 1992

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

Router interfaces usually have host nos. of .1 unless otherwise noted



FOCUS NEWS

FOCUS CLASSES

Esther Schroeder

Three FOCUS classes are being offered this fall. They will all be taught by staff members from Information Builders Inc. (IBI), the manufacturers of FOCUS. The first class, Course No. 102, is an introductory course designed for people with little or no FOCUS experience. The next two courses, Course No. 125 and Course No. 126, are intermediate courses designed for people with some FOCUS experience.

Course 102 — The Introductory Course

This introductory course will be given on Sept. 16-18 from 9 AM to 4 PM in the Sun Training Room, Bldg. 50B, Rm. 1215. This course is meant for people who have a knowledge of basic computer terminology, hands-on familiarity with a computer keyboard, and who can use a system editor.

The objective for this course, to quote from the IBI course catalogue, is: "... using case studies and extensive hands-on exercises, [to help you] acquire the skills you need to create business reports with both ad hoc and stored report requests."

The description reads as follows: "The course describes FOCUS file structures and presents techniques for selecting and organizing data in reports. It illustrates how to format reports, report from multiple files, and use TableTalk, IBI's automated report generator. Participants acquire reporting skills through extensive practice with business-oriented exercises. They will be given a complementary reporting manual designed to be a reference tool for use back on the job."

The cost for the course depends upon how many people enroll, but should be between \$300 and \$350. (If the course were being taken at an IBI site, the cost would be \$625!)

The following two courses are usually given as one three day course. However, as the contents of the course can easily be split into two courses, we have decided to do that. This gives you the opportunity to take only one if desired and to have a break between the two courses. The cost of this course at an IBI site is \$705.

Course 125 — Creating Menu-Driven Systems

This intermediate-level course will be given on Nov. 16 from 9 AM to 4 PM in the Sun Training Room, Bldg. 50B, Rm. 1215. It will show participants how to create menu-driven systems. This course is meant for people who have a good background in FOCUS and who can use a system editor.

The topics to be covered, to quote from the IBI course catalogue, include:

- Integrating multiple TABLE requests into a single procedure,
- Prompting for user-supplied variables in an interactive reporting dialogue,
- Creating menus,
- Implementing menu selection methods (specifying selection numbers, positioning of the cursor)."

The cost for the course depends upon how many people enroll, but should be about \$150.

Course 126 — Reporting Techniques

This intermediate-level course will be given on Dec. 7-8 from 9 AM to 4 PM in the Sun Training Room, Bldg. 50B, Rm. 1215. It will cover many sophisticated reporting techniques. This course is meant for people who have a good knowledge of FOCUS, TABLE in particular, and can use a system editor.

Some of the topics to be covered include:

- Screening Techniques
 - ✓ Screening for exceptions
 - ✓ Selecting records based on values in segment chains
 - ✓ Selecting the first and last instances in a segment
- Working with new values
 - ✓ Using a DEFINED field in the host file as the JOIN field
 - ✓ Creating a new value based on the preceding value of the field
 - ✓ Setting up and using counters
 - ✓ Using column position in calculating new fields
- Customizing your FOCUS environment
- Sorting
 - ✓ Ranking and grouping data
 - ✓ Specifying the different levels for summary data
- Formatting
- Alternate file views
- FOCUS Reporting Internals
 - ✓ Internal processing of a table request
 - ✓ Managing available memory.

The cost for the course depends, once again, upon how many people enroll, but should be between \$250 and \$300.

To enroll in any of the above, or for more information, please contact Esther Schroeder (x5306), or

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

FOCUS/TOOLKIT BROWN BAG SESSIONS

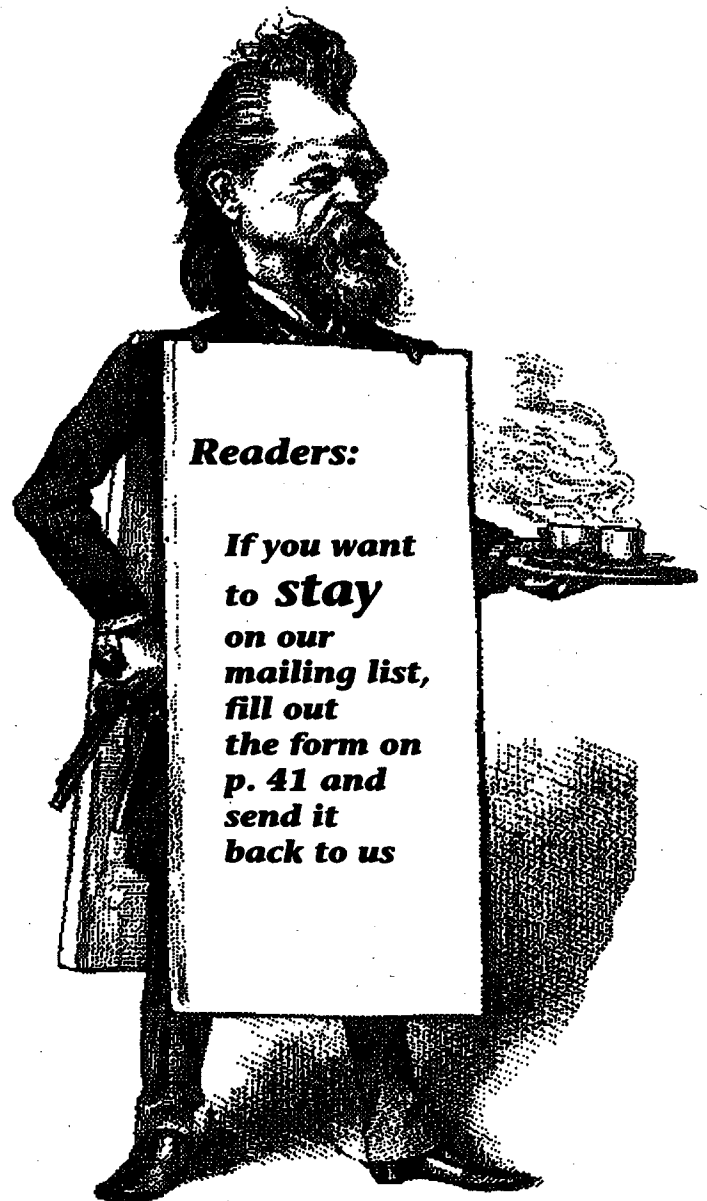
Linda Suarez

In response to increased usage of FOCUS and Toolkit at the laboratory, Data Processing Services will hold monthly FOCUS/Toolkit Brown Bag Sessions, with the intent of providing FOCUS and Toolkit support to users in an informal atmosphere. The sessions will be held every third Thursday of the month.

You are encouraged to bring your FOCUS and Toolkit questions/concerns to these meetings, as there will be no regular agenda. A FOCUS/Toolkit programmer will be present to field questions and provide hands-on assistance.

The first FOCUS/Toolkit Brown Bag Session will be held on September 17 in the B65A Conference Room, starting at 12 noon and ending promptly at 1 PM. Bring your lunch and your FOCUS/Toolkit questions.

For more information or if you have a FOCUS/Toolkit question and cannot wait until the next brown bag session, please call Esther Schroeder at x5306 or Linda Suarez at x6850.



THE WORKSTATION SCENE



The Workstation Group Laboratory, home of the WKSG Help Desk, the WKSG Evaluation Library, several WKSG members, is located in Bldg. 50B, Rm. 1237. The hours are:

Mon 8 AM - NOON
3 - 4 PM

Tues - Fri 8 AM - NOON
1 - 4:30 PM

To reach us using UNIX, QuickMail, Software Tools mail, etc, send E-mail to:

workstation@lbl.gov

To reach us using VMS mail, send E-mail to:

lbl::workstation

Main Help Desk Linex6858

Evaluation Library & Stores linex7444



[29.8.1]

NOVELL USERS' GROUP

Mark Rosenberg

The next meeting of the Novell Users' Group will be from 1 to 3 PM on Wednesday, Sept. 9 in the Bldg. 50F conference room.

The group meets on the second Wednesday of each month. Meetings are geared toward the administration and setup of Novell networks. The July meeting was taken up primarily with organizational matters. In August, Pat Beham from Novell spoke about the operation of Novell Netware 3.11, Network loadable modules, and the migration of 3COM users to Novell.

We've set up a mail group to inform Novell user group members of activities and announcements. If you're interested, you can be added to the mail group by sending a request to **postmaster@LBL.GOV**. For additional information you can contact Mark Rosenberg at x6708, or **MLRosenberg@LBL.GOV**.



[29.8.2]

TRADING POST

Items listed are for LBL use only and must be purchased with a valid account number. If a contact name does not appear with an item below, call Bruce Burkhardt, x7689.

1. **For Sale:** 2ea. Mac SE 20HD/4MB. \$650 ea.
2. **For Sale:** *Package:* Mac SE 20HD/4MB with Kodak DataShow HR/M Projection Pad, Mono. \$850.
3. **For Sale:** IBM/Compatible: Sysgen external 3.5-inch, 730KB/1.44MB Floppy Drive, new. \$195.
4. **For Sale:** Mac Plus, 4MB w/ext DataFrame 30MB Hard Disk. \$450.
5. **For Sale:** *Package:* IBM AT, EGA color, & keyboard, with HP LaserJet Plus. \$400.
6. **For Sale:** 3 ea. IBM AT systems, EGA color monitor, & keyboard. \$250 ea./best offer.



[29.8.3]

EVALUATION UNIT FROM HERTZ

The Workstation group has received an evaluation computer—an IBM clone based on a 50Mhz 486—from Hertz Computer Corp. of New York. The configuration we received includes an Adaptec SCSI controller and 660MB 16MS SCSI hard disk, a Diamond Stealth video card and a MAG 17" monitor. We will be evaluating the Hertz computers for use as both file servers and client workstations here and we'll be reporting the test results in a future newsletter article.



[29.8.4]

PC GRAPHICS HARDWARE

... from Workstation members Bruce Burkhart and Mark Rosenberg

PART I.

VGA ADAPTER CARDS

The IBM PC or compatible computer is usually purchased as a complete system—the easy way—and for obvious reasons: it's a formidable—if not an impossible—task for the average computer user to choose and match peripherals and come up with a working system.

It's best to leave choice of computer memory, graphic (video) boards, and monitors to a consultant or savvy salesperson. However, this doesn't mean you shouldn't be aware of what's in your computer.

So here we'd like to give you our two cents worth—in particular, we'd like to point out some things you should know if you're thinking about a new *large* screen monitor for your computer.

Why a large monitor?

First, the big picture. The success of Microsoft's Windows 3.1 graphical interface software and continuing price wars in computer hardware mean that established patterns in the PC computing world are being dramatically reshaped. Windows software sits on top of the MS-DOS operating system (until Windows NT) and makes the PC look like a Macintosh computer. Like the Mac, Windows gives you the option of opening lots of dialog boxes, displays a crowd of application icons, and shows multiple overlapping program windows.

The question is: can the historical 12-, 13- or 14-inch monitor handle this task? Well, it's trying to, but losing ground. The 17-inch monitor *is* the future standard. It offers

- additional desktop space needed by Windows
- operational features for higher-quality images
- more signal compatibility—autosyncs
- image controls, and antiglare screens
- multiple input connectors, and other features.

Windows may have made the PC easier to use (most users seem to agree that it has), but dealing with the complexity of the hardware is still with us: this includes the selection of the *right* graphics card for that big monitor. Before sorting out monitor issues, let's grapple with the "graphics adapter". Required by all monitors, the graphics adapter card is one of the more mysterious elements in the PC box.

It's hard to separate the technical specifications of the graphics adapter and monitor: they need each other. One of the basic considerations in choosing an adapter for your monitor, big or small, is compatibility.

Does the graphics card I/O plug fit the cable for the monitor, and does it work? Does it display what you anticipated? Is the visual information on the screen too small to read, or too big? Choosing the monitor and matching the graphics adapter is key to how well your PC will work for you.

The VGA & SVGA Card

Every PC sold today supports the VGA (Video Graphics Array) minimum standard of 640-by-480 dot resolution with 16 colors. Although this resolution is fine for a 13- or 14-inch monitor, it's not the optimum resolution for a 16-inch monitor running an application that uses 256 colors in Windows.

A high performance Super VGA (SVGA) card can support multiple resolutions up to 1280-by-1024 (for 19- and 21-inch monitors). Color support at this resolution level is currently only 16 colors.

At 1024-by-768 (for 17- and 19-inch monitors) most cards will support 8-bit or 256 colors. One notch lower at 800-by-600 resolution (for 14- and 17-inch monitors), 256 colors is supported by all card makers. Very recent entries into the SVGA card market are supporting 16-bit or 32,768 colors at this resolution.

SVGA cards are beginning to support True-color, 24-bit 16.7 million colors at the 640-by-480 resolution level. True-color at higher resolutions isn't here yet, but makers will catch up with the Macintosh and Workstation platform soon.

Visual ease of use is a powerful argument for a large monitor system.

In selecting an SVGA card, look primarily for video signal compatibility, performance, and ease of installation: it's not a bad idea to check price too. Compatibility includes matching the card's resolution capabilities and color support with the monitor you've selected.

Performance is speed, reflected in faster bit-map and line redraw. If hardware (dip) switches or jumpers need to be set, be sure your card comes with toll-free technical support, since documentation is poor in some cases. And be sure that the card comes with a 256 color Windows driver. (Don't forget!)

Best Buys—Super VGA

- **Super X VGA** card, \$175, from Boca Research is a very fast card, and it is inexpensive compared to other highly advertised cards. The card supports resolutions of up to 1,024-by-768 pixels with 8-bit, 256 colors.
- **VGAWonder XL** card, \$150, from ATI Technologies, is another other high-performance card with similar color support

- **SpeedSTAR 24X** card, \$140, from ATI Technologies. Formerly called the SpeedSTAR Plus, this card is a best buy for speed and support for multiple graphic modes.

There are lots of cards on the market with all kinds of features. Although choosing a SVGA card isn't as easy as we thought, we feel the ones we've selected are good choices. In addition to VGA and SVGA parameters, there are a few other options—acceleration, memory, and again price—to keep in mind when selecting and matching the right VGA adapter for your monitor and PC system.

Graphics Card Acceleration

The Windows excelerator graphics card is rather new technology, and not well known. Too bad, because the price difference between a top rated "high-speed" or "turbo" graphics adapter card and an adapter card with a S3 or Mach 8 accelerator chip is not that great. For an additional \$100-to-\$150 (over the price of an above-average performance SVGA card) you can install a high-performance accelerator card.

In selecting an SVGA card, look primarily for video signal compatibility, performance, and ease of installation

Speed Counts

Until Windows, (except for CAD and some graphics programs) times for screen-redraw and other graphics data-transfer operations weren't very important. And special drivers were written to enhance the display speed for the few DOS display-intensive applications that did need some zip.

Now, with Windows, it's a whole new ball game. Windows demands more speed to redraw lines, text, windows, and other bit-mapped objects on the screen. Accelerator chips offer faster bit-map & line redraw, rectangle fills & clipping, and off load other graphic operations faster than standard SVGA cards.

Accelerator chips that are "true coprocessors" also cache fonts and do polygon & oval filling. In addition to Windows support, both Super VGA and Accelerator cards usually include AutoCAD support and drivers for many popular application packages.

The new Super VGA cards are faster than the previous generation of VGA cards. The new Accelerator cards are 10-to-25 times faster than SVGA cards. This additional horsepower is not a luxury: it's really necessary. For

two reasons: they must handle the growing number of complex graphic Windows applications, and additional support is needed for larger 17-, 19- and 21-inch monitors.

Best Buys—Accelerator Cards

- **Diamond Stealth VRAM** card, \$239, by Diamond Computer Systems is a top rated accelerator card. It supports a multitude of resolutions up to 1024-by-768 (256 colors) and 1280-by-1024 (16 colors) in Windows. We rate it a Best Buy.

Here are two other high-performance cards with similar technical specifications

- **Orchid Fahrenheit 1280** card, \$230, by Orchid Technology.
- **ATI Vantage** with Dynamic Random Access Memory (DRAM) card, \$258, by ATI Technologies.

Graphics Card Memory & Color

Most of the lower-priced SVGA cards incorporate DRAM chip technology. The result is bit block transfer that accelerates the performance of Windows and other Graphic User Interface (GUI) applications to 10-to-15 times faster than that of a vanilla VGA card.

Video Random Access Memory (VRAM) does simultaneous reads *and* writes (images to screen), while DRAM only reads *or* writes. VRAM's video response provides about double the performance (of DRAM) in graphics-intensive applications. That's why you will see higher prices for adapter cards advertised with VRAM.

First some definitions commonly used in publications and advertisements:

- ✓ **Low-color** is 8-bit, 256 colors.
- ✓ **High-color** is 16-bit, 32,768 (usually referred to as *thousands*), and
- ✓ **True-color**, 24-bit, 16.7 million colors. Generally, the number of colors you need depends on the applications you're going to run.

If a standard is formulating, it's 8-bit, 256 colors. While 24-bit color is available at low resolutions, few, if any, cards (or applications) are currently supporting 24-bit color at high resolutions. If you know of any card that supports true color at resolutions of 1024-by-768 and above (necessary for 19-inch monitors), give us a call. It obvious that the PC platform is rapidly trying to catch up with the graphic display capability of the Macintosh and workstation platforms.

The Bottom Line

If you're considering a 17-inch monitor, remember that you will need a Super VGA card that supports a *minimum* 800-by-600 resolution with 256 colors. A Windows accelerator card is basically a Super VGA card with a micro-coprocessor to speed up the screen-redraw process. Acceleration benefits are significant if you work in AutoCAD, desktop publication, and multimedia.

The new Accelerator cards are to to 25 times faster than SVGA cards. This additional horsepower is not a luxury: it's really necessary.

PART II.

17-INCH MULTISYNC MONITORS

Buying a 17-inch monitor doesn't have to be difficult. Begin the process with a couple of straightforward concerns: quality and compatibility. The quality factors are many, but they boil down to sharpness and color excellence. Compatibility affects what display adapter you can connect to the monitor (and be sure it works!)

If you, as buyer, reach the point where manufacturers' terminology needs unscrambling, consult with the System Engineering Technical Support Group, x7554, or the Workstation Group, x6858: we're all here to help.

Computer Use

Normal word processing & spreadsheet applications and simple databases are general purpose software that most of us use on a daily basis. A vast majority of PC users run these applications in Windows on a 14-inch or smaller monitor every day. Most users have to make do with this small desktop. However, it's time to look at some additional requirements.

- If you work in electrical or mechanical CAD, 3-D modeling, industrial design, or geographical information systems, you will need a 19- or 21-inch monitor.
- A 17-inch monitor will meet the demands of business or scientific graphics applications, video-resolution animation (multimedia), and graphic design production.
- If you must work for long periods with a small 13- or 14-inch active screen for these applications, you will soon be exasperated and unproductive in your work.

Visual ease of use is a powerful argument for a large monitor system.

The Large Monitor

Determining your need to migrate to a 16-inch or even larger 19- or 21-inch monitor was easy—bigger is better. Let's pick some 16-inch winners.

But first let's talk a bit about how manufacturers choose to describe and market their monitors according to "size". NEC describes its monitor as 17-inch and

E-Machines calls its monitor a 16-inch. Is there a difference? Not really: it all depends on how much plastic bezel is added to the advertised size. Basically, the CRT tube is manufactured in four sizes: 13-, 16-, 19-, and 21-inch. The important point to consider is the "active viewing area" for each size. Here, the buyer might well beware. NEC, for example, depicts its 3FGX model as 15-inch. In fact, the active viewing area is really 12.75", similar to other advertised 13-, and 14-inch models.

The Autosynchronous Monitor

The name describes the ability to automatically adjust to a range of scan rates (or synchronizing rates), the number of times per second the screen is refreshed. It's a very interesting subject for techies—not the average user. So, we repeat, "one of the basic considerations in choosing an adapter for your monitor, big or small, is compatibility."

Simply put, if you're going to work at a specific resolution on your new monitor, be sure the SVGA or Accelerator Card you choose supports this resolution *and* the horizontal & vertical timing requirements of the monitor.

Best Buys—17-inch Monitors

We found four top-rated 17-inch monitors that we like. All will work nicely with a Super VGA adapter card—or better yet—an accelerator card. Some important **quality factors** we haven't mentioned: convergence, grille/shadow mask technology, dot pitch, interlace & non-interlace issues, glare-etched screens, base-support, connectors, user controls, CRT radiation, and ergonomics.

All of these factors are considered when we made our "best picks". (For detailed specifications on these quality factors, and others, see the *Resource Material List*.)

- **MAG MX17F**, \$1250, by MAG Innovision, is a top rated 17-inch antiglare silica-coated flat-square CRT, 0.26-mm dot pitch, with an Invar shadow mask. This economical, extremely sharp monitor produces a quality image with lots of extras. For example, it offers a backlit LCD message window in the lower-left corner of the screen that indicates resolution and refresh rate.

This microprocessor-equipped monitor comes with 13 preprogrammed resolution settings for most PC and Mac images. The optimum viewing mode (for 17-inch) is Super VGA 800-by-600 resolution. At 1024-by-768 resolution, more visual information will fit on the screen; however, the characters will be appreciably smaller and harder to read. (You can demo this monitor in the Workstation Lab, Bldg. 50B, Rm. 1237.)

- **Nanao FlexScan F550i**, \$1200, by Nanao USA, is another very economical, highly rated non-glare, anti-static coated flat-square screens, with 0.28-mm dot pitch, conventional shadow mask, 9 PC resolution presets (23 user-defined), including Mac II image size display modes. It is also one of the few PC monitors

now meeting the Swedish MPR-II low radiation emission standard.

The most outstanding feature of this display is its sharpness, and tight focus at 1024-by-768 resolution at 75-Hz refresh rate. Although this monitor does not appear as bright as the other three monitors listed here, it is the most feature-rich of the group. The brightness factor will probably be overcome with the soon-to-be-released Trinitron-based 17-inch T560i model—for Bigger Bucks.

- **NEC MultiSync 5FG**, \$1500 w/“light” or “dark” glare screen, by NEC is a highly rated 17-inch monitor that uses a 0.28-mm dot pitch, flat-square CRT (active display area, 14.5-inch diagonal) with an Invar shadow mask. Although a little expensive, it's the sharpest non-Trinitron autosync monitor on the market. For PCs, it supports VGA, SVGA resolutions and a non-interlaced 1280-by-1024 resolution at 74-Hz.

For the Mac, this monitor produces a 1152-by-870 resolution (dual page) display. The NEC MultiSync 5FG matched with a 800-by-600 resolution, 256 color Super VGA Card (about \$140) would be an excellent choice. However, matched with a Windows Accelerator Card (about \$240) graphics display operations would be up to 25-times faster than with Super VGA.

*If you, as a buyer,
reach the point where
the manufacturers'
terminology needs
unscrambling, consult
with the SETS Group,
x7554, or the WKSG,
x6858: we're all here
to help.*

- **ViewSonic 7**, \$1100, by ViewSonic, may be the best buy of the group. The monitor has a combination of competitive specifications, average performance or better, good image quality, and a very low price. It's built like the others too: 17-inch antiglare silica-coated flat-square CRT, 0.28-mm dot pitch, with an Invar shadow mask. It has sufficient refresh rates for resolutions of up to 1024-by-768. Although this monitor ranks last in this group, it produces an above-average image.

Resource Material List

Background and technical data for this article can be found in the following publications:

- PC/Computing, 3/92; “Graphics Accelerators For Windows”, “In Search of the Ultimate PC.”
- PC Magazine, 6/30/92; “17-inch Displays, A Better View of Windows.”
- PC/Computing, 6/92; “Editors’ Choice: 17-inch Monitors, Super VGA Cards, Windows Accelerator Cards.”
- PC Magazine, 7/92; “The Perfect PC: Video, Essential Peripherals.”
- MacUser Magazine, 8/92; “Autosynchronous Monitors.”
- MacWorld Magazine, 9/92; “The Bigger Picture.”

Various technical specification data sheets from: Diamond Computer Systems, Inc.; NEC Technologies, Inc.; MAG Innovision, Inc., and Nano USA Corporation.

This resource material in this list is available in the Workstation Lab, Bldg. 50B, Rm. 1237. The authors’ electronic mail addresses: BRBurkhart@LBL.GOV and MLRosenberg@LBL.GOV.

[29.8.5]

POWERBOOK KEYPAD

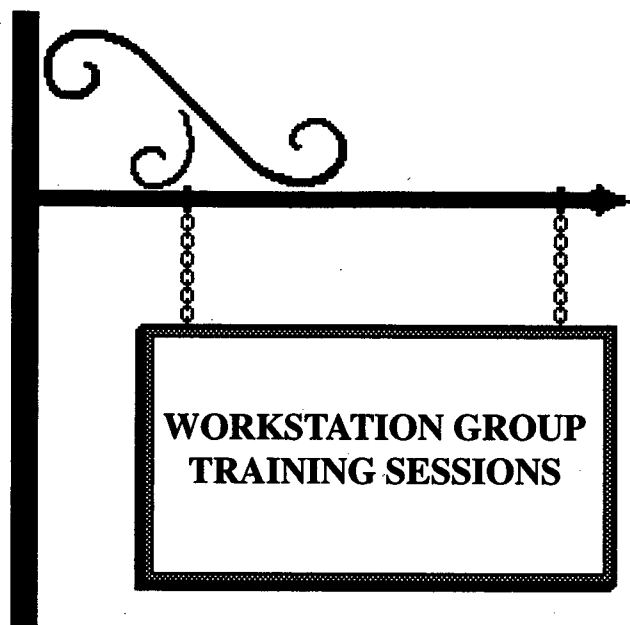
... from NSD's Art Poskanzer

Some of you PowerBook owners may find the fact that it does not have a keypad inconvenient, especially when you are connected to a VMS node and are using some editors and other applications. One solution: buy a keypad from Kensington. Another solution: use VersaTerm, Version 4.5 or VersaTerm Pro, Version 3.5 or later. These have an icon labeled “F1” at the bottom of the right-hand scroll bar. Dragging this icon pops up a screen keypad and a set of function keys.

But many of you who have PowerBooks use Apple Talk Remote Access to mount your disks at work on your PowerBook. It would be nice to use the same phone connection to access both your Mac and your VMS node at work. NCSA Telnet works over the Apple Talk Remote Access connection but does not have the screen keypad feature described above. However, if you install the Telnet Tool into VersaTerm or VersaTerm Pro, you can use it over Apple Talk remote Access. A caution: you have to open VersaTerm after you have made the Apple Talk Remote Access connection, so don't put a VersaTerm alias in your startup folder. The rest is done in the Settings pull-down menu:

select **Connection Tools**,
select **Configure**,
select the **Telnet Tool for the Method**,
enter the host name
(e.g. csa3, helios.ee.lbl.gov, nic.ddn.mil).

Then in future, you will just have to select **Open Connection**. Then using the Finder on your PowerBook, you should be able to switch between your Mac and your VMS node at work, with the advantage of having a screen keypad.



The Workstation Group offers the following classes to LBL staff and participating guests.

PC Classes

Introduction to PC-DOS

Computer: PC

Length of Class: 3 Hours

Learning the basics of PC-DOS is a necessity for every new PC user. In this class, you will become familiar with the terminology behind your computer and you will work hands-on to learn how to copy and delete files and directories, and how to format disks.

Introduction to Windows 3.1

Computer: PC

Length of Class: 3 Hours

Microsoft Windows is a graphical user interface that increases the ease of use of your IBM-compatible computer. In this class, you will gain the skills required to manage files and to take full advantage of Windows's utilities. You will learn how to work with the program groups, directories, and files, and to use the control panel, the file manager, and basic Windows applications.

Introduction to Networking

Computer: PC

Length of Class: 2 Hours

This seminar for PC users of the network explains the basic networking configurations at LBL.

- Connectivity (Kermit, IBX/ADI boxes, the LBL data switch, and modems)
- Data Transfer (Using FTP with Telnet, transferring with Kermit)

Bring a floppy disk to class. You will get a copy of Telnet, Kermit and the ICS User Guide.

cc: MAIL Administrators

Computer: PC

Length of Class: 1 Hour

In this class you will learn the cc:MAIL PO Administrator's responsibilities, mail system topology, and PO maintenance (adding users, deleting users, password maintenance, mailing lists, bulletin board). You will also learn cc:MAIL utilities (notify, messenger, backup) and end-user installation and training.

cc: MAIL - PC DOS User

Computer: PC

Length of Class: 1 Hour

In this class the PC DOS user will be taught how to install and start cc:MAIL; will become familiar with main mail features (receiving and replying to e-mail, sending e-mail, creating a new message, etc.) and will be taught how to change passwords. He will also learn various ways of addressing mail; storage options; sorting mail; and most importantly, the do's and don'ts of e-mail.

cc: MAIL - PC Windows User

Computer: PC

Length of Class: 1 Hour

In this class the PC Windows user will learn how to install and start cc:MAIL; will become familiar with cc:MAIL mail features (receiving and replying to e-mail, sending e-mail, creating a new message, etc.) and will be taught how to change passwords. She will also learn various ways of addressing mail; storage options; sorting mail; and most importantly, the do's and don'ts of e-mail.

Macintosh Classes

Microsoft Word

Computer: Macintosh

Length of Class: 6 Hours

In this course you will learn the basics: entering and editing text, formatting text and documents, finding and replacing text, entering and editing tables, and applying styles. Previous word-processing experience not required, but the Basic Macintosh Seminar or equivalent experience preferred. (See the Basic Macintosh Seminar for more details.)

FileMaker Pro

Computer: Macintosh

Length of Class: 4 Hours

This course covers the basic features of the FileMaker Pro database program. The hands-on class example will teach you how to create a database with three different views (called layouts) of your data: (1) Data Entry Screen, (2) Report, (3) Mailing Labels. You will also learn how to find, sort, and print the records in your database. In the last hour of the class you will learn how to create a subsummary part (for summarizing data from certain groups of records), and a grand summary part (for a grand total) of a specific field. Previous database experience not required for this class, but the Basic Macintosh Seminar or equivalent experience preferred. (See the Basic Macintosh Seminar for more details.)

Microsoft Excel

Computer: Macintosh

Length of Class: 6 Hours

In this course you will enter text, numbers, formulas, and date values, then format the worksheet and organize your data using Excel's features. Previous spreadsheet experience is not required for this class, but the Basic Macintosh Seminar or equivalent experience is preferred. (See the Basic Macintosh Seminar for more details.)

Introduction to Networking

Computer: Macintosh

Length of Class: 4 Hours

This seminar explains basic networking configurations at LBL.

- Connectivity (Appletalk, Fastpath gateways, Telnet, the LBL data switch, IBX/ADI boxes, and modems)
- Filesharing (AppleShare servers, sharing data with System 7.0)
- Remote Communications (Appleshare Remote Access, Versaterm)
- Data Transfer (Using FTP with Telnet)

Bring a floppy disk to the class. You will get a copy of Telnet and documentation including the ICS Data User Guide, Appleshare Remote Access and system 7.0 file sharing.

Seminars

Basic Macintosh

Computer: Macintosh

Length of Class: 1 Hour

In this one-hour seminar, the new Macintosh user will learn the basics necessary for using the computer: how to turn on the computer, how to use the mouse and how the equipment works. From there: how to use system menus, and how to operate windows, folders and documents on the desktop.

Introduction to System 7.0

Computer: Macintosh

Length of Class: 1 Hour

In this one-hour seminar you will learn the new features of System 7.0, including Balloon Help, the System folder's Extensions and Preferences folders, the new and improved Finder, the new System 7.0 System folder configuration, and how to work with fonts. Previous Macintosh experience not required, but the Basic Macintosh Seminar or equivalent experience preferred. (See the Basic Macintosh Seminar for more details.)

Class Schedules & Enrollment

Call 486-4511 to enroll. Current WKSG training schedules are on WKSG Server 2 (300M Disk) and in the monthly LBL Computing Newsletter.

YES, I would like to CONTINUE to receive the LBL Computing Newsletter

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Central Office 5871.2 50F 146

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VMS SYSTEM

Eric Beals (ERBeals) 5351 50F 143

UNIX SYSTEM AND DISTRIBUTED PRINTING

Craig Eades (CAEades) 6569 50F 144

UNIX (DSDavis) 5740 50F 110

Distributed Printing (RERendler) 5629 50F 129

System Manager: Roger Cochran (RJCochran) .. 5565 50F 127

WORKSTATION GROUP

Nancy Johnston (NEJohnston) 5093 50F 145

WKSG HELP DESK 6858 50B 1237

Software Evaluation and Acquisition 7444 50B 1237

Recorded Announcements 7111

USER RESOURCES

Accounting 7008 50F 142

HELP DESK 5981 50B 1215

Math Libraries 4749 50F 114

Document Management 5534 50F 132

Opening a New Account (PSBean) 7008 50F 142

UNIX and Cluster:

Software Acquisition & Management 5534 50F 132

COMPUTING FACILITIES

Connecting a Remote Terminal 5354 50B 2215

Terminal Repair

Paul G Murray (PGMurray) 5354 50B 2215

Operations Area 6211 50B 1215

Duncan Connor (DJConnor) 6211 50B 1225

Dan Van Zile (GDVanZile) 5534 50F 132

IMAGING TECHNOLOGY GROUP

Head: William E. Johnston (WEJohnston) 5014 50B 2276

CENTRAL ELECTRONIC MAIL FACILITY

First Initial-Middle Initial-Last Name is the standard recipient format in lab-wide mailing address

Examples: VMS lbl::JASmith
UNIX JASmith@lbl.gov
Software Tools JASmith@lbl.gov

NETWORK CONTACT INFORMATION

LBLnet New Installations & Trouble Calls

Ted Sopher (TGSopher) 4559, 5354 50B - 2266

DECnet Administration

William Jaquith (WDJaquith) 6966 50F - 128

IBM PC & Mac Network Administration

William Jaquith (WDJaquith) 4388 50F - 128

Nancy Travis (NJTravis) 7690 50B -1232D

Mark Rosenberg (MLRosenberg) 6708 50B -1232C

Distributed Printing/Kinetics FastPath

administration and requests

Bob Rendler (RERendler) 5629 50F - 129

AppleTalk & Kinetics FastPath Support 5354 50F - 2215

LBLnet troubles trouble@lbl.gov

LBLnet comments or non-critical trouble reports lblnet@lbl.gov

Internet administration ip-request@lbl.gov

LBL Postmaster for Lab-wide mail postmaster@lbl.gov

Network Advisory Group (NAG) nag@csam.lbl.gov

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

ICS

ICS Access Names

[VAX 65xx's & 66xx (Generic).....CSA]

VAX 6510 (VMS) CSA1

VAX 6510 (VMS) CSA2

VAX 6610 (VMS) CSA3

SUN-3/280 (UNIX 1) UX1

SUN-3/180 (UNIX 3) UX3

SUN-690 (UNIX 5) UX5

SUN-690 (UNIX 6) UX6

SUN-3/180 (ISD) ISD

Dial-up Access Numbers for ICS

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

Local TYMNET Access Numbers for ICS

	1200 BPS	2400 BPS
Oakland	430-2900	633-1896
Walnut Creek/Concord	935-0370	935-1507
San Francisco	974-1300	543-0691
Santa Clara	408-432-3430	932-8618
Palo Alto	415-366-1092	361-8701
San Jose	408-432-3430	432-8618
Fremont	510-490-7366	490-7366
Davis	916-758-3551	
Burlingame	415-588-3043	
Vallejo	707-644-1192	
Antioch	754-8222	
Pleasanton	462-2101	

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