Lawrence Berkeley National Laboratory

Title

LBL Computing Newsletter Vol 25 No 10

Permalink

Author

Lawrence Berkeley National Laboratory

Publication Date

1988-10-01

DISCLAIMER

TABLE OF CONTENTS

For Reference

Not to be taken from this room

OCTOBER 1988

NAMES & NUMBERS TO KNOW

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

INFORMATION & COMPUTING SCIENCES DIVISION
Director: Stewart Loken (SCLoken) 7474   50B - 2232E
Deputy: Sandy Merola (AXMerola) 7440   50B - 2232C

COMPUTING AND COMMUNICATIONS RESOURCES
Head: Ken Wiley (KGWiley) 7083   50B - 2258E
Office of Computing Resources:
         Dave Stevens (DFStevens) 7344   50B - 2258F
LBLnet Manager: Sig Rogers (SGRogers)........6713   50B - 2258G
Telephone Services: Sam Gibson (FSGibson).4234   80A - 103

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

WORKSTATION GROUP
Group Leader: Richard LaPierre (RLLaPierre)....4692   50B - 2245
    Software Evaluation & Acquisition...............6858   50B - 2231

COMPUTING SERVICES
Head: Marv Atchley (FMAtchley)......................5455   50F - 104
Asst.Head: Serge Polevitzky (SIPolevitzky) ...4389   50F - 142
    Central Office...5871   50F - 125

VMS SYSTEM
    Eric Beals (ERBeals) 5351   50F - 143
    System Manager (GPJohnson) 6211   50B - 1225

UNIX SYSTEM
    Dave Cleveland (DHCleveland).....................5336   50F - 115
    System Manager (RJCochran) 5565   50F - 127

DISTRIBUTED PRINTING
    Bob Rendler (RERendler)................................5629   50F - 119
    System Manager (RJCochran) 5565   50F - 127

USER RESOURCES
Jerry Borges (JTBorges) 5568   50F - 144
    Accounting...7008   50B - 1232A
    HELP DESK...5981   50B - 1272
    Math Libraries 4749   50F - 114
    Library/ Document Sales................................4242   50B - 1232B
    Opening a New Account (PSBean).................7008   50B - 1232A
    UNIX and Cluster
        Software Evaluation & Acquisition...........5568   50F - 144

COMPUTING FACILITIES
    Connecting a Remote Terminal (ACHart)....7444   50F - 129
    Graphics 6945   50F - 126
    Network Coordinator (WDJaquith) 4388   50F - 109

COMPUTING FACILITIES (Continued)
    Operations Area 6211   50B - 1215
    Develcon Problems & Terminal Repair
        (PGMurray)..5354   50B - 2259

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

CENTRAL ELECTRONIC MAIL FACILITY

FIRST INITIAL-MIDDLE INITIAL-LAST NAME is the standard
recipient format in Lab-wide mailing address.
Examples: VMS: lbl::JASmith
            UNIX: JASmith@lbl.gov
    Software Tools: JASmith@lbl.gov

DEVELCON
DEVELCON Access Names

    [VAX 8650's (GENERIC) ....CSA]

    VAX 8650 (VMS) CSA1
    VAX 8650 (VMS) CSA2
    VAX 8650 (VMS) CSA3
    VAX 8650 (VMS) CSA4
    VAX 8650 (VMS) CSA5

    SUN-3 / 280 (UNIX1)......................................UX1
    SUN-3 / 180 (UNIX3)......................................UX3
    SUN-3 / 180 (ISD) ....ISD

Dial-up Access Numbers

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

Local TYMNET Access Numbers for DEVELCON

	1200 bps	2400 bps
Oakland	430-2900	633-1896
Walnut Creek/Concord	935-0370	935-1507
San Francisco	974-1300	543-0691
Santa Clara	408-980-8100	986-0646
Palo Alto	415-366-1092	361-8701
Vallejo	707-644-1192	
Antioch	754-8222	
Fremont	490-7366	
Pleasanton	462-2101	

MFE Consulting Number is 422-1544

SCHEDULES FOR COMPUTER CLASSES

IN THE TRAINING ROOM, BLDG. 50B, RM. 1237
or
IN THE BUILDING 50F CONFERENCE ROOM

Jerry Borges

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

DATE	TIME	DESCRIPTION	INSTRUCTOR
October 26	10 AM - NOON	Electronic Mail: Survey	William Jaquith
Oct 17, 19, 21	9 - 10:30 AM	Introduction to UNIX	Ed Sheena
Oct 19 & 21	1 - 3 PM	Introduction to VAX/VMS	Marty Gelbaum

IN THE MAC TRAINING ROOM, BLDG. 50B, RM. 1229

Carole Casaretto

The following computer classes will be offered by the Workstation Group. There is no charge for these classes. To enroll, obtain your supervisor's approval and then contact Carole Casaretto, (x6858). Those classes with asterisks (*) appended are already full.

Call **now** to sign up for classes later in the year. For more information, see **THE WORKSTATION SCENE** in this Newsletter. If you have any questions regarding these classes or suggestions for other computer-oriented topics, contact Richard LaPierre (x4692).

DATE	TIME	DESCRIPTION	INSTRUCTOR
Oct. 3, 5	3-4:30 PM	Basic Intro. to **FileMaker***	Claudia Madison, C. Casaretto
Oct. 11, 13, 18, 20	1-2:30 PM	Beginning **MS WORD 3.01***	Karla Savage, Tom Pope
Oct. 19	10-11 AM	Introduction to **HyperCard**	Bruce Burkhart
Oct. 24, 26	10-11:30 AM	**HyperCard** -- Creating Cards and Stacks	Bruce Burkhart
Oct. 26, 27, 28	8:30-10 AM	Introduction to **MacDraw II***	Karla Savage, Carole Casaretto
Oct. 26, 28	1-3 PM	Beginning **EXCEL** Spreadsheet*	Claudia Madison, Dana Conant
Nov. 8, 10, 15, 17	1-2:30 PM 3-4:30 PM	Beginning **MS WORD 3.01**	Karla Savage, Tom Pope Claudia Madison, J. Wolslegel
Nov. 9, 11	1-2:30 PM	Basic Intro. to **FileMaker***	Claudia Madison, C. Casaretto
Nov. 28, 30, Dec. 2	1-3 PM	Beginning **EXCEL** Spreadsheet*	Nancy Travis, A. Soulsburg
Nov. 30, Dec. 1, 2	10:30-12 noon	Introduction to **MacDraw II**	Karla Savage, Carole Casaretto
Jan. 11, 13	1-2:30 PM	Basic Intro. to **FileMaker***	Claudia Madison, C. Casaretto
Jan, 25, 27	1-3 PM	Beginning **EXCEL** Spreadsheet	Claudia Madison, C. Casaretto

LBLnet NEWS

Bob Fink
Sig Rogers

An Extended Ethernet Topology

LBLnet has conformed to published Ethernet topology standards as the conservative approach to providing a highly reliable network. The standard topology specifies how many segments of cable may be interconnected with repeaters and how long each segment may be. With the Phase II expansion of LBLnet it has become necessary to understand the real limits of Ethernet topology to determine the most cost-effective topologies in addition to guaranteeing high reliability.

To this end, LBLnet staff instituted an Ethernet conformance testing facility (see last month's LBLnet News) and performed a series of experiments in extended Ethernet topology. The results of these measurements and tests will allow LBLnet topologies which minimize the use of bridges where they aren't needed for load isolation, thus making LBLnet cheaper to install and easier to maintain.

This article provides more technical background of this work.

Ethernet Topology

Ethernet topology is carefully spelled out in the Ethernet 2.0 and IEEE 802.3 standards documents. The basic goal in specifying topology is to prevent the installation of networks that exceed timing and signalling parameters. In particular, if a network gets too long, i.e., has a round trip signalling path greater than a certain time, then packets may be transmitted successfully by the transmitter but the receiver may never see them due to collisions. In other words, the collision detection scheme will fail.

The basic topology architecture of Ethernet is quite simple: Multiple Ethernet segments (i.e., pieces of coaxial cable up to 500 meters long) may be interconnected with repeaters providing that no more than three segments and two repeaters are in the path between any two users. This gives a star-like structure with a core segment at the center and repeated segments radiating from it. See Figure 1.

core segment

repeaters

repeated segments

STANDARD ETHERNET TOPOLOGY

Figure 1
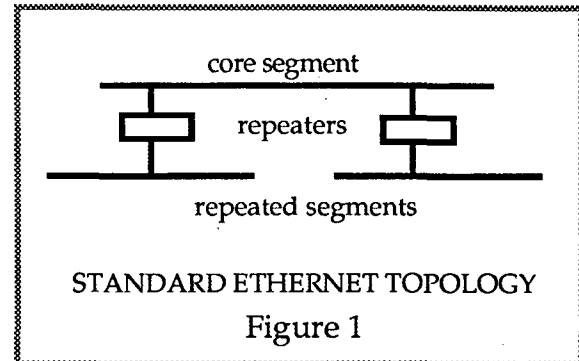
The repeaters may be local or remote. Remote repeaters are pairs of repeaters interconnected with up to 1000 meters of optical fiber cable. This is typical of the existing LBLnet. The maximum overall length of a standard Ethernet is then calculated as three 500 meter segments and 1000 meters of repeater fiber for a total of 2500 meters (actually 2800 meters if the six possible 50 meter transceiver cables are added in).

The use of bridges or routers between any two such Ethernets allows the construction of larger networks. The use of bridges has allowed multiple Ethernet topologies to be utilized in LBLnet. Bridges also isolate the local load on each side of the bridge from the other side.

The Need For A New Topology

As LBLnet is extended into smaller buildings using the new ICS fiber plant now being installed, economy dictates the need to minimize the use of bridges when they are not needed to isolate load. A case that violated standard Ethernet topology is shown in Figure 2 where more than three segments and two repeaters are between some users.

To date LBLnet has utilized only standard configurations to guarantee LBLnet reliability. To change our approach in any way that reduces reliability would be unacceptable. Therefore, great care was taken to understand the real limiting factors to Ethernet topology. In last month's LBLnet News a conformance testing facility was discussed. Conformance testing is done in part to help understand the limits of Ethernet.

core segment

remote fiber repeaters

local repeaters

repeated segments

· EXTENDED ETHERNET TOPOLOGY

Figure 2
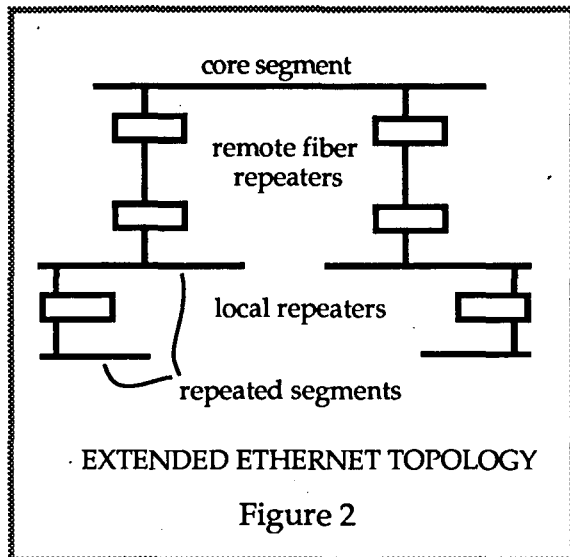
Measurements Of Ethernet Components

Since the principal determinant in Ethernet topology is the time it takes to travel certain paths, extensive measurement of all delays in every network component used in LBLnet were made. Then tests were done with combinations of components to detect unexpected or undesirable interactions. As one would expect, we (LBLnet staff) learned more and more about what the limits of an Ethernet are.

Two design factors dictate the maximum length, or round trip time, for an Ethernet. The first, mentioned above, is to guarantee that if a sender's packet collides with another packet, the sender will detect that collision. This means that for the minimum length Ethernet packet of 64 bytes plus 64 bit . preamble any potentially colliding packet must be seen by the sender no more than 57.6 microseconds after the start of its transmission. (This is calculated as 64 bytes*8 bits + 64 bits multiplied by 100 nanoseconds per bit.) This means that the round trip time on the network must be below this time.

The second factor is more limiting. The maximum fragment size on the network (fragments are the packets resulting from collisions) must be less than the minimum sized packet so that interface hardware can discard them without processing overhead. The derivation of this limit is affected by the generation of 96 bit jamming signals in all repeaters that detect a collision. Since jams contribute to collision fragment size a collision must

occur within ~48 microseconds of transmission so that the jam doesn't make the fragment larger than the 57.6 microseconds minimum transmission size. Thus a less than 48 microsecond round trip time on the network is dictated.

For LBLnet it is easy to determine maximum round trip time. Conformance testing has supplied us with all component delays, and extensive knowledge of the physical site from the ICS installation has provided us with the delays to expect in cable. Round trip times in LBLnet between any two buildings via an ICS Node Site are well under 40 microseconds.

Repeaters In An Ethernet

Upon extensive study of original design documents from the 802.3 standards committee it was discovered that the two repeater limit was to prevent the inter-packet gap (IPG) from shrinking below prescribed minimums. The nominal IPG is 9.6 microseconds, however, it may be as small as ~7 microseconds. The original work on repeaters presumed worst case variances in designs that did not even exist at the time. Actual measurements in the LBLnet conformance work on available repeaters show no such variances in repeater chains up to 8 deep and no IPG shrinkage.

These measurements left us confident of the viability of the extended Ethernet topology, but without any testing in an actual configuration we were hesitant to proceed. This was solved by a very fortunate collaboration with David Boggs, now of Digital Equipment Western Research Laboratory (DECWRL) in Palo Alto. David is one of the two inventors of Ethernet in 1973 (he was then at Xerox); Bob Metcalf was the other (he is now head of 3COM). David participated in the evolution of the Ethernet as we know it, but hasn't been involved for several years. However, recently he became interested in demonstrating the performance capacity of an Ethernet utilizing the Titan RISC workstations at DECWRL. He hoped to show the true maximum capacity of an Ethernet in very high load situations. Thus he configured up to 24 of these 15 MIPS workstations at a time on Ethernets under controlled load and measurement conditions.

Early this summer, when we first saw David's work, he had performed his tests using a short 10 foot and a medium length 3000 foot network with no repeaters. We proposed that he repeat the tests using an LBL-supplied test network that was very long and had

many repeaters in it. David agreed and the tests were done in July and August using maximum-sized networks with up to 8 repeaters. The results were surprising to all of us. Not only did the repeaters perform reliably but the performance of the network was only 10% less than David's short network. The Ethernet standard design is indeed a robust and conservative one.

At this point, the LBLnet staff is confident of the extended Ethernet topology. It will be used to minimize the use of bridges and routers in sparse areas of the Laboratory. Of course the actual size of these networks will always be well known and their performance and reliability will be carefully monitored, as it is for all of LBLnet.

Network Contact Information

LBLnet new installations:
      Ted Sopher,   x4559 or x5354

LBLnet trouble calls: x5354

LBLnet comments or trouble reports:
      lblnet@lbl

For Decnet administration:
      William Jaquith,   x4388

For Internet administration:
      Darren Griffiths,   x6966

For IBM PC and Macintosh network administration:
      Richard LaPierre,   x4692
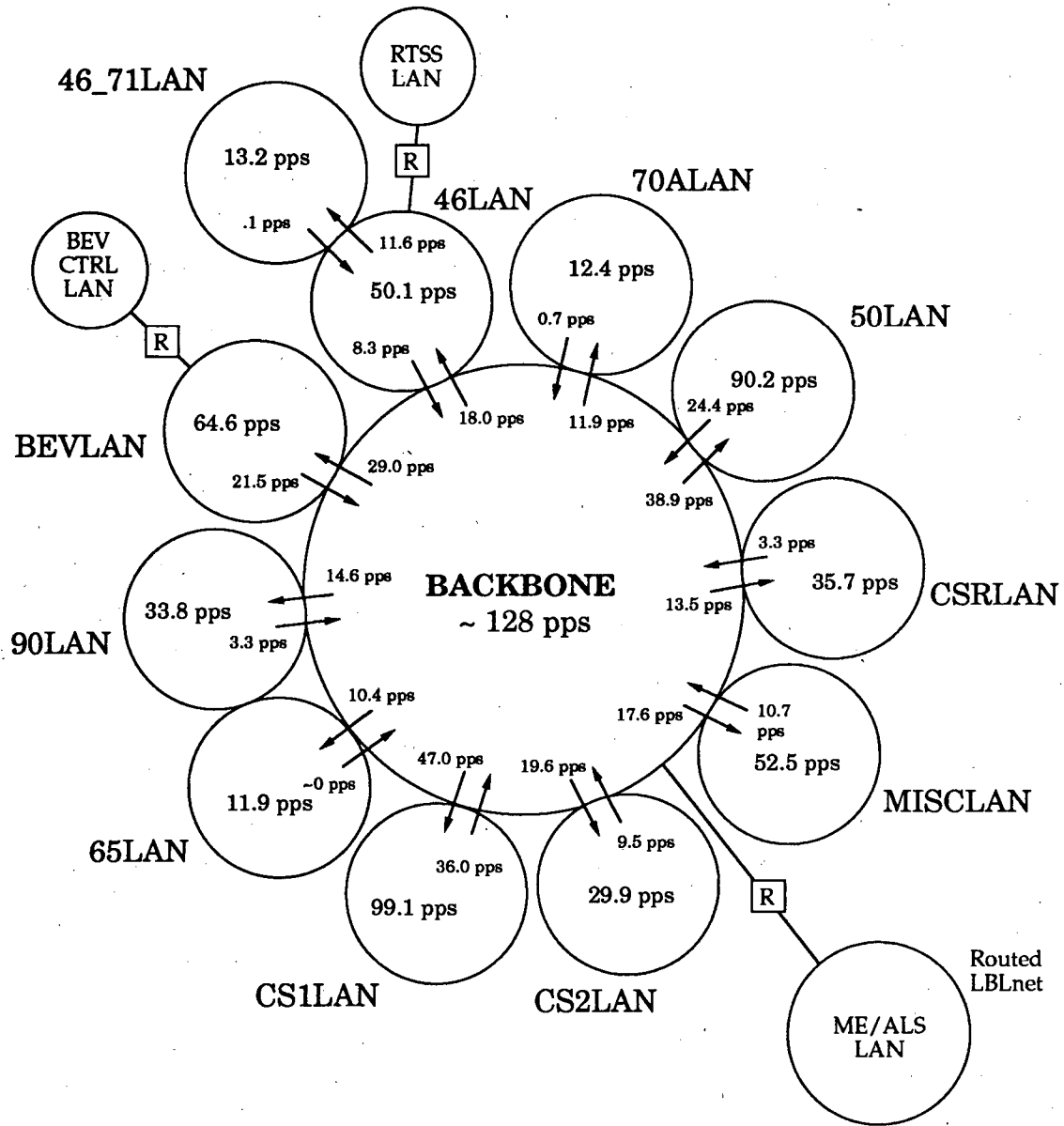
To contact the Network Advisory Group (NAG):
      nag@csam.lbl.gov

If you are in doubt about whom to call, call:
      Bob Fink ,   x5692,
      Serge Polevitzky,   x4389,
      Sig Rogers,   x6713

RTSS LAN

46_71LAN

13.2 pps

.1 pps

BEV CTRL LAN

46LAN

R

11.6 pps

50.1 pps

70ALAN

12.4 pps

0.7 pps

50LAN

90.2 pps

24.4 pps

R

8.3 pps

BEVLAN

64.6 pps

29.0 pps

18.0 pps

11.9 pps

38.9 pps

21.5 pps

3.3 pps

35.7 pps

CSRLAN

14.6 pps

BACKBONE
~ 128 pps

13.5 pps

90LAN

33.8 pps

3.3 pps

10.4 pps

17.6 pps

10.7 pps

52.5 pps

MISCLAN

~0 pps

47.0 pps

19.6 pps

65LAN

11.9 pps

36.0 pps

9.5 pps

R

99.1 pps

29.9 pps

CS1LAN

CS2LAN

Routed LBLnet

ME/ALS LAN

R = IP Router

pps = packets per second; all figures are monthly averages

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

Note: Each circle shown above is a separate Ethernet that is
interconnected to the others via a bridge (or router if indicated)
that provides forwarding of packets based on address.

LBLnet Activity
August 1988

ICSD/CCR   Fink/Rogers

ESnet - THE ENERGY SCIENCES NETWORK

Sandy Merola

Users of LBL computing facilities may have noticed some recent changes in the LBL-wide area network environment. Since June 1988, LBL DECnet users have been utilizing a higher speed backbone (formerly 9.6 kbps - now 56 kbps) interconnecting many DOE Laboratories. LBL TCP/IP users can anticipate similar increased bandwidth to all National Laboratories and most other other major ER facilities in the very near future. This increased bandwidth is being provided via the recently created Energy Sciences Network. This article is intended to provide the reader with background and planning information, as well as some technical details concerning this network, which is still in its very early stages of formation.

Over the last few years, the DOE Energy Research (ER) community has demonstrated an increased demand for wide area networking facilities. For example, here at LBL, researchers have been extensively utilizing the High Energy Physics Network (HEPnet), the Magnetic Fusion Energy Network (MFEnet), the ARPA/Milnet, and the Bay Area Regional Research Network (BARRnet, associated with NSFnet). During the mid-1980s, the Office of Energy Research conducted extensive surveys of the use of computer networks by ER scientists, and as a result charted the creation of the Energy Sciences Network.

The Energy Sciences Network (ESnet) is intended for use by the ER scientific research community. ESnet will provide access to all major laboratories and many other sites with projects supported by ER, including universities, private research institutions, subcontractors, and industrial collaborators. ESnet is installed and operated by the National Magnetic Fusion Energy Computer Center at LLNL.

The ESnet backbone will provide both IP datagram and X.25 packet switching services. These services support the higher level DECnet and NSP protocols used by HEPnet and MFEnet as well as TCP/IP. During the fall of 1988, the ESnet backbone, capable of both IP and X.25 support, is expected to consist of a loop of 56 kbps links connecting:

> Argonne National Laboratory
> Florida State University
> General Atomics (San Diego)
> Lawrence Berkeley Laboratory
> Lawrence Livermore National Laboratory

> Los Alamos National Laboratory
> Princeton Plasma Physics Laboratory
> University of Texas, Austin

The following sites are scheduled for installation before the end of calendar year 1988:

> Brookhaven National Laboratory
> Fermi National Accelerator Laboratory
> Massachusetts Institute of Technology
> Oak Ridge National Laboratory
> Stanford Linear Accelerator Center

Upgrades to T1 speeds (1.544 Mbps) are under active consideration.

ESnet will provide needed foreign connectivity in support of ER programs. There is already available a 64 kbps satellite connection to CERN and discussions are being conducted with a number of other European sites. A complete list of those sites can be found at the end of this article.

ESnet will also provide needed gateways to the other major government scientific networks.

ESNET STEERING COMMITTEE

An ESnet Steering Committee has been formed to represent the ER scientific community by providing user level guidance to the ESnet management. Committee members are appointed by their respective program offices within ER. The ESnet Steering Committee is chartered to:

> 1) identify and prioritize ER networking needs;
> 2) review ESnet implementation plans and allocation of resources;
> 3) recommend ESnet policy.

Current membership is:

BES	
Thomas Dunning	ANL
James Davenport	BNL
HEP	
Larry Price	ANL
George Brandenburg	Harvard
NP	
Russell Roberson	Duke
OFE	
Martin Greenwald	MIT

Jean-Noel Leboeuf	ORNL

OHER
Thomas Marr	LANL

AMS
Sandy Merola	LBL

NMFECC
James Leighton	LLNL

ESNET COORDINATING COMMITTEE

An ESnet Coordinating Committee has been formed to provide a liaison between the ESnet implementors and the local sites. The ESnet Coordinating Committee is chartered to:

1) serve as forum for discussion of technical issues related to the interface between ESnet and the Local Area Network;
2) supply needed supplemental network ;
3) provide the necessary interface between individual local users of ESnet and the ESnet implementors.

Bill Johnston is the LBL member of this committee. The LBL Network Advisory Group (NAG) has been providing substantial input to MFE on various ESnet issues.

It is our plan that the implementation of ESnet at LBL will be visible only in terms of improvements to the LBL user community. Questions concerning ESnet implementation at LBL should be brought to the attention of Bill Johnston (wejohnston@lbl.gov, lbl::wejohnston). General questions as to ESnet goals, policies and futures can be brought to my attention (axmerola@lbl.gov, lbl::axmerola).

ESNET FOREIGN SITES
UNDER CONSIDERATION

ENGLAND

JET, Culham

Culham Laboratory, Culham

Rutherford Appleton Laboratory

FRANCE

Cadarache - CEN

ITALY

Frascati Energy Research Center, ENEA

Padova - IGICGR - ENEA

Gran Sasso Lab

GERMANY

Deutsches Elektron-Synchrotron, Hamburg

Max-Planck Institute, München

University of Wuppertal, Wuppertal

Albert-Ludwigs University, Freiburg

European Molecular Biology Laboratory, Heidelberg

KFA Juelich, Juelich

University of Stuttgart, Stuttgart

KFA Karlsruhe, Karlsruhe

Berlin Electron Synchrotron Light Source, Berlin

Gesellschaft fur Schwerionenforschung, Darmstadt

AUSTRIA

IAEA Headquarters, Vienna

SWITZERLAND

CRPP, EPFL, Lausanne

CERN, Geneva

SIN, Villigen

JAPAN

Kyoto Univ, Uji, Kyoto

IPP, Nagoya

JAERI, Naka

JAERI, Tokai

KEK National Laboratory for High Energy Physics, Tsukuba

National Institute of Genetics, Misima, Sizuoka-Ken

PHYSICS NEWS

Werner Koellner

● PHYSICS UTILITIES

Access to the Physics Utilities, which include the CERN Library, and the PAW Library (Physics Analysis Workstation), is available, after executing the DCL command

> **@Physics$Manager:Setup_Phys**

It is recommended that you include this line in your login.com file. When you type

> **help @physics_utilities**

you'll see many of the utilities that are available. You may also type

> **help 'subtopic'**

to get help on a particular utility directly.

● CERN LIBRARY

Object libraries are updated at unpredictable times. Changes are documented in the CERN Computer Newsletter, and sometimes also in the directory Cern$Inform. In some cases, a previous version of an object library is available as xxxxx.OLD. The following Object Libraries have been updated recently:

```
COMIS ...........Version 1.04
GEANT312.......Geant Version 3.12
GENLIB...........Version 1.27
GRAFLIB.........(Hbook4 Vers. 4.04,
       .................. Hplot Vers 5.03
HBOOK ..........Version 3.46
HBOOK4 ........Version 4.04/01
HERWIG.........Version 2.04 (see below)
HIGZ/HIGX....Version 1.03 (note: HIGX
                 is the GKS version)
HPLOT............Version 4.19
HPLOT5 ..........Version 5.03
ISAJET.............Version 6.02/01
KERNLIB........(Kernfor 4.19, Kernvax 2.29)
KUIP...............Version 1.34
MGKS ............Version 1.10
PACKLIB ........(Hbook Vers. 3.46)
PACKLIB4.......(Hbook4 Vers. 4.03)
PAW ..............Version 1.03/05
SIGMA ...........Version 1.00
ZEBRA ..........Version 3.57
```

● DISPLAY

The DISPLAY program, Version 3.0, has recently been updated, following a change in a UGS module, so that the normal Tektronix output file (option ST) may now be printed on a Postscript printer (LaserWriter).

● GEANT

GEANT, a system of detector description and physics simulation tools, is available as part of the CERN Libraries. For novice users, a collection of sample programs is available. Version 3.12 of GEANT represents a major revision of the program. There's also a new hadronic shower package, library GEANH.OLB, and a new track extrapolation package, library GEANE.OLB. These new libraries have been built for use with GKS and KUIP. Version 3.10 of GEANT will be deleted. Please type

> **HELP GEANT**

for additional information.

● HERWIG

A new Monte Carlo generator for simulating hadron emissions with interfering gluons by G. Marchesini and B.R. Webber is now available. Some preliminary information can be found in CERN$INFORM:Herwig.Info.

● PAW

At LBL, the program PAW is available in both minimal-GKS and full GKS versions. The full GKS version, named PAW_ATC, differs slightly from the corresponding version at CERN, primarily in the availability of workstations, and in their ID's. The current version allows you to invoke the array manipulation package SIGMA, although documentation for this has not yet arrived. Graphics output may be directed simultaneously to a Metafile, which later can be processed via the preliminary program Paw$Library:Metapaw.Exe, to direct the output to any available graphics device. Most recent improvements are documented in files Cern$Inform:Paw.News*. Type

> **HELP PAW**

for additional information.

Forward comments and questions to me at x4398 or

> VMS Mail   lbl::WOKoellner

> UNIX or Software Tools Mail: WOKoellner@lbl.gov

UNIX NEWS

C++

Dave Cleveland

Introduction

C++ is a programming language designed to make programming more enjoyable for the serious programmer. An extension of the C programming language, C++ retains C's efficiency and flexibility. C++ also offers facilities for designing better interfaces among and within program modules. These facilities support extensive data abstraction and stronger type checking than C.

In C++, data abstraction is the technique for partitioning an application into manageable pieces by defining new types that closely match the concepts of the application.

C++ Classes.

The new types that C++ lets you define are called *classes*. These resemble C structures, except that they can have function members as well as data members. For example, if you were developing an application for a publisher or bookstore, you could define a class to represent a book with data members representing title, author, etc., and function members to list books by a particular author or to increase a price.

```
class Book {
        char *title, *author, *publisher;
        int copyright;
        float price;
public:
        void search(char*);
        void markup(float);
};
```

You can declare as many data objects of the class as you wish after defining it:

```
Book novel;
Book play;
```

Implementation

On the Sun Unix systems, UX1 and UX3, the AT&T C++ Translator, *Release 1.2*, is provided. It translates C++ source code to C source code. As implemented, the default execution of the translator also calls the C compiler, *cc*, which compiles the C source code and calls the link editor, *ld*, which writes an executable output file. To translate and compile a C++ source file, program.C, one would type

% CC -o program program.C

Documentation

Available documentation includes a manual entry, CC(L), and a book which fully describes the C++ programming language. The manual entry may be accessed by typing

% man CC <return>

The book, *The C++ Programming Languagee*, by Bjarne Stroustrup, is available from the Computing Services library, Bldg. 50B, Rm. 1232B, x4242. In future Newsletter articles, we'll show more features of C++ (some not found in the book)

Forward accolades, brickbats, comments, gripes, and questions to me at x5336 or

VMS Mail:	**lbl::DHCleveland**
Unix or Software Tools Mail	**DHCleveland@lbl.gov**

UNIX REMOTE COMMANDS, PART 2

Dave Cleveland

finger

Local Execution

The command **finger** is available to users on the
Computing Center's UNIX systems, UX1 and UX3. It
displays the login names and real names of the users
currently logged in. Simply type:

> % **finger** <return>

and a display will appear on your terminal screen or
window like:

Login	Name	TTY	Idle
author	Rudy Kipling	14	4
flight	Amelia Earhart	28	1:41

This command is also useful for acquiring information
about individual users. If **finger** is executed with a login
name, say "english", as an argument, it will display the
user's real name as well as the date and time that the
user last logged in:

> % **finger english** <return>

Login name: english
In real life: William Shakespeare
Last login Tue Sep 20 07:27 on tty2f

The person's first or last name may also be used as an
argument:

> %. **finger shakespeare** <return>

Depending on the popularity of a particular name,
information on more than one user may be displayed.

Remote Execution

Remote execution of **finger** is also useful. If the command
is executed with an `@' (at-sign) prefixed to some remote
host's name as an argument, **finger** will be executed on
that remote host:

> % **finger @csa3** <return>

If a login name, say "emilyd", is prefixed to the `@' and
the remote hosts's name, say "@csa3", information about
the user on the remote host will be displayed:

> % **finger emilyd@csa3** <return>

If the remote host is a UNIX system, a person's first or
last name may be used instead of a login name:

> % **finger dickinson@ux3** <return>

Forward accolades, brickbats, comments, gripes, and
questions to me at x5336 or

VMS Mail:	**lbl::DHCleveland**
Unix or	**DHCleveland@lbl.gov**
Software Tools Mail	

POSTMASTER'S CORNER

William Jaquith

This is the Postmaster's Corner. We'll answer frequently-asked Electronic Mail questions here. You can also get answers to your Electronic Mail questions by sending them to Postmastor or PostOffice on the CSA cluster.

> Once a month, Computing Services offers a free Electronic Mail class to the LBL staff (See Pg. 3 of this Newsletter). At this class, we go over the VMS Mail utility, the Software Tools MSG, and the UNIX Mail Utility.

QUESTION:

I am using VMS Mail; I just received the following message on my terminal screen.

%MAIL-E-LOGLINK, error creating network link
    to node PHYS
  -SYSTEM-F-UNREACHABLE,
     remote node is not currently reachable

What does this mean? Am I doing something wrong?

ANSWER:

These messages are telling you that you cannot send mail to the remote node at this time. You are not doing anything wrong. For some reason, the network connection to the remote node is down.

The first statement is an error message from the VMS Mail Utility. 'MAIL' indicates the VMS Mail Utility and the 'E' indicates an Error. 'LOGLINK' says that the error concerned a Logical Link or a network connection. The rest of the line has additional information including the remote node that you were trying to reach, in this case a DECnet node called PHYS.

In the second line ,'SYSTEM' indicates that this message is from the VMS operating system. 'F' indicates a Fatal error. 'UNREACHABLE' and the rest of the line explain the error. While this is logged as a Fatal error, we could also consider the message to be Informational in this case.

Your options when receiving this sort of message are to try to re-send the mail later when the remote node is up or to call to the Software Tools (MSG or SNDMSG) mail utility.

You can call to the Software Tools mail by changing the address and wrapping the address in a Software Tools header. The call to Software Tools (msg) is done differently depending on whether you are on the CSA cluster or on a DECnet node that is not part of the CSA cluster.

When on the CSA cluster: st%"david@phys.hepnet"
When NOT on CSA cluster: lbl::"david@phys.hepnet"

In either case, you change the format of the address from the VMS Mail format, node::user (e.g., phys::david) to a Software Tools format, user@node.domain (e.g., david@phys.hepnet). When on the CSA cluster, the preface ST% calls to the Software Tools mail interface. You must enclose the address in quotes so that the correct address is passed to MSG. When you are not on the CSA cluster, send the mail to the Software Tools (MSG) mail gateway at LBL using LBL:: and then append the quoted address. Note: you must append the domain or network to which this mail is being sent. Any VMS Mail node will be in the HEPnet domain (network). Mail without the network or mail domain will very likely fail.

Now that we have managed to send your mail -- even though the remote DECnet/HEPnet node is down -- you may be interested ito know why we needed to do this at all. VMS Mail creates a connection in real (clock) time from the mail utility on your node to the mail utility on the remote node. When the connection cannot be made then the mail cannot be sent and thus the informational/error messages that you see are generated. The Software Tools (MSG) utility uses a store-and-forward service. If the remote node is not available, the mail is put in queue and re-submitted each hour until the remote node comes back online. If the remote node does not come up within three days the mail is returned to you with a message telling you that the remote node was unavailable for three days.

In general if the nodes that you send mail to are up and online most of the time, then there is little difference between using VMS Mail or Software Tools (MSG). It is mostly a matter of your personal preference. If you are sending mail to a node that is often down or if you are making use of large distribution lists, the queued service available from MSG will make sending mail easier. If VMS Mail is your preferred mail utility, send mail to the MSG mail interface from VMS Mail

. . . *Hermes, Postmaster*

Forward comments or queries to William Jaquith (x4388) or

VMS Mail: lbl::Postmaster

UNIX or
Software Tools Mail: Postmaster@lbl.gov

DIVISIONAL ACCOUNTS ON TYMNET

William Jaquith

Effective October 10, 1988, the LBL division Tymnet
accounts will have new passwords. The password change
is to help maintain security and also to keep the LBL
Tymnet accounts available only to the current active LBL
staff. Periodic changing of LBL Tymnet division
passwords is a policy that has been set up with the
agreement of the Computer Science Advisory Committee.

Please check with your LBL Division contact for your new
Tymnet access password.

Division Contacts

LBLADMIN	Bill Bagot
LBLAFRD	Mike Helm
LBLASD	Bill Carroll
LBLBIO	Ron Huesman
LBLCBD	Gary Smith
LBLENG	Steve Marks
LBLESD	Karl Olson
LBLOHS	Mary Clary
LBLICSD	William Jaquith
LBLMSCD	Marilyn Graham
LBLNSD	Janis Dairiki
LBLPHYSICS	Joan Baird
LBLSSC	Tjet Sun

Forward comments or queries to William Jaquith
(x4388) or

VMS Mail: lbl::WDJaquith

**UNIX or
Software Tools Mail:**   WDJaquith@lbl.gov

NOTES FROM TROUBLE MAIL

Dana Conant, Computing Services

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

****

MESSAGE:

Is there a way to phone out from the CSA system? If so,
how can I find out about it — method, cost, etc. I would
like to call to a 2400 bpi Hayes connected to a MicroVAX
in New Mexico.

RESPONSE:

There are two dial capable modems installed on CSA4.
The VMS HELP topic Dialout discusses how to use the
modems. They are restricted in their dial capability to
local calls and to FTS calls. The cost is charged to Comput-
ing Services.

****

MESSAGE:

I have been trying to telnet to my account at LBL, but the
local system does not support the telnet command (poor
guys...). So I have accessed LBL through a modem at
(415)486-4979. Since this may give rise to a steep phone
bill, I was wondering if LBL has an (800) number for
remote access.

RESPONSE:

There is no (800) telephone number for LBL remote access.
There is Tymnet service which will do what you would
like: you can dial a local Tymnet access number, then
login to the Tymnet service which will deliver you to the
LBL Develcon dataswitch. Your Division Office should
have the Tymnet username and password. There is
currently no charge for Tymnet use.

****

MESSAGE:

A comrade here has a Tymnet access question — she has
been using it via Develcon, but now Develcon is no
longer convenient. What would be the best way for her
to get to Tymnet?
• Should she hook a modem to her Mac and call the
Oakland Tymnet number direct?
• Should she log in to the VAX cluster, set host /dte,
etc. and dial out?
• Is there some better way available?

RESPONSE:

She should use the first method you suggest: attach a
modem to her Mac and dial the Oakland Tymnet number
directly. She won't have to pay for connect time to CSA4;
CSA4 has only two dialout ports; their use can cause

surprising problems for the whole machine if misused;
and she is independent of cluster load and downtime.

****

MESSAGE:

Could you temporarily increase the job limits in the
standby queues to two to allow for a more effective use
of CPU power? At the moment, we occupy them with I/
O-intensive jobs which can never take more than 50% of
the CPU time.

RESPONSE:

There are queues in other CSA machines which you can
use. The intent of the STANDBY queue was to provide a
means where time which was otherwise idle could be used
and not interfere with other jobs. Increasing the number
of STANDBY jobs increases the resources used by these
jobs during normal hours and would increase the interfer-
ence.

****

MESSAGE:

If I create a Fortran listing file (FORTRAN/LIST xxx), I
cannot get a good hardcopy on an Imagen or PostScript
printer. I try to print out the file using
        IMPRINT -N -R XXX.LIS
I get the error message that 16 lines were wrapped
because of length. When I look at the output, I find that
the VMS header is printed incorrectly and thus takes too
many lines. As a result, extra pages are inserted and the
output is hard to read. Can you fix this problem?

RESPONSE:

From the error message you include, I gather you were
trying to print the listing file on a PostScript printer, not an
Imagen, since the Imagen software does not report any-
thing about "wrapped" lines.
In any case, note the following from the online HELP
article IMPRINT, subtopic FORTRAN_LISTING_FILES:
Printing FORTRAN listing files (generated by FORTRAN/
LIST PROGRAM.FOR):
For the Imagen:
        IMPRINT -N -R -PipN PROGRAM .LIS
"ipN" is the target Imagen.

For PostScript printers:
        IMPRINT -PapN -N -R -Fcourier PROGRAM.LIS
"apN" is the target LaserWriter.
(If you do NOT use the courier font on the Apple Laser-
Writer, the pagination will be wrong.)
You may also use
IMPRINT -PapN -N -R -Fcourier-bold7 PROGRAM.LIS
if you want emboldened output.

****

MESSAGE:

On CSA, when I attempt to use "finger" I get a "Permission denied" error. Since this used to work fine, can you fix it so that it will work again? Note that the command FINGER USERNAME works but is almost useless since it gives info about the last time the user used the shell (which is never for most people). FINGER USERNAME@ used to provide useful info; now I get the error noted above. I define "finger" in my login.com by

        finger :== $usrbin:finger. finger

RESPONSE:

Remove the above line from your login.com. It references the Eunice FINGER which is no longer in use. There is a system symbol FINGER defined for you which invokes the correct FINGER program.

****

MESSAGE:

I was wondering who built the VHS tape drive that Computing Services is now using and where the drive is located. Is this drive being evaluated for possible lab-wide use? I am keeping track of this in case my group decides to purchase new tape drives.

RESPONSE:

The VHS tape drive we have is made by Digidata. Unfortunately, it is located in the machine room, so you have to ask an operator to mount your tapes for you. The reason the drive is there is due to the cable length requirements. We'd love to make it user accessible.

It appears that VHS tape technology will soon be replaced by 8mm tape technology. We've ordered an 8mm system which should arrive soon. I'd recommend looking into 8mm instead of VHS tapes for the near future.

****

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<cr>

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

THE WORKSTATION SCENE

● **[25.10.1]**...

WORKSTATION GROUP ELECTRONIC MAIL

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

VMS Mail.   lbl::WKSG

**UNIX or
Software Tools Mail: WKSG@lbl.gov**

We hope this alternative (to the telephone) will help
users who have problems or who want to share helpful
hints.

● **[25.10.2]**...

WHERE WE'RE AT

The Workstation Laboratory, (the "lab"), home of
several Workstation Wizards as well as the Worksta-
tion Lending Library, is located at Bldg. 50B, Rm. 2231.
It's open from 8 AM to 5 PM Monday through Friday.
We're here to help; call us (x6858).

● **[25.10.3]**...

IT'S OVER FOR ANOTHER YEAR

The Workstation Group has survived another fiscal year
closing. Those of you who have visited the lab in the
last month know how hectic the situation gets at this
time of the year. We hope that you, our customers, were
satisified with our service.

We could not have made it without the fantastic help of
LBL's Purchasing officers. They kept us up-to-date about
availability and delivery schedule of equipment, which
enabled us to purchase recommended system configura-
tions for you. A special thanks to **Nora Nichols** for all
her help.

We would also like to thank all the overworked people
in Receiving. They never seem to tire of answering each
and every time we ask "Is it here yet?" Congratulations
on a job are well done also go to Transportation's **Khalid
Najee**. He treats each parcel as if it was something spe-
cial and somehow manages to correctly and cheerfully
deliver mounds of packages daily.

● **[25.10.4]**...

TIMELY TIP: FALL BACK (PC USERS)

PC Users. Daylight Savings time is coming. Don't forget
to Fall Back on October 30. If you have a standard AST
Board, you run the AST- supplied program SET-
CLOCK.COM as follows:

C> SETCLOCK <cr>

It will respond

resident DATE/TIME processor loaded

Current date is 10/30/89.
Current time is 02:01:22.07

Now, issue the following DOS Time command

C> time <cr>

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

Current time is 02:01:22.07
Enter new time; 01:02 <cr>

PC-AT Owners: If you're using PC-DOS Version 3.3, just
use the **Time** Command. If your PC-DOS is Version 3.2 or
earlier, you must run the Setup program to set your clock.
The program is on the Diagnostics disk supplied with
your system. The disk is usually stored in the rear of the
Guide to Operations manual.

● **[25.10.5]**...

NETPRINT -- PC TO POSTSCRIPT PRINTING

. . . *From Workstation Group member Claudia Madison*

Tops NetPrint promises easy printing from IBM and com-
patibles to PostScript printers, a promise on which, for
the most part, it delivers.

Once *NetPrint* is installed, it is possible to print directly
from the PC to the PostScript printer using a program's
standard printing commands.

NetPrint requires Tops and an AppleTalk card of some
sort for the PC. While it does allow use of PostScript
printers in various emulation modes, it is most appropri-
ate when used with applications that support PostScript
printers. We have used it successfully with Microsoft
Word 4.0, which supports all built-in fonts on the Laser-
Writer Plus, and less successfully with *WordPerfect* 4.0
which supports only two fonts.

Generally, a user in the following situation will benefit
most from *NetPrint* if he

-   already has TOPS;

- has a LaserWriter on a Mac AppleTalk network, but
  no high-quality printer for the PC or compatible;

- Uses an application that supports PostScript.

We found installation to be straightforward when we
used *NetPrint* with a LaserWriter and in no emulation
mode.

Take Note: Installation notes for our version refer to
batch files we should install for various applications.
We did not have those batch files on our disk, and in fact
did not even read that far in the notes until after our in-
stallation was already done.

Microsoft *Word* and *WordPerfect* users take note: We did
read the section of the installation notes on modifying
PostScript code library files. For a successful installation,
follow the instructions to the letter.

Drawbacks: Documents spool to disk fast, but *NetPrint* is
slow to send the documents on to the printer. Also, sending
several documents to the printer at once sometimes results
in a lost document. *NetPrint* beeps when it has finished
sending a document; you'd be wise to wait for the beep
from one print job before starting another. *NetPrint* has no
way to signal when the LaserWriter is out of paper. Our
LaserWriter ran out of paper after we had sent several
print jobs in a row, and this caused a complete hang-up of
our PC.

● [25.10.6]...................:..................................

IBM-TO-MAC FILE TRANSFERS WITH TELNET

. . . From Workstation group member Nancy Travis

NCSA (National Center for Supercomputing Applica-
tions) *TELNET* provides a fast and easy method for
transferring files between the IBM and the Macintosh.
Many popular programs can handle the software file
conversion so that all you need to do is get the binary file
from one platform/media to the other.

Requirements: Any two machines that have:

1) a physical Ethernet connection;

2) an IP address.

(Typically, the IBM will have an Ethernet card and an
assigned IP address and the Macintosh will have an Ap-
pletalk network with a Kinetics box and a dynamically-
assigned IP address).

Here is an example of how we would transfer a PC Lotus
file to MacIntosh *Excel*.

On the Macintosh:
Launch *TELNET*. Note the Mac's dynamic IP address
from the menu "**Session/Show Network Numbers**". This
number changes, so be sure to check it each time. Close the
Session dialog box, but do not quit *TELNET*.

On the IBM
FTP to the Macintosh IP address with the command:
        ftp 128.3.n.n
(use the address that you got from the Macintosh. Log in
with a user name. No password is required as a default,
but one can be set.)
        bin (binary)
        send filename.wks
        bye
Your file will be written to the Macintosh disk. It can
then be opened from *Excel* and "**saved as**" an *Excel* docu-
ment. Files can also be copied from the Macintosh disk
using the same method and the command
        get filename.
(Note that *Mac Excel* easily reads Lotus format but **not** *PC*
Excel format. *PC Excel* must be saved in SYLK format
before transfer to *Mac Excel*.)

NCSA gets an A+ for speed and ease of use. If you are fa-
miliar with Unix commands, you will enjoy using the
same commands to navigate directories. **Cd**, for example,
changes directory to a specified folder, drive or subdirec-
tory. Commands apply to the remote host unless prefixed
with "l" (local). If you hate the Unix/DOS discrepancies
as much as I do, you'll be tickled to find that both **ls** and
dir work equally well, as do "/" and "\". The commands
that you can't easily guess can be accessed with a simple
'?'.

NCSA TELNET is in the public domain and copies can be
obtained from the Workstation Group. If you would like a
file transfer demonstration, call Nancy Travis at x6858.

● [25.10.7]..

IBM PC-TO-MACINTOSH CONNECTIVITY

Now available at the WKSG lab: an Apple-produced
5-1/4 inch floppy disk, titled, "The Compatibility
Guide: An MS-DOS Point of View about Macintosh."
This demo disk shows you how Macintosh and PC's can
work together bette, and provides data on Mac products
and third-party communications products. Bring a blank-
formatted 5-1/4inch disk to the Workstation Lab for your
free copy.

● [25.10.8]..

MACINTOSH CONNECTIVITY

. . . From WKSG member Dan Van Zile
*   and ICSD staffer Jon Forrest*

Mac-to-mainframe connectivity can be achieved in a
variety of ways resulting in very different data transfer
speeds and costs.

1. Terminal Emulators

First and most often used is a simple terminal emulator program such as Versaterm, MacTerminal or Kermit. A program running on the Mac causes the Mac to emulate a terminal such as a DEC VT100. This program allows the Mac to connect to other computers through an ordinary RS-232 port at speeds up to 9600 baud (960 characters per second). The connection is made through the 'modem' port on the Mac to a Develcon TSB box or actual modem to Unix or VMS. This method allows a single connection to take lace at a time. This works fine for most applications involving minimal I/O but is fairly slow for dealing with large files or for actual file transfers.

2. LocalTalk connection

A second method (which is becoming increasingly common at LBL) is a connection through an Apple 'LocalTalk' network which is connected to the labwide 'Ethernet' via a Kinetics 'FastPath' box. By running appropriate software such as the NCSA TELNET programs, multiple logins to many different computers can be made simultaneously. You could, for example, be reading your mail on UX1 in one window and, at the same time, be running a Fortran compilation on CSA2 in a different window. This connection is made through the Mac's printer port and runs at 'LocalTalk' speed (up to about 1 megabit per second depending on network loading). One Kinetics (or K-box) can provide access for up to 256 MacIntosh computers at a relatively low cost per Mac. Only one connection needs to be made to connect the 'LocalTalk' net to the ethernet and only one IP address on the LBLnet is used. Each Mac using this path obtains a dynamic IP address when the connection is made. Another advantage of this method: you can choose from all the printers accessible on LBLnet.

3. Direct Ethernet Connection

The third way to make this connection is to use a direct Ethernet connection from a Mac to the Ethernet. A Kinetics Ethernet card installed on a Mac II or Mac SE costs about $800 and allows a connection directly to the Ethernet. (Sorry, no direct Ethernet connection exists for the Mac Plus!) NCSA TCP/IP software may be run and other programs, such as TCI's *CommUnity*, are available. The virtue of this method is that it allows files and data to be sent at full Ethernet speed of up to 10 megabits per second -- again depending on network loading. Large file transfers move at the fastest possible speed using this method. The principal disadvantages:

1) the high cost of the necessary hardware and software,
2) the need for a permanent IP address, and
3) the need for an Ethernet connection for each Mac.

4. TCI's *CommUnity*

Another useful software package you can use to connect your Mac to LBLnet is the *CommUnity* package from TCI. This is a software package that makes a Mac act like a DECNET end-node, giving you the ability to do remote logins to other DECNET machines, transfer files back and forth to and from other DECNET machines, to use a DECNET machine as a file server, and even to send and receive VMS mail. Of course, if the machine you want to communicate with isn't running DECNET, then this package won't do you any good.

This package also requires your Mac to have an Ethernet card installed in it. The method used by the NCSA *TELNET* package (using an AppleTalk connection to an AppleTalk-to-Ethernet gateway) can't be used by *CommUnity*.

On the other hand, the file server capability in *CommUnity* is so good that the extra expense of an Ethernet card might be warranted. You can tell the VMS file server to create what looks just like a Mac volume, including icons and all. This volume is actually stored as a file on the VMS host which allows the standard VMS backup procedures to be used so that you don't have to worry about backing up the volume yourself. This, combined with the fact that the size of such a volume is limited only by available diskspace on the VMS host, might make *CommUnity* useful to certain users in spite of its higher cost.

Although being able to send and receive mail on your Mac might sound like a good thing, this method used by the Software Tools mailer to deliver mail doesn't work well with a system (like the Mac) which is turned on and off often. However, when VMS Mail is used to send mail to a Mac running *CommUnity* , this isn't a problem.

Computing Services has a beta test copy of *CommUnity* and the accompanying documentation. The price of this product to the Lab hasn't been finalized yet but if you're interested in finding out more about this package, contact Jon Forrest at x4991. The NCSA TCP/IP software is public domain (like Kermit). Copies of the latest release (2.2) and more information on this and other products can be obtained from Workstation member Dan Van Zile at x6858.

• [25.10.9]..

HYPERCARD CORNER

. . . From Workstation Group member and HyperCard Enthusiast Bruce Burkhart

Last month was vacation time at HyperCard Corner. However, we're back to kick off the Fall season with lots of HyperCard news, views, and reviews.

❏ HyperCard Version 1.2.1 Update

After Version 1.0 came 1.2, and now 1.2.1. If you don't have the latest version of HyperCard, bring a blank floppy around to the Workstation lab for a free copy. The update disk includes a Version 1.2 update documentation stack.

❏ Looking Back at Boston's MacWorld Expo

Some final "stack" thoughts on this year's Boston Macworld Expo. There were lots of Stackware demonstrations of mainstream applications; these were the main attractions of the show. Adobe Systems released a free *Type Catalog Stack*. STAX! of Austin, Texas introduced a *Helper* design stack & a *Sound Effects Studio* stack. Applied Imagination demo'd six new stacks including *Contact!*, a stack that's a low-level database, with mail merge and other cataloging information. Individual Software showed its new *101 Scripts and Buttons*.

❏ QuickDraw

Interested in building a complete audiovisual HyperCard presentation with a single application? Farallon Computing will soon announce *QuickDraw* recorder. This product records all keystrokes and mouse actions in an application and then plays the sequence back on demand. Play these recorded *QuickDraw* sequences from within HyperCard (as an XFCN) with MacRecorder sounds and you're in the big time. Certainly a project for the unafraid.

❏ Virus

With all the talk of viruses lately, it was inevitable that one would eventually end up in a HyperCard application. And it has. Slipped into a CompuServe network stack, this benign little devil replaces your clock, and puts up this message, *"Hello from the HyperAvenger-Dukakis for President-and have a nice day."* This infected stack was caught early and should not affect any users at LBL.

❏ Here's HyperScan

If you've been waiting for an easy method to get graphics into your stacks, wait no longer. Apple has bundled *Hy-*

perScan software with its brand new Scanner. *HyperScan* lets you scan images for use in HyperCard stacks. In a few simple steps, *HyperScan* adds your graphic to the Clipboard, ready to be pasted into place in the stack of your choice. Other scanner manufactures were caught off guard with the announcement of this *HyperScan* software. At the Seybold Conference last month, we learned that MicroTek (another scanner manufacturer) was ready with a driver for its scanner, compatible with *HyperScan*, and that it "would be available around the first of the year."

❏ BMUG's New Catalog

The Berkeley Macintosh User Group (BMUG) now has available a paper bound *"Catalog of Publicly Distributable HyperCard Stacks - Fall 1988"*. At $10, this catalog has almost 600 stack listings and 50 pages of Appendices that include reviews, notes, and other articles on HyperCard. The stack format is represented by two cards. One is a sample card from the stack, and the other gives the stack name, BMUG disk name, author, and a stack description. Stop by the Workstation Lab to see a copy.

❏ Help Corner

Installing Clip Art in your HyperCard stack.

For this example, open the **Art Ideas** stack in the **Ideas** stack folder. Click on the "Animals, Wildlife, Fish, and Birds" button. From the card full of little creatures let's copy (for instance) the elephant outline to our stack. Use the select or lasso tool. When selected, click on *Copy Picture* under **Edit** in the menu bar.

Now, under **File**, open the stack that will get the new elephant outline. Remember here that if the elephant is to go on all the cards of your stack, you must turn on the Background. Click on **Paste Picture** under **Edit** in the menu bar. While the elephant is still selected, reposition the image anywhere on the card. Easy, isn't it.

• [25.10.10]..

MACTOBERFEST IS HERE

The annual *MacToberFest* will be a *MacTurkeyFest* this year. Put on by BMUG and Apple Computer, this event will be held this year on November 17th in the Pauley Ballroom on the UCB campus. More details next month.

• [25.10.11]...

GRAPHICS SUPPLEMENT: HANDY HANDOUT

You can pick up a free copy of Tom Pope's WKSG Graphics Supplement, reviewed in the August '88 Workstation Scene, at the Workstation lab.

• [25.10.12]......................................

A FIRST LOOK AT APPLE'S NEW FILE SERVER

. . .From Richard LaPierre

We just received the new release of AppleShare File Server Version 2.01. My first impression of this release is that it is a great product for those who really need a file server. I was not at all interested in the previous release of this product since it wouldn't let me perform any administrative functions (for instance, add a new user), without shutting down the network file server. Having enjoyed several years' experience with servers, I know how difficult it is to take down a server during normal working hours for **any** reason. Apple has solved that problem; I now can run the Administrator commands while the file server is running.

Other neat features include:

- **Volume copy.** The administrator can copy Apple-Share volumes from one disk to another while retaining full access privileges.
- **Copy protection.** Administrators can mark certain applications as **read-only** which will prevent users from downloading a copy of the application onto their hard disks.
- **Folder locking.** A user can lock a folder so it can't be renamed, discarded, or moved somewhere else on the same volume.
- **Server and volume reports.** The administrator can obtain lists of all registered users & the groups they belong to, as well as the files and folders he has and the amount of space they occupy. The volume report gives details about the folders in a volume.

Network Planning

If you are seriously considering a Local Area Network with or without an Apple File Server, I recommend that you look through the July-Aug-Sept issue of **Menu**, the Magazine of Small Systems Support, produced by LLNL.

Performance Tests?

I have not yet conducted any performance tests or analyzed/compared this product with other file server approaches. -- (this approach requires a dedicated server) -- but I feel that in a real network application of any size this is not a major issue. It is more important to have the source of the files you want UP AND RUNNING.

I occasionally have nightmares where one of my 3Com PC networks breaks and my network guru, Nancy Travis, is unavailable. With what I have seen of this product, I rest assured that those nightmares should disappear.

We will keep you informed as the Workstation Lab gains experience and knowledge with the new Version 2.01 of the Apple File Server.

• [25.10.13]......................................

THE NEW MACINTOSH IIx

The news may be a bit old by now, but it's worth repeating - Apple has a new MacII. Called the Macintosh IIx, it is primarily aimed at the higher education market and A/UX users. The Mac IIx features a 68030 microprocessor and a 68882 math co-processor. The 68030 includes a built-in PMMU (Paged Memory Management Unit) that provides advanced memory management and multi-tasking capabilities when running A/UX.

The new chip should (on average) improve performance 10% - 15% over the Mac II. Although this increase in speed is hardly noticeable, the real benefit of the Mac IIx will be the new "SuperDrive" 1.4-Mbyte floppy drive. This drive will read and write to the major 3.5" disk formats: the Mac 400K, 800K, and Modified Frequency Modulation (MFM) 1.44MB formats; and the MS-DOS and OS/2 MFM 720K and 1.44MB formats.

The Mac IIx will be available as either a single floppy-based system or an internal 80MB hard drive system. 4MB of RAM will be standard on both configurations. Apple states, "with very few exceptions" all existing Mac II software will be compatible with the Mac IIx. System 6.0 or later will also be required for operation with the Mac IIx.

There will be an upgrade path from the Mac II to the Mac IIx. A Mac IIx Logic Board will soon be available, but the 1.44MB drive will not be available until later this year.

For your pleasure, the Workstation lab has a Quick Reference Booklet which features all the highlights of the new Mac IIx. In addition, there is a HyperCard stack which covers the same Booklet material. This stack is a joy to watch; bring by a blank floppy for a free copy.

The Macintosh IIx (M5820) without the 80MB Hard Disk is Lab priced at $4506; with the Hard Disk, $5434. Upgrade prices are unavailable at LBL Newsletter article submission deadline date.

The New Macintosh SE HD 40/2 CPU

This "new" model release from Apple simply adds another 1MB of RAM memory to the "old" MacSE, and replaces the "old" 20MB hard disk with a 40MB disk. You cannot order the new model without the Apple internal 40MB hard disk. Current Lab pricing for this SE HD 40/2 CPU is $2940; with the Apple Keyboard, $3020; and with the extended Keyboard, $3082.

Other New Products

The new Apple Scanner (without cables) is available at a Lab price of $1187. The Apple FAX Modem (with System Cables) is $478.50.

[25.10.14]...

APPLE MACINTOSH SYSTEM 6.0.2[*]

It's here! Apple's long-awaited system upgrade has arrived at last and is available in the Workstation lab (Bldg. 50B, Rm. 2231). Bring your own blank floppies for copies of Version 6.0.2. -- there 's no documentation for the updated version. There is a very limited number of Version 6.0 packages (with documentation and upgrade) available in the Workstation Lab, at $32.

• [25.10.15]...

TIMELY TIP: FALL BACK (MAC USERS)

Mac Users: Daylight Savings time is coming. Don't forget to Fall Back on October 30. To set your clock:

(1) Select the Apple icon.

(2) Select Alarm Clock.

(3) When the Time window opens, click on the flag on the right side of the window. That will open Time and Date Set functions.

(4) Click on the Clock (not the Alarm Clock) icon. Select numbers in hour portion. Type in new number. Select numbers in minutes portion. Type in new number (if you need to). Select numbers in seconds portion. Type in new number (if you're that fussy).

(5) Click on the Clock again.

(6) Close Alarm Clock.

• [25.10.16]...

BEGINNING *PAGEMAKER* CLASS
FOR THE MACINTOSH

If there is enough interest (6-8 people), the Workstation Group will set up a Beginning *PageMaker* Class for laboratory employees. This course is taught by an outside instructor and costs about $150.00 per person. It is a one-day course from 8:30am to 4:30pm held in the Mac Training Room, 50B/1229.

Please call Workstation Group member Carole Casaretto (x6858) if you are interested.

---

[*]6.0.2 supersedes the short-lived 6.01, which superseded the short-lived 6.0.

YES, I would like to receive the LBL Computing Newsletter

NAME...

ADDRESS..

....

CITY
STATE...
ZIP

PHONE..

COMMENTS..

....

....

Return to ....Newsletter - MS 50F
Lawrence Berkeley Laboratory
University of California
Berkeley, CA 94720

Attention: NL MAILING LIST

SIGN UP FOR THE NEWSLETTER

Attention LBL employees: If you use the Computer Center's UNIX or VMS system, or if you are an owner or user of a PC or a MAC, you should sign up to receive the Laboratory's Computing Newsletter. It contains useful information about our systems and has a helpful Workstation News section (supported by the Information and Computing Sciences Division's Workstation Group), offering support and helpful hints for PC users. This is also a place for you to send questions and comments. To add your name to the Newsletter Mailing List, contact Irene Partyka, x4242, or

VMS MAIL   lbl::IMPartyka

UNIX or
Software Tools Mail   IMPartyka@lbl.gov

Vogue la galère
. . . Rabelais