We are longing to use ourlivingroom more freely.   1

Lebensraum

(J19660)   15-OCT-73 08:05;   Title: Author(s): Dirk H. Van
Nouhuys/DVN; Distribution: /MAB2; Sub-Collections: SRI-ARC; Clerk: DVN;

Request for Site's Distribution Preference

To: Station Agents   1

From: Jeanne North   2

Re: Distribution of NIC Documents   3

At various times, and particularly at the time of Susan Lee's recent
phone poll of Sites, several Sites indicated their willingness to
receive only one copy of documents distributed from the NIC.   4

If your Site is one of these, will you tell us the one person whom
you want to designate as the recipient for the Site. This person will
be expected by NIC to function as Station Agent in the supplying of
NIC documents to others at the Site. Therefore this person will be
regarded by NIC as the Station Agent, although they may be Liaison or
other person as well.   5

Please address your information to Marcia Keeney.   6

19661 Distribution   1
    A. Wayne Hathaway, Patrick W. Foulk, Richard A. Winter, Harold R. Van
    Zoeren, Alex A. McKenzie, Abhay K. Bhushan, B. Michael Wilber, Edward
    A. Feigenbaum, Robert T. Braden, James M. Pepin, John T. Melvin,   1a
    Dan Odom, Robert G. Merryman, P. Tveitane, Adrian V. Stokes, David L.
    Retz, Reg E. Martin, Gene Leichner, Jean Iseli, James E. (JED)
    Donnelley, William Kantrowitz, Michael S. Wolfberg, Yeshiah S.
    Feinroth, Anthony C. Hearn, Eric F. Harslem, Robert M. (Bob)
    Metcalfe, Bradley A. Reussow, Daniel L. Kadunce, George N. Petregal,
    Michael B. Young, Michael A. Padlipsky, Schuyler Stevenson, L. Peter
    Deutsch, John Davidson, Thomas O'Sullivan, Sol F. Seroussi, Scott
    Bradner, Robert H. Thomas, Michael J. Romanelli, Ronald M. Stoughton,
    A. D. (Buz) Owen, Robert L. Fink, Jeanne B. North, Steve D. Crocker,
    Thomas F. Lawrence, John W. McConnell, James E. (Jim) White   1b
    Craig Fields, Margaret Iwamoto, Dee Larson, Robert E. Doane, Brenda
    Monroe, Jeanne B. North, Pam J. Klotz Cutler, Stan Golding, Steve G.
    Chipman, John P. Barden, Martha A. Ginsberg, Shirley W. Watkins,
    Janet W. Troxel, Connie D. Rosewall, Anita L. Coley, Carol J.
    Mostrom, Marcia Lynn Keeney, Michael D. Kudlick, Jeffery B. Rubin,
    John F. Wakerly, Tom C. Rindfleisch, Leonard B. Fall, David L. Hyde,
    Gary Blunck, Tom P. Milke, Alan H. Wells, Chuck R. Pierson, Carl M.
    Ellison, Robert P. Blanc, Jay R. Walton, Terence E. D EVINE, David J.
    King, William L. Andrews, Milton H. Reese, Kenneth M. Brandon, Lou C.
    Nelson, Jeffrey P. Golden, Richard B. Neely   1c
    Kasee N. Menke, Ruth Ann McDermott, Angie R. Yingling, Michael M.
    Dervage, Carolyn E. Taynai, Easter D. Russell, Leonard B. Fall, Peggy
    D. Irving, Roy Levin, M. P. McCluskey, Pitts Jarvis, Barbara A.
    Nicholas, Jacquie A. Priest, Terence E. Devine, Paul M. Rubin, Paula
    L. Cotter, O. A. Hansen, Dan Dechatelets, Nancy C. Thies, Robert
    Silberski, Marcia Lynn Keeney, Margaret A. (Maggie) Bassett, J. A.
    Smith, Leina M. Boone, Diana L. Jones, Nancy J. Neigus, Terry Sack,
    Frances A. (Toni) McHale, Lucille C. (Lucy) Gilliard, Ed J. Collins,
    Gary Blunck, John F. Heafner, Kathy Beaman, David J. King, Sue
    Pitkin, Jerry Fitzsimmons, Gloria Jean Maxey, Roberta J. Peeler   1d

Request for Site's Distribution Preference

(J19661) 15-OCT-73 08:31;   Title: Author(s): Jeanne B. North/JBN;
Distribution: /NSAG MLK MDK NLG; Sub-Collections: NIC NSAG NLG; Clerk:
JBN:
Origin: <NORTH>DISTCUT.NLS;1, 15-OCT-73 07:56 JBN ;

Stanford Research Institute
Augmentation Research Center
333 Ravenswood Avenue
Menlo Park, California 94025

Mr. Burns, RADC/PMA
Department of the Air Force
Headquarters Rome Air Development Center (AFSC)
Griffiss Air Force Base, New York 13440

Dear Mr. Burns:

This responds to block 10 of DD Form 1664 with respect to
contract F30602-73-C-0285 (SRI #2697).   1

The table below shows the man hours expended on the subject
contract since the last reporting period (five weeks).   2

	Cumulative to 9/1/73	Person Hours Expended During Report Period
Supervisor	40	0
Senior Professional	0	0
Professional	832	376
Technical	0	0
Other	0	0

	872	

2a

We estimate that the percentage of technical completion at the
end of August 30 per cent.   3

Sincerely,

Dirk van Nouhuys
Research Analyst
Augmentation Research Center

dvn

19663 Distribution
    James C. Norton, Duane L. Stone,

R&D Contract Status Report for August, Project 2697

(J19663) 15-OCT-73 20:00;   Title: Author(s): Dirk H. Van Nouhuys/DVN;
Sub-Collections: SRI-ARC RADC; Clerk: DVN;
Origin: <VANNOUHUYS>AUGUSTMOLD.NLS;2, 15-OCT-73 11:51 DVN ;   Title:
Autnor(s): Van Nouhuys, Dirk H. /DVN; Distribution: /JCN DLS;
Sub-Collections: SRI-ARC; Clerk: KFB;
Origin: <BYRD>R&DCONTRACT.NLS;6, 9-MAR-73 8:35 KFB ;

Stanford Research Institute
Augmentation Research Center
333 Ravenswood Avenue
Menlo Park, California 94025

Mr. Burns, RADC/PMA
Department of the Air Force
Headquarters Rome Air Development Center (AFSC)
Griffiss Air Force Base, New York 13440

Dear Mr. Burns:

This responds to block 10 of DD Form 1664 with respect to
contract F30602-73-C-0285 (SRI #2697).   1

The table below shows the man hours expended on the subject
contract since the last reporting period (four weeks).   2

Cumulative to 9/29/73		Person Hours Expended During Report Period
Supervisor	40	0
Senior Professional	0	0
Professional	1104	372
Technical	0	0
Other	0	0

	1144	

2a

We estimate that the percentage of technical completion at the
end of September 45 per cent.   3

Sincerely,

Dirk van Nouhuys
Research Analyst
Augmentation Research Center

dvn

19664 Distribution
    Duane L. Stone, James C. Norton,

R&D Contract Status Report for September, Project 2697

(J19664) 15-OCT-73 20:05;   Title: Author(s): Dirk H. Van Nouhuys/DVN;
Sub-Collections: SRI-ARC RADC; Clerk: DVN;
Origin: <VANNOUHUYS>SEPTEMBERMOULD.NLS;1, 15-OCT-73 11:40 DVN ;
Title: Author(s): Van Nouhuys, Dirk H. /DVN; Distribution: /DLS JCN;
Sub-Collections: SRI-ARC; Clerk: KFB;
Origin: <BYRD>R&DCONTRACT.NLS;6, 9-MAR-73 8:35 KFB ;

People Do Use the Locators

With the new copy directory options (documentation,help,diropt) it is
possible to learn how often a version has been read since its
creation. The current version of <userguides,areclocator,> has been
read 163 times since its creation December 4th and (nic, locator,)
read 302 times since its creation October 15th.   1

People Do Use the Locators

(J19665)   4-JAN-74 14:38;   Title: Author(s): Dirk H. Van Nouhuys/DVN;
Distribution: /KIRK NDM RWW MDK JCN JBN DCE; Sub-Collections: SRI-ARC;
Clerk: DVN;

For Your Information

Request For Demonstration of Split-Platen Terminet

Augmentation Research Center
Stanford Research Institute
Menlo Park, California 94025
(415) 326-6200

General Electric
Section 794-08
POB 4197,
Lynchburg,Virginia.

Dear Sir:

We are cooperating with Information Sciences Branch at Rome
Air Development Center in developing a Forms Generating
System which will be used first at Rome with computation
carried out on our machine in Menlo Park via the ARPA
network.   1

For the Forms System we are interested in a terminal with a
split platten and the capacity to turn the platen either way
by half steps. RADC would be the first to acquire a
terminal.   2

RADC already uses some Termicettes.   3

I would like to see a demonstration of your Terminet 300 SP
and it is likely Duane Stone at RADC would as well. If you
are interested, please phone to arrange a time.   4

                        Sincerely,

                        Dirk H. van Nouhuys
                        Augmentation Research Center

jc:Duane L. Stone,
Rome Air Development Center (ISIM)
Griffiss Air Force Base
Rome, New York 13440

Phone: (315) 330-3857;

Request For Demonstration of Split-Platen Terminet

(J19666) 7-JAN-74 11:15;   Title: Author(s): Dirk H. Van Nouhuys/DVN;
Distribution: /DLS NDM MEH EKM JHB JSP; Sub-Collections: DPCS RADC NIC
IC ; Clerk: DVN;
Origin: <VANNOUHUYS>PLATTEN.NLS;2, 7-JAN-74 11:00 DVN ;

 PSO will meet to exchage information as usual this Thursday at 2:00
in the Parsley. JML KIRK MEJ and are expected to attend, and
everyone is welcome.

1

(J19667)   7-JAN-74 11:26;   Title: Author(s): Dirk H. Van Nouhuys/DVN;
Distribution: /SRI-ARC; Sub-Collections: SRI-ARC; Clerk: DVN;

Visit Log: Sverre Sem- Sandberg of Ericsson Sweden Oct 12 73

Sverre Sem-Sandberg of L M Ericsson visited Fri Oct 12. He is
Manager of their info system dept. He seemed interested in NLS and
Network developments. He was concerned about what steps he might
take to get his people in contact with developments here. We
discussed the ARPANET Tip in Norway, the Utility, the possibility of
people from there coming here for a period of time. He said he would
be back in touch. He is also a Vice President of IFIPS.   1

Visit Log: Sverre Sem- Sandberg of Ericsson Sweden Oct 12 73

(J19668)   15-OCT-73 08:50;   Title: Author(s): Richard W. Watson/RWW;
Distribution: /DCE; Sub-Collections: SRI-ARC; Clerk: RWW;

Revised Q-Card

Dean, another thing for you to do is revise the Q-card. We should
have it ready for people who start using the new language, but we
can't complete it until we have a running system to debug against. 1

19669 Distribution   1
    N. Dean Meyer, James H. Bair, Elizabeth K. Michael, Richard W.
    Watson, Elizabeth J. (Jake) Feinler, Harvey G. Lehtman, Kirk E.
    Kelley, Laura E. Gould, N. Dean Meyer, Jeanne M. Beck, Charles F.
    Dornbush, Dirk H. Van Nouhuys, Michael D. Kudlick, Diane S. Kaye,
    James C. Norton,   1a

Revised Q-Card

(J19669)   15-OCT-73 09:05;   Title: Author(s): Dirk H. Van
Nouhuys/DVN; Distribution: /NDM DIRT(fyi); Sub-Collections: SRI-ARC
DIRT; Clerk: DVN;

Grumble reply to AAM (See (19648,))

Grumble 1 (being asked for your ident) was the result of the ident
file going bad. As soon as someone here discovers the problem
exists, it is remedied by bringing in an older, good copy of the
system ident file back.   1

Grumble 2 sounds like the result of trying to do an update on what
had been originally a bad file. It is possible to w rk in NLS on a
file without realizing it has some bad spots if you do not do
anything which would reference the bad page. When you do something
which reads in a bad page (commands which look at all pages include
update, output, and file verify), the system will tell you the file
is bad. You could have tried to recover the original file (assuming
it was not bad, or had someone here recover the first good copy from
a dump. Please do not grow paranoid about "Update" in general: what
good would life be without a few surprises?   2

19670 Distribution   1
    Bgs Bugs, Diane S. Kaye, Harvey G. Lehtman, Charles H. Irby, Alex A.
    McKenzie,   1a

Grumble reply to AAM (See (19648,))

(J19670) 15-OCT-73 09:30;   Title: Author(s): Harvey G. Lehtman/HGL;
Distribution: /BUGS AAM; Sub-Collections: SRI-ARC BUGS; Clerk: HGL;

Miscellaneous Items of Help Design; Work Breakdown for Writing About
the New Command Language for the Next Few Weeks

On Wednesday the 10the te HELP design group met again. The most
important conclusions of the meeting appeared in the mean time as a
description of the commands, appearance to the user, maintenance
tools, and link constraints of the HELP programs <Ljournal,19624,>
and a description of the data base and allied matters,
<ljournal,19634,>   1

   We discussed drafts of these two documents and made minor changes.   1a

We also discused or settled several matters outside the two documents
just mentioned.   2

   Since the data base design now calls for square brackets to mark
   options in syntax, we requested that full
   prompting<JJOURNAL,19369,2c> mark options by square brackets
   rather than by astrisk.   2a

   With others, I objected to certain points in Harvey's description
   of the operation of HELP that depend on the user understanding
   that the data base has a tree structure. We agreed to rename the
   "Probable Command", "TOP" to somthing else that would not imply
   topness, and to avoid mentioned the ↑, "upnode" command to HELP
   users.   2b

   We agreed that examples in HELP, primer, and, presumably, User
   Guide, and the hoped-for scenarios would demonstrate demand
   recognition with altmode used in the most effecient manner.   2c

     Introductory lines off examples will read: "You should see"
     instead of "It will look like"   2c1

   Some people objected to the prompt K: on account of its adding to
   the printout a user has to face At first we agreed to buck the
   descison to DIck Watson, but Mike Kudlick later called a meeting
   on the general question of prompts and recongnition.That meeting
   resulted in <ljournal,19639,>.   2d

The working writers (dvn,jmb,kirk,ndm absent) of the data base met
the following morning to distribute the remaining work They created
the following work breakdown..   3

   Round 1   3a

     Edit written concepts. -- DVN   3a1

     Put in written and edited concepts. -- INDIVIDUALS   3a2

     Rewrite command syntax. -- JMB   3a3

Rewrite examples. -- NDM   3a4

  To fit efficient demand recognition and check for accuracy
  against the command syntax.   3a4a

Rearange file. -- KIRK JMB   3a5

Rewrite function statements -- DVN JMB KIRK
 (create effects staments, decide what should go in menu, what
in show, etc.).   3a6

Decide what concepts need to be written -- MDK
before help can function.   3a7

  write them   3a7a

Write new links -- DVN KIRK JMB   3a8

Rewrite Primer -- DVN   3a9

Edit assembled HELP for content (not links).-- NDM   3a10

Round 2   (assumming experimental system available)   3b

Update Q-card   --ndm   3b1

Debug HELP for accuracy against NLS running commands against
running commands-- EVERYONE.   3b2

Debug HELP by means of the nice maintenance programs HGL will
write us. -- NDM   3b3

Proof read assembled help. -- JDC   3b4

Plan User Guide: Outline schedule, priorities, work
assignements. -- DVN   3b5

Round 3 Let Help Run   3c

Write User Guide.   3c1

Add non-critical concepts.   3c2

Search out the occasions where we need to talk in HELP about
display-only matters, and add them.   3c3

Round 4   3d

Make improvements we cannot now foresee.   3d1

19671 Distribution   1
      James H. Bair, Elizabeth K. Michael, Richard W. Watson, Elizabeth J.
      (Jake) Feinler, Harvey G. Lehtman, Kirk E. Kelley, Laura E. Gould, N.
      Dean Meyer, Jeanne M. Beck, Charles F. Dornbush, Dirk H. Van Nounuys,
      Michael D. Kudlick, Diane S. Kaye, James C. Norton,   1a

Miscellaneous Items of Help Design; Work Breakdown for Writing About
the New Command Language for the Next Few Weeks

(J19671)   15-OCT-73 09:48;   Title: Author(s): Dirk H. Van Nouhuys/DVN;
Distribution: /DIRT; Sub-Collections: SRI-ARC DIRT; Clerk: DVN;
Origin: <VANNOUHUYS>WEDNOTES.NLS;1, 15-OCT-73 09:40 DVN ;

TY Terminal loan for Energy Project use at SRI Washington

Special Messages (Tried to send them tied to the respective Idents, but it didn't go):   1

(Dave: fyi, Good Luck)   1a

(Paul: can you check about their department's plans to buy or lease their own terminals? They'll need them; we are pinched for them.)   1b

(Dirk: can you be sure our property-control records have this terminal 'signed out' appropriately?)   1c

Dave Russel asked me Tuesday 9 Oct if ARC could help SRI's Energy-Project people to get set up at SRI's Washington office with a terminal so that over the next few weeks of high activity they could participate in the Network-dialogue mode. I provided the Execuport I had at home; SRI got it to Berg and Schmidt by Wednesday morning; Berg linked to me Wed morning to say that he had it.   2

SRI's Energy-project guys (whether here or in Wash) can receive SNDMSGs via address "ENERGY@SRI-ARC", or Journal mail in their initial files in that directory. Berg ident is DNB.   3

Apparently there is a significant flurry of activity in the ARPA Energy Project, and Berg and Schmidt may be at Washington for a while.   4

19672 Distribution   1
    Paul Rech, David N. Berg, Richard W. Watson, James C. Norton, Bonnar
    Cox, David R. Brown, David N. Berg, Dirk H. Van Nounuys,   1a

TY Terminal loan for Energy Project use at SRI Washington

(J19672) 15-OCT-73 13:59;   Title: Author(s): Douglas C. Engelbart/DCE
; Distribution: /pr dnb rww jcn bc drb dnb dvn ;
Sub-Collections: SRI-ARC; Clerk: DCE ;

The Line Processor Available for General Use

I am sitting here using the line processor and find it quite easy to use. It is available for general use by anyone and I would like to encourage others at ARC to spend time using it to get their impressions. The directions for how to use it on on top. I, Charles or Martin can quickly show you how to turn it on if the directions aren't clear.

1

The Line Processor Available for General Use

(J19673)   15-OCT-73 14:18;   Title: Author(s): Richard W. Watson/RWW;
Sub-Collections: SRI-ARC; Clerk: RWW;

                                Augmentation Research Center
                                Stanford Research Institute
                                Menlo Park, California 94025

Joseph B. Reid
Universite du Quebec
2875 Boul. Laurier
Ste-Foy, Quebec 10,
CANADA

Dear M. Reid: 1

Thank you for your thoughtful consideration of the current
catalog. Your points are well taken. I'd like to respond to
them.   2

Yes, we need an improved stoplist. There are some English
candidates not yet included. We have discussed this subject
in regard to English words and have not taken action. I had
not even noticed the foreign word problem. What we can also
do, and I believe it may be simpler, is to delete the
statements (in these indexes each line is a statement) which
are not acceptable to index practice. We usually do some of
this deletion; and as you may see, many title words are not
substantive and could be dispersed with, except that the
stoplist would become very long.   3

True, we did not update the number listing 13458 because of
the length, but not just because of the length of the entire
document. We proposed to number the new pages in a separate
series, but the length was still such that the the NIC
director ruled no update at all at present. That is one
reason for the questionnaire mailed with the ARPANET NEWS in
July. Support is needed to indicate the usefulness of the
listing. My desire is to make one more print of the entire
listing, including a number of old documents now included,
and printing on both sides. Overlapping when necessary.   4

Thank you for your interest. We need to know how the NIC
documents are received and get suggestions for improvement.   5

Sincerely,

                                Jeanne B. North
                                Augmentation Research Center

1967 Distribution
    Joseph B. Reid,

1a

1

Letter to Joseph B. Reid

(J19674) 15-OCT-73 15:08;   Title: Author(s): Jeanne B. North/JBN;
Distribution: /JBR2; Sub-Collections: SRI-ARC; Clerk: KIRK;
Origin: <KELLEY>NORTH.NLS;4, 15-OCT-73 14:46 KIRK ;

Structural Position of Lexicon in Help Database

I suggest that the lexicon be moved to branch one of the database so
that it can be structured and still be searched first.   1

19675 Distribution   1
    James H. Bair, Elizabeth K. Michael, Richard W. Watson, Elizabeth J.
    (Jake) Feinler, Harvey G. Lehtman, Kirk E. Kelley, Laura E. Gould, N.
    Dean Meyer, Jeanne M. Beck, Charles F. Dornbush, Dirk H. Van Nouhuys,
    Michael D. Kudlick, Diane S. Kaye, James C. Norton,   1a

Structural Position of Lexicon in Help Database

(J19675)   15-OCT-73 15:40;   Title: Author(s): Kirk E. Kelley/KIRK;
Distribution: /DIRT; Sub-Collections: SRI-ARC DIRT; Clerk: KIRK;

For time being, please avoid over-long statements

Mil: Reading your memo (19563,) to Ken on TENEX Link features
(which, by the way is a very good contribution), some of your
statements are too long to see in one Tasker screenful, and
(unfortunately, but hopefully "for the time being") a DNLS user can't
scroll down within a statemnt. Please don't use such long statements
on Journal memos, o.k.? At least until DNLS gets Jump to Line
capability. (If you're interested, see the memo about this that was
triggered by my trying to read your memo and feeling grumpy about the
Jump to Line that was taken out of DNLS when we changed from the CDC
3100 to the SDS 940 -- 19580,).   1

For time being, please avoid over-long statements

(J19676) 15-OCT-73 18:09;   Title: Author(s): Douglas C. Engelbart/DCE
; Distribution: /mej rww (Dick: fyi) jcn (Jim: fyi) ; Sub-Collections:
SRI-ARC; Clerk: DCE ;

Visit Log: 11 Oct 73, Lewis Finkelstein, New York City Transit
Authority, and David Herron, SRI

Hosted by DCE and RWW

Visit Log: 11 Oct 73, Lewis Finkelstein, New York City Transit
Authority, and David Herron, SRI

Mr. Lewis Finkelstein, New York City Transit Authority. (See Journal
item of pre-visit notice -- 19583,). Dave Herron is a Senior
Management Consultant with SRI, and participates in a fairly sizeable
contract from the NYC Transit Authority. Finkelstein's SRI visit was
basically about the contract; the visit here was at his request.   1

Finkelstein had a general sort of interest; apparently nothing that
was specific in terms of needs or possibilities within the Transit
Authority. Dick and I both greeted them, and had some general
discussion. Dick then gave them some brief demonstrations, and some
more ARC literature: 2

Visit Log: 11 Oct 73, Lewis Finkelstein, New York City Transit
Authority, and David Herron, SRI

(J19677) 15-OCT-73 18:09;   Title: Author(s): Douglas C. Engelbart/DCE
; Sub-Collections: SRI-ARC; Clerk: DCE ;

R&D Contract Status Report for June, Project 2697

Stanford Research Institute
Augmentation Research Center
333 Ravenswood Avenue
Menlo Park, California   94025

Mr. Burns, RADC/PMA
Department of the Air Force
Headquarters Rome Air Development Center (AFSC)
Griffiss Air Force Base, New York 13440

Dear Mr. Burns:

This responds to block 10 of DD Form 1664 with respect to
contract F30602-73-C-0285 (SRI #1894).   1

The table below shows the man hours expended on the subject
contract since it began in June (three weeks).   2

Cumulative to 6/30/73		Person Hours Expended During Report Period
Supervisor	40	40
Senior Professional	0	0
Professional	200	200
Technical	0	0
Other	0	0

	240	

2a

We estimate that the percentage of technical completion at the
end of June was 15 per cent.   3

Sincerely,

Dirk van Nouhuys
Research Analyst
Augmentation Research Center

dvn

(J19679) 15-OCT-73 19:21; Title: Author(s): Dirk H. Van Nouhuys/DVN;
Sub-Collections: SRI-ARC RADC; Clerk: DVN;
Origin: <VANNOUHUYS>JUNEMOLD.NLS;1, 15-OCT-73 11:47 DVN ; Title:
Author¤(s): Van Nouhuys, Dirk H. /DVN; Distribution: /DLS JCN;
Sub-Collections: SRI-ARC; Clerk: KFB;
Origin: <BYRD>R&DCONTRACT.NLS;6, 9-MAR-73 8:35 KFB ;

Request for assistance from all DNLS users

It seems there was some confusion about the message I sent last week
on collecting command frequency information (19510,). I intended for
people to begin collecting information without further notice,
however this was unclear to several people.   1

This message is to clarify the previous one and to let all DNLS users
know that beginning Tuesday, October 16, we would like you to start
collecting data on command frequency in the following manner.   2

   Before you logout of a DNLS session, use the command, G(oto) U(se
   measurements) F(requency Count) S(ave). This will create a file
   in your directory, QBVMXYZ.LAN (where XYZ is your ident). An
   output quickprint of this file will produce two tables of
   information which you can leave in Susan Lee's in-box.   2a

If the response to this request is insufficient, the alternative will
be to resurrect a section of NLS code which will automatically create
the above mentioned files when someone is working. The problem with
this is that the existing program which collects this data can only
be run at night and will therefore collect data only on the last
session of the day for each user.   3

Your cooperation in this will be appreciated.   4

If anyone has any questions or complaints please direct them to me
(SRL).   5

19680 Distribution   1

Donald C. (Smokey) Wallace, Richard W. Watson, Don I. Andrews,   1a
A. Jim Blum, A. Analysis, Meredith(Reddy) E. Dively, Jeanne M.
Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Mark Alexander Beach,
Judy D. Cooke, Marcia Lynn Keeney, Carol B. Guilbault, Susan R. Lee,
Elizabeth K. Michael, Charles F. Dornbush, Elizabeth J. (Jake)
Feinler, Kirk E. Kelley, N. Dean Meyer, James E. (Jim) White, Diane
S. Kaye, Paul Rech, Michael D. Kudlick, Ferg R. Ferguson, Douglas C.
Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper,
Charles H. Irby, Mil E. Jernigan, Harvey G. Lehtman, Jeanne B. North,
James C. Norton, Jeffrey C. Peters, Jake Ratliff, Edwin K. Van De
Riet, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor   1b

Request for assistance from all DNLS users

(J19680) 15-OCT-73 20:16;   Title: Author(s): Susan R. Lee/SRL;
Distribution: /SRI-ARC; Sub-Collections: SRI-ARC; Clerk: SRL;
Origin: <LEE>JUNK.NLS;1, 15-OCT-73 19:51 SRL ;

FTPIG

Abhay,

     I would be most appreciative if you could add my ident to the
FTPIG. I am at SDAC-tip and am currently working on our own version
of an FTP server. If you see fit to add my name the following should
be of help.   Alan R. Hill   ARH

                    SDAC-TIP
            314 Montgomery St.
          Alexandria, Va. 22314
           Teledyne - Geotech
          (703) 836-3882 ext 294

Thanks.   1

19681 Distribution
    A BHAY K. Bhushan,

(n1) ARPANET NEWS November 1973 Issue 9   NIC 19720

Choose one by typing:
(for example) s[how] n5 CR   (to display FEATURED SITE)
(or) s[how] u1 CR   (to display first update)
To print statement numbers, type v[:type View specs:]mG CR

1

    n2 ARPANET NEWS   Information About the Publication

1a

    n3 CALENDAR   Events of Network Interest

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    n4 ARTICLES   STATUS REPORT on the TERMINAL IMP

               ARPANET USERS Interest Group Charter

               An ONLINE INTERVIEW with DR. FRANK KUO

1c

    n5 FEATURED SITES   Co-Featured sites : CMU and ALOHA

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    n6 PROTOCOLS

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    n7 RESOURCE NEWS   New Programs and Publications

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    n8 PLANS

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    n9 OTHER NEWS

1h

    u1 Update 13 November   1i

    u2 Update 18 November   1j

    u3 Update 20 November   1k

(n2) ARPANET NEWS Information About the Publication

2

    Issue 9   November 1973   2a

    Hardcopy issue published monthly

ARPANET News, Issue 9, November 1973

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Editors: Jeanne B. North (NIC)
           Jean Iseli (MITRE)
Contributing Editor: Susan S. Poh (MITRE)
                       Mil E. Jernigan (NIC)

                                                                     2c

The online version is available to all Network members who receive
online delivery from NIC. It can also be accessed by anyone who
logs into SRI-ARC and uses the query language named nic.

                                                                     2d

The online version contains the month's basic issue. Each week a
branch is added, containing items received during the week. This
update material is added to the new feature articles to produce
the next month's issue.

                                                                     2e

    For scanning:

                                                                     2f

        control c
        nic CR
        a[rpanet news] CR
        s[how] (whatever you choose from the contents) CR
        (to stop printing) control o
        (to exit) q[uit] CR
        (to show statement numbers) v[:Type Viewspecs:]mG CR

                                                                     2g

    For printing NEWS:

                                                                     2h

        nls CR

        l[oad] f[ile] <nic>arpanews CR CR (current)
        o[utput] d[evice] t[eletype] CR   2i

              or
        l[oad] f[ile] <nic>arpanewsoctober CR CR
        o[utput] d[evice] t[eletype] CR (for earlier issue)   2j

              or
        l[oad] f[ile] <nic>arpanewsup CR CR (for UPDATES only)

ARPANET News, Issue 9, November 1973

o[utput d[evice t[eletype]   CR

2k

One hardcopy of the monthly issue will be sent to each Liaison,
Principal Investigator, and Station Agent at Network Sites, and to
Network Associates. Local reproduction of multiple copies is
encouraged.

2l

Contributions to the NEWS may be forwarded to JI at NIC through
the Journal, to ISELI@USC-ISI, or to Jean Iseli, The MITRE
Corporation, National Systems Design Dept., Westgate Research
Park, McLean, Va. 22101. News may also be forwarded to JBN through
the NIC Journal, or mailed to Jeanne North at SRI.

2m

To return to contents outline type s[how]n1   CR

2n

(n3) CALENDAR   Events of Network Interest

3

Type s[how] (parenthetical name)

3a

(condensed)   3b

11/5-7	IEEE-SYS Conf on Systems, Man & Cybernetics
11/7-8	ARCH Sym on High Level Language Computer Arch
11/12-13	TEXAS 2nd Texas Conf on Computing Systems
11/12-16	Image Processing
11/13-15	DATA-SYMP
11/27-30	DECUS Fall Symposium
1/8-10 74	HAWAII-CON
2/12-14 74	2nd Ann Computer Science Conference
4/22-23 74	Workshop on Machine-Independent Graphics
5/6-10 74	NCC 1974 National Computer Conference
6/17-19 74	IEEE Intl Conf on Communications ICC74
7/15-17 74	(graph) Conf on Comp Graphics

3b1

A meeting listed here is sponsored by the Group named. Many
meetings are open to other interested people. NIC document
references are given where available.

3b2

Meetings sponsored by Groups in the Network are indicated by *.

3b3

(graph) Conference on Computer Graphics and Interactive
    Techniques, July 15-17, 1974,   University of Colorado,

3c

This will be a formal conference with papers later published in
the Journal of Computers and Graphics or in the proceedings.
Ira Cotton will chair a session on Graphics and Networks, Jim
George of Colorado State University will chair a session on
Standards, and Andy van Dam of Brown University is planning one
on Division of Labor between Central and Satellite Computers.
Robert Schiffman of the University of Colorado, Boulder
Colorado 80302, is the Conference General Chairman, and Jon
Meads of Tektronix, Delivery Station 81-872, Box 500,
Beaverton, Oregon 97005, is the Program Chairman. Contact any
of these if you have suggestions or wish to submit a paper.   3c1

    ... excerpted by JBN from Network Graphics Note 4, Nic 19474

3c2

(decus) DECUS 1973 Fall Symposium, November 27-30, Hyatt Regency,
San Francisco.

3d

Attendees will register for Mini/midi computer sessions, or for
Decsystem-10 sessions. Advance registrations are to be made
with DECUS, 146 Main St., Maynard, Mass. 01754. Fee: $45 or $60
member, $50 or $65 nonmember. Daily registration $17 and $20.

3d1

    To return to contents outline type s[how]n1   CR

3e

(n4) ARTICLE   4

    (bbn-net)   STATUS REPORT on the TERMINAL IMP

                    (This status report assumes the distribution of
                    Software Release 316 which in some cases is still
                    Pending)
                    ....Alex A. Mckenzie [BBN-NET]

4a

The first Terminal IMP (TIP) was delivered to the field in late
1971. At the end of October 1973, nineteen TIPs were

operational within the network at the following sites:

4a1

NASA, Ames Research Center, Moffett Field, California   4a2

University of Hawaii, Honolulu, Hawaii   4a3

University of Southern California, Los Angeles   4a4

Fleet Numerical Weather Central, Monterey, California   4a5

Tymshare Data Services, Cupertino, California   4a6

Range Measurements Laboratory, Cocoa Beach, Florida   4a7

University of Utah, Salt Lake City, Utah   4a8

Air Force Global Weather Central, Lincoln, Nebraska   4a9

U.S. Department of Commerce, Boulder, Colorado   4a10

University of London, London, England   4a11

Norwegian Seismic Array, Kjellar, Norway   4a12

Seismic Data Analysis Center, Washington, D.C.   4a13

MITRE Corporation, Washington, D.C.   4a14

Advanced Research Projects Agency, Washington, D.C.   4a15

U.S. Air Force Environmental Technical Applications Center,
Washington, D.C.   4a16

National Bureau of Standards, Washington, D.C.   4a17

Computer Corporation of America, Cambridge, Massachusetts   4a18

Rome Air Development Center, New York   4a19

Wright-Patterson Air Force Base, Ohio

4a20

Further, TIPs are imminently scheduled for delivery to Rutgers
University and Kirtland Air Force base, and a TIP is to be
installed at Bolt Beranek and Newman for service to the user
community in the Boston area. Given the proliferation of TIPs
over the past two years, the fact that TIPs account for a large
portion of the network's traffic, and the fact that the TIP

software development effort is reaching a plateau, it seems
appropriate to give a complete status report on the TIP effort.

4a21

1.   Fabrication, Installation and Maintenance

4a22

The TIP is fabricated by BBN by combining a Multi-Line
Controller with a 316 IMP. The former is constructed by BBN,
the latter by Honeywell. Completed systems are extensively
tested both off and on the network before shipment to the
field. TIPs are installed by a BBN field engineer with the help
of a Honeywell field engineer. The BBN field engineer also aids
site personnel in connecting Hosts and data sets to the TIP.
Once installed, the TIP is under a Honeywell maintenance
contract although BBN engineers are regularly sent to the field
to help with difficult problems. In practice the basic
Multi-line Controller has proven to be almost 100% free from
failure although there have been failures of Line Interface
Units, the modules to which terminals or data sets are
connected.

4a23

All TIPs in the network are configured with at least 28
kilowords of core memory of which 16 kilowords is dedicated to
the IMP and the remainder is dedicated to the TIP. Two TIPs
have been delivered with a magnetic tape option and these have
an additional 4 kilowords of memory (or 32 kilowords total).
The Wright-Patterson machine and most future TIPs will have 32
kilowords of core as Honeywell now manufactures only 8-kiloword
banks of memory.

4a24

At present all TIPs have at least one Host interface although
this is only used at about half the TIP sites. Two Host
interfaces are possible at present, and this will be expanded
to three at some time in the future. A TIP can handle up to 63
modem and terminal devices.

4a25

2.   Documentation and the TIP Users Group

4a26

In addition to numerous informal and working publications to
date, five formal publications about the TIP have been written.
These are:

4a27

BBN Report 2183, "User's Guide to the Terminal IMP" (kept
current through updates). A guide to using a TIP from a
terminal, including discussion of how to make a logical
connection to a Host and how to operate the TIP magnetic tape
option.

4a28

BBN Report 2184, "Hardware Manual for the BBN Terminal
Interface Message Processor" (October 1972). A complete
hardware logic description of the Multi-Line Controller
(limited distribution).

4a29

BBN Report 2277, "Specifications for the Interconnection of
Terminals and the Terminal IMP" (kept current through updates).
The description of how to connect modems and terminals to the
Line Interface Units of the TIP's Multi-Line Controller
(limited distribution).

4a30

S. Ornstein, F. Heart, W. Crowther, H. Rising, S. Russell, and
A. Michel, "The Terminal IMP for the ARPA Computer Network".
Proceedings of AFIPS 1972 Spring Joint Computer Conference,
Vol. 40, pp. 243-254 (May 1972).

4a31

N. Mimno, B. Cosell, D. Walden, S. Butterfield, and J. Levin,
"Terminal Access to the ARPA Network -- Experience and
Improvements", Proceedings of the Seventh Annual IEEE Computer
Society International Conference (COMPCON 73), pp. 39-43
(February 1973).

4a32

The most important source of informal TIP documentation is the
TIP User's Group Note series. Notes in this series are
published in a timely fashion and are primarily used to warn
users of impending system changes and to poll users as to their
desires for future improvements. These notes, as well as TIP
User's Guide updates, are distributed directly or through site
representatives to all TIP Users. We estimate that there are
presently between 700 and 1000 TIP users, from Hawaii to
Norway.

4a33

3.   Terminal and Modem Handling Capabilities

4a34

The TIP presently assumes all terminals use 8 bit characters

except IBM 2741s; although TIP hardware exists to vary this, the TIP software does not presently allow variation. The TIP allows the following modem and terminal rates when they are clocked internally to the TIP: 75 bps, 110 bps, 134.5 bps, 150 bps, 300 bps, 600 bps, 1200 bps, 1800 bps, 2400 bps, 4800 bps, 9600 bps, and 19200 bps. Speeds in excess of 2400 bps are supported for output only.

4a35

The following rates are allowed when clocked externally to the TIP: any rate up to 3.3 Kbs for input or output, and any rate from 3.3 to 19.2 Kbs for input only.

4a36

The TIP handles a variety of terminal and modem types as listed below.

4a37

3.1 Terminals (see footnote [1] below)

4a38

- KSR-33 Teletype compatible terminals; i.e., ASCII terminals without requirement for special timing or parity calculations.

4a39

- KSR-37 Teletype compatible terminals; i.e., ASCII terminals requiring even parity output.

4a40

- ODEC Printer; an ASCII printer requiring special timing considerations.

4a41

- MEMOREX Printer; an ASCII printer requiring special timing considerations.

4a42

- Execuport compatible terminals; i.e., Teletype compatible terminal requiring special timing for a slow carriage return and line feed.

4a43

- IBM PTTC and Correspondence 2741 compatible terminals; i.e., EBCDIC terminals with the 2741 transmit and receive interrupt options but requiring a special line turnaround protocol.

4a44

There are a large number of terminals compatible or "almost compatible" with those listed above; many of these have been used with the TIP by various groups. The TIP does not handle remote job entry terminals or other terminals requiring complex protocols.

4a45

3.2 Modems

4a46

The TIP will work with the appropriate options of Bell 103 or 113 series modems up to 300 baud. Specifically included are the Vadic equivalents of the Bell modems.

4a47

Above 300 baud fewer options exist. For 4-wire, private line, full duplex operation, the Bell 202R, and (if properly configured) the 202D may be used up to 1800 baud. The 202C is intended for two-wire dial up use and, since it is a half duplex device, will not work with the TIP. The Supervisory-channel version provides only a 5-baud reverse path which is of no use to the TIP. With certain cross-connections, a simplex device (such as a line printer) can be run with a 202C but the complexity and the software constraints cause us not to recommend it.

4a48

No Bell modem exists for 1200 baud dial-up operation. The only such modems known to us are the Vadic 3400 series, which have been tested by BBN and seem to work as advertised. They are available with many strap options, including a set which handles the 103 protocol, allowing direct replacement in the case of devices which are now using the 103 and are limited by transmission speed.

4a49

Several manufacturers sell (or advertise) dial-up modems which provide 1200 baud transmission in one direction and 110 or 150 in the other. In concept, this is an obvious choice for CRT terminals. However, evaluation of many of these units has led us to be extremely cautious. Those that malfunctioned tended to have few problems with their modulators or demodulators, but frequently failed to establish connections due to inadequate hand-shaking-protocol logic.

4a50

In December or January a report summarizing the specific

problems and solutions of the various modem choices will be
issued to TIP users.

4a51

Recently BBN implemented a complete modem "hang up" protocol
which is required for use of automatic-answer 103 modems
connected to some central switching offices (the TIP previously
relied on hang-up procedure originating in the carrier's
central office, but not all central offices originate this
procedure). In addition, the "hunt" bit for a port can no
longer be altered by a dial-in user.

4a52

4.   Magnetic Tape Option

4a53

Significant modifications have been made to the magnetic tape
option since it was originally developed. The major
characteristics of the option as it now exists are listed
below:

4a54

- The TIP magnetic tape option follows a simple, efficient,
robust, but ad hoc protocol.

4a55

- A tape transfer will "ride through" the destruction of a
message or even a network partition for an extended period
without data loss (assuming that the source and destination
TIPs survive for the duration of the transfer).

4a56

- The tape option uses the network optimally with respect to
throughput by allowing multiple messages to be simultaneously
in transit.

4a57

- The tape option uses messages optimally by packing 2 2/3
6-bit bytes into every 16 bit word transferred.

4a58

- The maximum size record which can be handled is currently
2400 frames (7-track tape); this maximum is tailored to the
user's requirements.

4a59

- The option is in routine use between GWC and ETAC for the
transfer of two tapes every day. It also will soon be in daily

use between GWC and AFCRL via Lincoln Labs.

4a60

5. Use of the Resource Sharing Executive (RSEXEC)

4a61

The TIPs now make extensive use of the TENEX RSEXEC [2]. The
TENEX RSEXEC currently is run on many network TENEX systems and
a package (called TIPSER) which allows direct TIP use of the
TENEX RSEXEC runs on BBN-TENEX, ISI-TENEX, and will soon run on
the SRI-ARC TENEX.

4a62

TIP use of RSEXEC is presently initiated by the TIP user
command @N [3]. This initiates a broadcast of a TIP message to
all network RSEXECs running TIPSER. A connection is made
between the TIP and the first RSEXEC to respond. Over this
connection, the TIP user can access a number of useful
services. At the present time these are:

4a63

- A "NETNEWS" service which allows the IMP and TIP system
programmers and the NCC staff to communicate to users. The
headline of the latest news is typed immediately on connection
to TIPSER.

4a64

- A "GRIPE" service which allows users to communicate to the
IMP and TIP system programmers and to the NCC staff.

4a65

- A "HOSTAT" service which reports which Hosts in the network
are up and available.

4a66

A "LINK" service which allows a TIP user to make a two-way
connection between his terminal and any user of a TENEX system
running RSEXEC.

4a67

- A "SNDMSG" service which provides a general purpose "mail"
distribution facility.

4a68

- A "TRMINF" service which gives the TIP user information about
his terminal including the name of the TIP he is using and the
TIP MLC port to which his terminal is attached.

4a69

- More than seventeen other services (commands) are presently available to the TIP user through TIPSER. Included are text editing (e.g., delete character, delete line, retype line) and terminal control (e.g., full duplex, set attention character) commands, as well as commands for finding other network users, finding an unloaded server TENEX, and commands which help in learning to use the RSEXEC.

4a70

We plan to continue expanding the facilities available to TIP users through the RSEXEC. Most immediately, we plan to add a facility which will give users news relating specifically to the TIP they are using, such as an announcement of an updated preventative maintenance period for the TIP. This will also include a facility which permits the site person responsible for the TIP to add a site specific news item and edit out old news items. Other facilities which will eventually exist via RSEXEC are:

4a71

- on-line access to the TIP User's Guide and other documents such as the Resource Notebook.

4a72

-TIP passwords, access control, and accounting

4a73

- generalization of the LINK and SNDMSG services to allow addressing of other TIP users as well as Host users.

4a74

- a READMAIL service which allows TIP users to receive mail independent of any server Host.

4a75

- an expanded TRMINF service to provide TIP status (e.g., number of users on TIP, load average).

4a76

- a distributed virtual file system for TIP users.

4a77

6.   Software Improvements

4a78

Since the installation of the first TIP in the field, hundreds of improvements have been made in the TIP software system. Since July 1972 the changes visible to users have been

documented in a series of "Letters to TIP Users" published as
RFCs and TIP Users Group Notes [4]. Consequently, we will not
describe the software development to date [5]. We will,
however, list a few of what we think are the most important
upcoming software changes:

4a79

- The TIP logger will be made re-entrant.

4a80

- The new TELNET protocol will be implemented -- this and the
previous task are highest priority and should be done by early
in 1974.

4a81

- The TIP's handling of terminals will be extended to the
simulation of tabs and formfeeds, handling of line and page
overflow (especially for CRT terminals), motor control,
X-ON/X-OFF handling, and using a reverse channel for "Go
Ahead."

4a82

- Improvement of TIP messages to the user.

4a83

- Making various TIP options yet more modular.

4a84

7.   Bandwidth Capabilities

4a85

The TIP can physically handle 63 terminals and data sets. A
recent recalculation of the TIP bandwidth indicates that there
has been little decrease in the total bandwidth which may pass
through the TIP to and from its 63 terminals. The maximum
terminal traffic is still about 80 Kbs (e.g., eight 9600 bps
CRT terminals doing only output [6]). The maximum total TIP
throughput of Hosts, wideband lines, and terminals is still
about 600 Kbs full duplex and must satisfy the inequality

4a86

$$H+L+15T<600 \text{ Kbs}$$

4a87

where H, L, and T are full duplex Host, line, and terminal
traffic respectively (e.g., a 50 Kbs line with full traffic in
both directions counts as only 50 Kbs).

4a88

Footnotes

4a89

[1]   In addition to those listed below, at BBN we have a
heavy duty Data-Products printer connected to the TIP, in a
manner which requires no special software, through a special
interface which provides an external clock to the TIP at
maximum rate.

4a90

[2]   R. Thomas, "A Resource Sharing Executive for the
ARPANET", Proceedings of the AFIPS 1973 National Computer
Conference and Exposition, Vol 42, pp. 155-163 (June 1973).

4a91

[3]   Later this may be made automatic.

4a92

[4]   RFCs 365 and 386, and TIPUG Notes 5, 8, 12, 13, 14, and
19.

4a93

[5]   Perhaps the most important change in the software is in
the area of increased adapta Assuming sufficient buffer space
is available and that no special software timing or parity
calculations are necessary.

4a94

(using)   ARPANET USERS Interest Group Charter

4b

USING Note #6   J. Iseli (MITRE-TIP)
NIC 19025   D. Crocker (UCLA-NMC)
                                       N. Neigus (BBN-NET)

4b1

BACKGROUND

4b2

The ARPANET Users Interest Group (NIC Ident = USING) was formed
at a meeting of 15 Network people on May 23, 1973 in an attempt
to improve the Network user's working environment. USING will
attempt to represent the interests and needs of users in the
Network community, so as to increase awareness of user
requirements and encourage better provision of the needed

services.   The group believes that the Network is moving beyond
a concentration of resources in self-perpetuating research and
development; the Network is becoming a service and its
viability as such is dependent on user satisfaction.

4b3

A second group, the ARPANET Users Group (NIC Ident = USERS) is
organized as a forum for users to express their desires and
complaints.   Acting as a steering committee and lobby for this
group, USING will forward their ideas to the appropriate
centers.

4b4

MEMBERSHIP

4b5

Group membership, in USING, is open to individuals interested
in working to improve Network user support and able and willing
to make meaningful contributions to USING's activities.

4b6

Membership, in USERS, is open to any interested person.

4b7

SCOPE

4b8

USING has set as its scope those facets of Network activity
that affect the provision of services to users.   This includes
the availability of resources, their reliability and ease of
use.

4b9

GOALS

4b10

USING's overall goal is to ensure that the ARPANET becomes a
coherent system in which users can regulate their own working
environment according to their level of experience and the
degree of transparency (of specific system idiosyncracies) they
desire.   System resources should be self-documenting, and all
levels of assistance (on- and off-line) should be available,
again, to be regulated by the user.

4b11

Short Term Objectives, for the initial 6-12 months

4b12

    1. Specification of a user-level Common Command Language

(CCL);

4b13

2. Specification of a Network Editor for CCL;

4b14

3. Further definition and focusing of User Issues;

4b15

4. Encouraging establishment of a User's consulting service;

4b16

5. Publication of a New-Users Handbook.

4b17

Long Term Activities

4b18

1. Monitor and/or provide impetus for user-oriented Network development efforts, including resource directories, tutorials [static and dynamic], training courses and referral services;

4b19

2. Provide mechanisms to encourage, analyze, and respond to user feedback;

4b20

3. Develop profile information relative to users' requirements, types, usage attributes, and affiliations;

4b21

4. Stimulate mechanisms to facilitate entry of new users to the ARPANET;

4b22

5. Sponsor user seminars and encourage formation of viable user working groups where appropriate.

4b23

(kuo)   An ONLINE INTERVIEW with DR. FRANK KUO

4c

Following is an online interview conducted 25 October 1973 by Jean Iseli, MITRE-TIP, Editor of the ARPANET Newsletter, with Dr. Frank Kuo of the ALOHA System, University of Hawaii, author of the article in this issue, The ALOHA System.

4c1

ji: Dr. Kuo, can anything be said at this time relative to
        tentative or firm plans for when the BCC 500 system will
        be available on the ARPANET? Let me defer till last the
        several questions I wanted to ask about your work in
        satellite communications.

                                                            4c2

FFK: NOT REALLY. THE 500 IS NOT YET ON THE NETWORK AS A HOST.
        WE EXPECT THAT IT WILL BE EQUIPPED WITH AN NCP AROUND
        THE END OF THE YEAR. AS YOU KNOW, THE MACHINE IS MOSTLY
        AN EXPERIMENTAL MACHINE. AT LEAST, IT IS A ONE OF A KIND.
        THUS WE HAVE THE USUAL SERIOUS PROBLEMS WITH REGARD TO
        DISTRIBUTION OF DOCUMENTATION, ETC., WHICH MAKES IT
        DIFFICULT TO ACCOMMODATE NUMBERS OF USERS ALL OVER THE
        NETWORK. CERTAINLY, IT MUCH EASIER FOR TENEX TO FACE THIS
        PROBLEM. ALL WE CAN REALLY SAY NOW IS SOMETIME AROUND THE
        FIRST OF THE YEAR.

                                                            4c3

ji: I can well understand that. Could you maybe tell us a
        little bit about the type of network users you might,
        when the machine is available on the Net, like to see
        employ it. My understanding is that it contains may
        unusual and forefront features.

                                                            4c4

FFK: THANKS FOR THE COMPLIMENT...BUT TO A USER IT LOOKS LIKE
        MANY OF THE OTHER SYSTEMS NOW ON THE NETWORK. ITS COMMAND
        LANGUAGE STRUCTURE LOOKS SOMEWHAT LIKE TENEX'S (ALTHOUGH
        IT IS DIFFERENT, OF COURSE) AND OTHER THAN THAT, WELL IT
        JUST COMPUTES. ALL OF THE REALLY FANCY FEATURES RELATE TO
        THE SYSTEM ARCHITECTURE, AND THE USER HAS NO WAY OF
        TELLING THAT WHEN HE IS ON LINE. IT WILL RUN OLD XDS 940
        SOFTWARE AND IT DOES ACCOMMODATE SPL, A SYSTEMS
        PROGRAMMING LANGUAGE DEVELOPED BY PETER DEUTSCH AND
        BUTLER LAMPSON SEVERAL YEARS AGO WHEN THEY WERE AT BCC.
        OTHER THAN THAT, THE SPL LANGUAGE RESEMBLES OTHER
        LANGUAGES NOW AVAILABLE (SAIL, BLISS, ETC.)

                                                            4c5

ji: Would it be fair to represent that the BCC 500 will then
        be a general server to the Net?

                                                            4c6

FFK: PROBABLY NOT. WE WOULD LIKE TO SEE IT USED BY A NUMBER
        OF PEOPLE, OF COURSE, BUT IT IS DIFFICULT TO SUPPORT THE
        PUBLIC AT LARGE. IT WILL BE USED BY A SELECTED NUMBER WHO
        IN SOME SENSE WORK CLOSELY WITH US OR OTHERWISE SOMEHOW
        KNOW HOW TO USE IT. FOR NOW AND FOR THE NEXT SEVERAL

MONTHS, IT MUST BE CONSIDERED ONLY FOR "FOOLING AROUND".

4c7

ji: The reason for my interest on this point is that, as you
      may know, we assist ARPA in helping new network users
      satisfy their interest in the network. We have found that
      an understanding of the status of a site, relative to its
      desire for general network users, is mandatory to avoid
      much unnecessary confusion and embarassment. Aside from
      the interests you mentioned in the fine article that you
      and Wayne submitted to us, are there other categories of
      interest or areas of collaboration that night be
      mentioned to better characterize for our readership, the

**   ALOHA system, and in particular the BCC 500 intended user
      community?

4c8

FFK: THE BCC 500 WILL BE USED PRIMARILY BY THE PEOPLE AT NASA
      AMES AND XEROX PARC WHO ARE FAMILIAR WITH THE XDS 940.
      IT WILL BE USED AS A RESEARCH MACHINE FOR OUR WORK ON
      SYSTEM SECURITY. IT IS TOO EARLY YET TO DESCRIBE THIS
      WORK, AS THIS IS AN AREA THAT WE ARE JUST MOVING INTO IN
      SUPPORT OF THE DEVELOPMENT OF THE ILLIAC SYSTEM. MEL
      PIRTLE AND WAYNE LICHTENBERGER ARE WORKING VERY CLOSELY
      ON THIS PROBLEM, WHICH IS JUST IN THE DEFINITION STAGE
      NOW. I CAN SAY QUITE A BIT MORE ABOUT THE WORK OF TASK 1
      IF YOU WISH TO PROCEED NOW.

4c9

ji: Fine, your article prompted several questions about the
      broad and powerful implications of the work you are
      doing in satellite communications. Maybe I could just
      ask a few preliminary questions first to broaden our
      understanding: (1) The function of your MENEHUNE
      communications computer -- could you maybe amplify in
      this area a little, and (2) the "link" you mentioned to
      the University of Alaska, and other possible links; will
      that also provide access to ARPANET resources to these
      existing and proposed "links"?

4c10

FFK: THE MENEHUNE FUNCTIONS MUCH LIKE AN IMP ON A RADIO
      CHANNEL INSTEAD OF LEASED LINES. IT HAS BUFFERING,
      ERROR DETECTION, ACKNOWLEDGEMENT, TIMEOUT, PACKET
      ASSEMBLING AND DISASSEMBLING CAPABILITIES. THE MACHINE
      ITSELF IS A 16K HP 2100; 8K IS DEDICATED TO THE RADIO
      CHANNEL AND 8K IS TO BE USED FOR OUR MINI-NCP WHICH IS
      BEING WRITTEN AND DEBUGGED NOW. WHEN THE NCP IS
      COMPLETED BY THE END OF THIS YEAR, THE USERS OF THE

RADIO CHANNEL CAN ACCESS THE ARPANET THROUGH THE
REGULAR ALOHA RADIO CHANNEL. SINCE THE MENEHUNE TREATS
THE SATELLITE USERS ON THE ATS-1 AS ANY OTHER USER,
ATS-1 USERS CAN ACCESS THE ARPANET VIA OUR MENEHUNE.
HOWEVER, WE MUST GET PERMISSION FROM ARPA FOR OUTSIDE
(ATS-1 USERS) TO ACCESS ANY PARTICULAR SYSTEM. WE'LL
FACE THAT WHEN WE GET ALL CONNECTED.

4c11

ji: Is my understanding correct in the following:
      (1) The MENEHUNE computer will be interconnected to
      the ARPANET, (2) The MENEHUNE computer is also much
      like a TIP in that it will contain an NCP; and (3) The
      MENEHUNE will, in a manner of speaking, provide
      potential access to ARPANET resources (given that
      appropriate issues are ironed out) for the ALOHA user
      community?

4c12

FFK: THE MENEHUNE WILL BE CONNECTED TO THE ARPANET THROUGH A
      HOST PORT ON THE HAWAII TIP. THE OTHER HOST ON THE TIP
      WILL BE THE BCC 500. THUS THE HAWAII TIP WILL ENABLE
      ALOHA RADIO CHANNEL USERS TO ACCESS BOTH THE ARPANET AND
      THE BCC 500.

4c13

ji: What I find so exciting in the work you are doing is
      the terrific potential for economically distributing
      access to the many benefits inherent in an ARPANET to
      a global community. Remote areas, with the inexpensive
      ground station you mention in the article, can avail
      themselves of network resources without the significant
      expense of communication lines and necessity for local
      IMPS/TIPS or costly alternatives.

4c14

FFK: YOU'VE SAID IT ALL. I'D JUST LIKE TO ADD A POINT. WE ARE
      IN DAILY VOICE CONTACT VIA ATS-1 WITH FIJI, NEW ZEALAND,
      ALASKA, AUSTRALIA, AND NASA AMES. ONCE WE PROVIDE THESE
      FACILITIES WITH PROTOTYPES OF OUR MENEHUNE (DOCUMENTS
      AND BLUEPRINTS, MAINLY) THEY CAN BE ON THE AIR SENDING
      DATA. THE HP2100 SYSTEM PLUS THE TCU'S COST IS LESS THAN
      HALF OF A TIP. THIS IS WHERE THE REAL BREAKTHROUGH WILL
      COME. FOR THE PEOPLE WHO ARE UNFAMILIAR WITH THE
      TECHNICAL ISSUES OF SATELLITE BROADCASTING ON AN ALOHA
      CHANNEL, I REFER THEM TO THE PAPERS IN THE 73 NCC
      PROCEEDINGS BY ABRAMSON, KLEINROCK AND ROBERTS.

4c15

ji: Dr. Kuo, I want to thank you very, VERY much for the
     real and RARE delight of sharing this discussion with
     you.

4c16

FFK: THANK YOU FOR THE OPPORTUNITY TO DISCUSS OUR WORK.

4c17

ji: One more question, please. Would you consider a member
     of your staff writing a summary of the forthcoming
     session in Hawaii, the network subconference. I
     believe our readership would be most interested in that.

4c18

FFK: NORM ABRAMSON IS CHAIRMAN OF THE SUBCONFERENCE.
     INCIDENTALLY, VINT CERF AND BOB KAHN WILL ALSO BE HERE
     THEN FOR AN INWG MEETING. SO I ENCOURAGE ALL MEMBERS OF
     THE ARPA NETWORK COMMUNITY TO COME FOR THESE TWO
     EXCITING MEETINGS.

4c19

ji: Fine, I will contact Norm. Thank you again, Frank.

4c20

(n5) FEATURED SITES   Co-Featured sites : CMU and ALOHA

5

  (cmu)   CARNEGIE-MELLON COMPUTER SCIENCE DEPARTMENT

5a

By

Howard Wactler for
Allen Newell

5a1

The Computer Science Department evolved as a graduate education
and research department of the university in 1965. The research
pursued spans the entire spectrum of computer science, emphasis
varying with changing interests of the faculty. The computing
facility is based around two PDP-10 processors whose system
embellishments support the research needs. This service is
complemented by an engineering lab facility staffed with eleven
full-time engineers and technicians that enables us to support
efforts from speech understanding to (multi)processor design
and measurement. Our efforts are funded by a collection of

grants, gifts, and contracts, the largest being with ARPA/IPT.

5a2

RESEARCH INTERESTS

5a3

Reflecting the interests of faculty and students, our efforts
include artificial intelligence, speech and visual recognition,
operating systems, programming languages and system building
systems, graphics, complexity theory, numerical analysis,
performance measurement, and the design of computer hardware
systems. We select just three of these for mention below.

5a4

C. mmp and Hydra

5a5

The CMU multi-mini processor is constructed around a set of up
to 16 PDP-11 computers, connected through a crosspoint switch
to a large sharable memory of up to 2↑20 words. The present
configuration has grown to three processors and four memory
ports; the operation of the 16 X 16 switch is anticipated by
January. The kernel of the operating system, named Hydra, is
running on the PDP-10 and portions are now functioning on the
prototype system being driven by test programs. Hydra is built
in BLISS, which is an implementation language on the PDP-10
that produces object code for either the PDP-10 or PDP-11. It
is intended that this processor will be significant in
satisfying the real-time I/O and processing requirements of the
speech understanding system and other similar network
computational needs. It provides as well a fertile environment
for our research in computer structures, operating system
design, interprocess and processor communication and
measurement.

5a6

Speech Understanding System

5a7

The Hearsay system is operational on our PDP-10's and has been
demonstrated live at several workshops. The system utilizes
simultaneous analysis of context, syntax and semantics in a
speech recognition task in a limited domain. Its continuing
improvement with evolving heuristics and programming techniques
is being measured and charted. There is significant interaction
and data sharing with other network sites engaged in similar
efforts. The needs of this project have spurred the development
of a high performance intelligent video terminal (50,000
vectors/sec) for monitoring the system performance and the

XCRIBL system for hard copy, raster scan, computer output of
arbitrary type font text, graphics and half-tone images on the
Xerox Graphics Printer for recording it.

5a8

Artificial Intelligence

5a9

Work is proceeding in this area on several fronts, many closely
related to work in human cognition. Automatic protocol analysis
programs (PAS-II) exist to transform human verbal behavior to
problem behavior graphs (a trace of how the human solves the
problem). There is work on production systems, which are
composed of productions (a condition and an action) and a
collection of data structures for encoding the information upon
which the productions act. Productions systems are being used
both to explore the structure of the human immediate processor
and as a general form of programming system for understanding
programs. Other work continues on understanding systems, with
MERLIN as the vehicle for investigation. Chess also continues
to be a serious research endeavor. Many of these programs were
constructed with L*, a system building kernel language on the
PDP-10, presently being bootstrapped for the PDP-11.

5a10

FACILITY

5a11

Two independent PDP-10 KA10's running embellished DEC "10/50"
systems complemented by DEC, Stanford and CMU language
processors provide the base of our service. Presently, the two
machines communicate with each other only over the network. We
expect to soon add C.mmp and the university's 360/67 and 1108
as additional hosts on our IMP. Both of our systems have
approximately 200K of memory, 600K swapping space and 40
million words of disk storage. One system (10A) is considered
the general user machine with 40 terminal lines and 20 hour per
day scheduled user uptime. The alternate system (10B) supports
all the specialized speech and vision hardware, mountable
private disk structures and specialized terminals, and thus
serves as the primary machine for those engaged in sensory
perception research. The same machine is used for system
development and experimentation therefore having scheduled
downtimes and a less stable performance.

5a12

Our system provides TELNET, FTP and MAIL service but only a
limited set of HELP functions presently exists. Expected in the
first quarter of 1974, a specialized hardware interface between

PDP-10's and PDP-11's (C.mmp) will provide for data transfers
at estimated rates of 5 megabits/sec while at the same time
giving us the means for implementing a common communications
front end for all our systems. It is anticipated that such a
front end will eventually alleviate the PDP-10's and C.mmp of
much of the lowest level IMP-network service burden.

5a13

Usage information is available from S300HW09@CMU-10A via FTP
mail or through the NIC to ident HDW.

5a14

(aloha)   The ALOHA System

5b

By

Franklin F. Kuo

5b1

The ALOHA System is composed of a related series of contracts
and grants from a variety of funding agencies with principal
support from ARPA, which deal with two main themes: computer
communications (TASK 1), and computer structures (TASK 2).

5b2

Under computer-communications there is work in (a) studies on
computer-communications using radio and satellites; (b) the
development of a prototype radio-linked timesharing network;
(c) system studies and planning for a Pacific area computer
communications network linking major universities in the U.S.,
Japan, Australia and other Pacific countries.

5b3

Under computer structures, we are engaged in
research/development in multiprocessor computing structures,
computer networks, and geographically distributed computing
systems. This work is being undertaken in two phases: (1) the
establishment of a research facility, and (2) the research work
itself. The research facility is centered around the BCC 500
computing system.

5b4

TASK 1: Radio Communications

5b5

Developments in remote access computing during the latter part
of the 1960's have resulted in increasing importance of remote
timesharing, remote job entry and networking for large
information processing systems. The present generation of
computer-communication systems is based on the use of leased or
dial-up common carrier facilities, primarily wire connections.
Under many conditions such communication facilities offer the
best possible communications option to the overall system
designer of a large computer-communication facility. In other
circumstances, however, the organization of common carrier data
communication systems seriously limits the possibilities of a
large information processing system.

5b6

Since September 1968, the ALOHA System Project at the
University of Hawaii has investigated alternatives to the use
of conventional wire communications in a geographically diffuse
computer system. When the constraint of data communications by
wire is eliminated a number of options for different methods of
organizing data communications within a computer-communications
net are made available to the system designer.   The ALOHA
System Project has investigated the use of a new and simple
form of random access communications for a statewide university
computing system; the first links in this UHF radio-linked
computer system, were set up in mid-1971.

5b7

Since that time the ALOHA System has been in continuous
operation. The ALOHA network uses two 24,000 baud channels at
407.350 MHz and at 413.475 MHz in the upper UHF band. ALOHA
uses packet switching techniques similar to that employed by
the ARPANET, in conjunction with a novel form of random-access
radio-channel multiplexing.

5b8

We are now developing a Phase II ALOHA network with mini- and
micro-computers as programmable terminals and repeaters. This
effort is part of the work undertaken by the Packet Radio Group
under the direction of Robert E. Kahn of ARPA. In conjunction
with the hardware development we are also conducting system
studies on the effects of different channel protocols upon
system performance and also on the properties of the
random-access channel (known now as the ALOHA Channel) used in
different modes.

5b9

TASK 1: Satellite Communications

5b10

We are now conducting experiments on the effective uses of high capacity satellite channels for packet switched communications. The experiments are centered around the geosynchronous satellites ATS-1 of NASA and INTELSAT IV of COMSAT.

5b11

With the development of new digital communications systems by COMSAT in which data at the rate of 50 Kbaud can be transmitted through a single voice channel, data transmission by satellite has become both technologically and economically realizable. During the past year we have initiated two specific research projects for satellite extension of the ALOHA System and several theoretical studies involving the unique properties of satellite channels. The first of the projects involves the use of large commercial ground stations and the establishment of an ARPANET SATELLITE SYSTEM; the second involves the use of small inexpensive ground stations in a joint research effort with NASA Ames Research Center. In regard to the ARPANET SATELLITE SYSTEM we have been involved in a joint study with ARPA, BBN, UCLA, and Xerox PARC to design a suitable protocol for packet communications via satellite.

5b12

In December 1972, a 50 kilobaud data channel using a single PCM voice channel was installed between the COMSAT ground stations at Paumalu, Hawaii, and Jamesburg, California. The first subscriber of this service was ARPA for the inclusion of the ALOHA System into the ARPANET. The BCC 500 computer is planned to be the main HOST of the Hawaii TIP. We are also planning to connect the MENEHUNE (the communications computer for the ALOHA Net) as the second HOST.

5b13

The second satellite project involves the use of the NASA satellite ATS-1 using small inexpensive ground stations which cost less than $5,000 each. Thus far we have progressed to the point where an ALOHA random access burst mode channel is in operation between the University of Hawaii, NASA/AMES Research Center and the University of Alaska. During the following year we plan to interface this channel into computer near each of these ground stations, extend the number of ground stations to other sites, including possibly universities in Japan (Tohoku), Australia (Sydney), and other Pacific countries and establish a small ground station satellite network on an experimental basis.

5b14

We are also studying the possibility of using a complete transponder on a U.S. domestic satellite for ARPA Network

operation. Such a transponder might provide megabit or higher
rates using a transponder dedicated to packet switched
operation and terminating in a large number of moderately
priced ground stations at a cost of only a fraction of the
expected land line costs by the end of 1974. In addition to the
lower costs and higher speeds, a packet switched transponder on
a domestic satellite would provide for higher network
connectivity and enhanced possibilities for new forms of
resource sharing.

5b15

TASK 2: Background

5b16

Task II of the ALOHA System is concerned with multiprocessor
computing structures and systems. Its primary research facility
is the large BCC 500 system which was brought from Berkeley,
California when the Berkeley Computer Corporation ceased
activities.

5b17

The main ideas involved in the 500's design were formulated by
Project GENIE at UC Berkeley during 1967 and 1968. At that time
it was planned that a private company would participate with UC
in a joint design effort for a multi-user computing system
designed expressly for online activities. This arrangement did
not work well, however, and in early 1969 a number of persons
from the project left UC and formed BCC with the specific goal
of building a working prototype of a similar system.

5b18

This effort came to an end two years later when, with the
nation's economy in a severe recession and the entire computing
industry in an accompanying "adjustment", the company ran out
of available development capital a few months short of its goal
of producing income on its prototype. The system itself,
however, was almost complete and had been running an operating
system for six months.

5b19

The equipment was acquired by the University of Hawaii upon the
formation of Task II and was brought to Honolulu in early 1972.
Since that time much of the Task's efforts have been directed
to setting up the system once again and reconstructing some of
the hardware after careful analysis of its state. Software
development has also been done since the system has been
locally usable beginning in March, 1973. By December 1973 the
system will achieve full host status on the ARPANET and will be

operated regularly. By virtue of the time difference between
Hawaii and the mainland -- especially the East Coast -- the
system might be especially attractive for browsers.

5b20

TASK 2: BCC 500 System

5b21

The system hardware includes two central processors and five
special purpose processors, 128K 24-bit words of central memory
(i.e., visible to all processors), 32K words of additional
memory connected to some of the special purpose processors, 4
million words of drum storage (transferring at 2 megawords/sec,
or 6 megabytes/sec) and 380 megabytes of disk storage. The
central processors are provided each with memory maps giving
them the ability to address 256K words of paged, virtual memory
of which half is available for user programs.

5b22

The special purpose processors implement those portions of the
operating system which are concerned with global system tasks.
These include memory management -- central memory allocation,
dynamic drum allocation, disk allocation and all page traffic
between these devices; character input/output -- to and from
terminals including the handling of break and/or wakeup
characters and remote echo strategies; central processor
scheduling; and the NCP process for network protocol handling.
Those operating system functions which are oriented toward the
individual user process, i.e., which can be done by calls from
the user process not requiring its blocking, are performed on
the CPU's in a conventional manner. The systems code for these
functions resides in one of two hardware-implemented system
rings (a third ring permits the user to process to run while
permitting the system full protection from it).

5b23

All the system software is written in SPL, a
systems-programming language developed by BCC for operating
systems and utility subsystems (like compilers). There is no
assembly language. All compiled code is reentrant and sharable
between tasks.

5b24

The CPU's have a special mode selectable in their state word
which permits them to execute XDS 940 machine language
directly. A utility program, called the 940 Emulator, is
available to all users and operates in conjunction with 940
programs, serving to translate 940 system calls which are

otherwise trapped into equivalent sequences of 500 system
calls. In this fashion all available 940 software will run on
the 500 system.

5b25

We will welcome your online exploration of our system as it
assumes host status and direct your attention particularly to
the SPL language. Please address your questions and comments
to: Wayne Lichtenberger, 486 Holmes Hall, University of Hawaii,
2540 Dole Street, Honolulu, Hawaii 96822.

5b26

To return to contents outline type s[how]n1 CR

5b27

(n6) PROTOCOLS

6

(impl) Implementation Schedule

6a

The New TELNET (NIC 18639 and NIC 18640) is scheduled to go
into effect on 1 January 1974.

The new FTP (NIC 17760) is scheduled to go into effect 1
February 1974.

The User sitting at his terminal should not notice the
changeover, and will not have to do anything different.
......Jon Postel

6a1

(tel-option) Updated TELNET Option

6b

A completely updated version of 18492, Remote Controlled
Transmission and Echoing TELNET Option, has been issued by D.
Crocker and J. Postel as NIC 19859. The corrections are pointed
up in NIC 19860, issued as RFC 581., and will be distributed by
NIC to holders of the Protocol Notebook.

6b1

To return to contents outline type s[how]n1 CR

6c

(n7) RESOURCE NEWS   New Programs and Publications

7

ARPANET News, Issue 9, November 1973

Type s[how] (parenthetical name)

7a

(traffic) Traffic Statistics for September 1973

7b

Network Liaisons have received RFC 579 by Alex McKenzie, NIC
18801, which gives Host throughput statistics for September,
showing the traffic for each Host. Internode traffic totalled
86,793,910 packets, intranode traffic was 22,232,380, giving
daily averages of 2,893,130 and 742,746 respectively.
Packets/messages (internode) was 1.07.

7b1

(abstracts) Abstracts of Recent Network Documents
          ...... abstracted by Mil Jernigan

7c

Alex Reid (Communications Studies Group, Joint Unit for
Planning Research, University College London and London School
of Economics). New Directions in Telecommunications Research: A
Report Prepared for the Sloan Commission on Cable
Communications. 62p. June 1971. NIC 18595.

Alternative criteria for future developments
in person-person telecommunications are considered.
Relevant allied areas discussed are information theory,
applied and experimental psychology, management theory,
sciology, urban and regional planning, geography, and
human communication techniques. Future research is
suggested in community communications, human aspects
of telecommunications, rather than simply the needs
of business firms. The psychological background of
telecommunication as related to technology is
explored.

7c1

D. K. Branstad (National Security Agency, Fort George G. Meade,
Maryland). Security Aspects of Computer Networks. In: AIAA
Proceedings, Computer Network Systems Conference, Huntsville,
Alabama, 16-18 April 1973. Paper 73-427. 8p. NIC 18603.

Connecting various types of terminals and various
computer systems in either geographically local or
distributed networks creates many technical problems.
Under consideration is the definition of the
communication and switching requirements of a network
of different computers, terminals, and users with
various access authorizations. The general problem

is described, as is the impact that security
requirements have on a network, and some possible
approaches to a solution.

7c2

Eric F. Harlsem, Suzanne D. Landa (RAND Corporation, Santa
Monica, California). VIEW: A Distributed System for Graphical
Analysis of Large Data Bases. In: AIAA Proceedings, Computer
Network Systems Conference, Huntsville, Alabama, April 16-18,
1973. Paper 73-431. 8p. NIC 18604.

The VIEW System is designed to aid researchers via
graphical analysis of large, remotely-located data bases.
In order to access remote data storage facilities
(e.g., the trillion-bit Laser Store), modules of VIEW
are distributed over the ARPANET, with the main analysis
module on the UCLA 360/91. The user/system interface
was designed to satisfy a set of user-generated
specifications and to allow syntactically different
inputs to remote data retrieval systems. Terminal
input/output is in a Network standard format, allowing
use of VIEW from any graphics terminal connected to
the Network.

7c3

Stuart Wecker (Digital Equipment Corporation, Programming R&D,
Maynard, Massachusetts). A Building Block Approach to
Multi-Function Multiple Processor Operating Systems. In: AIAA
Proceedings, Computer Network Systems Conference, Huntsville,
Alabama, 16-18 April 1973. Paper 73-425. 9p. NIC 18601.

A description of the structure of a functionally
flexible operating system created from building block
modules. Independent communicating modules structure
the functions and services, connected by an operating
system base which provides the communication
facilities. The functional modules communicate
and synchronize their actions via explicit data
exchanges over well-defined communication channels.
This explicitness of communication allows for the
independent movement of these modules within the
system environment, making this structure suitable
for multiple processor and computer network
configurations.

7c4

W. Michael Lay, David L. Mills, Marvin V. Zelkowitz (University
of Maryland, Computer Science Center, College Park, Maryland).
Design of a Distributed Computer Network for Resource Sharing.

In: AIAA Proceedings, Computer Network Systems Conference,
Huntsville, Alabama, 16-18 April 1973. Paper 73-426. 7p. NIC
18602.

A distributed operating system for an integrated
network of minicomputers is proposed. This system
provides the network resources and controls the
sharing of these resources by using blocks of virtual
memory called segments. Segments can be used for
programs and data, and can be transmitted as messages
between processes. Processes are given capabilities
to influence their own environment, as well as that
of other processes, through standard message
communication procedures. The network design allows
processes to be location independent so that they
need not be aware of the hardware configuration
(possibly distributed over several sites) upon which
they execute.

7c5

Julius S. Aronofsky (Southern Methodist University, Dallas,
Texas). National Networks for Education. In: AIAA Proceedings,
Computer Network Systems Conference, Huntsville, Alabama, 16-18
April 1973. Paper 73-419. 5p. NIC 18600.

A discussion of the trend towards regional and
national educational computer networks as a means of
progress on three levels of academic community
involvement: (1) hardware/software research for non-
university users; (2) instruction of students and their
preparation for coping with the impact of computers on
society; (3) optimum use of computers as part of
educational technology. A commentary is given on some
recent publications and also comments on a series of
EDUCOM sponsored meetings. Future directions are
discussed.

7c6

Benjamin J. Loret (Joint Technical Support Activity,
Washington, D.C.). Prototype Worldwide Military Command and
Control System Intercomputer Network. In: AIAA, Computer
Network Systems Conference, Huntsville, Alabama, 16-18 April
1973. Paper 73-416. 9p. NIC 18606.

Experiments are being developed leading to specs for
operationally linking the WWMCCS standard Honeywell
6000 series computers in 1970s. Network connectivity
will use leased lines, four interconnected Honeywell
316 IMPs (one for network control, one for each

computer). Experiments will include workload sharing
concepts, system software and communications
requirements, overall system responsiveness resulting
from various data distribution strategies.
Experiments, simulations, and communications/ADP
tradeoff analyses will lead to definition of
specs for ADP and communications hardware,
software and interface.

7c7

E. Levin (System Development Corporation, Santa Monica,
California). The Future Shock of Information Networks. In: AIAA
Proceedings, Computer Network Systems Conference, Huntsville,
Alabama, 16-18 April 1973. Paper 73-439. 10p. NIC 18605.

During the past five years the burgeoning growth of
the large scale distributed computer processing systems
tied together through an information network are being
recognized as having an impact on our nation comparable
to the recent great technological developments such as
nuclear energy, supersonic aircraft, space flight, lasers
and TV. In many ways, our daily lives will be altered to
a greater extent by information networks than any other
recent technology. Possibly the most dramatic changes
will be a cashless society and a computerized government,
although protection of individual rights is a deep
concern. Greatest danger is one of insufficient policy
rather than insufficient technology.

7c8

A. Shoshani, I. Spiegler (System Development Corporation, Santa
Monica, California). The Integration of Data Management Systems
on a Computer Network. In: AIAA Proceedings, Computer Network
Systems Conference, Huntsville, Alabama, 16-18 April 1973.
Paper 73-417. 8p. NIC 15717.

An approach is discussed to integrate data management
systems on a computer network for the purpose of data
sharing. Properties of the common language are
explored, and a method of implementing the translation
interfaces by a meta-compiler is described. More
flexibility can be achieved by the use of a natural
language processor. Some conclusions are drawn regard-
ing the desirability and feasibility of this approach.

7c9

IRICON, International Information Service via Computer Oriented
Network. (ITALCABLE, Rome, Italy.) 12p. December 1972. NIC
18594.

Brochure describing the services, communications
handling and tariff arrangements on the ITALCABLE
store-and-forward, message switching computer network.
The services possible for private networks and
subscribers, computer utility services, traffic
pattern logistics, quick retrieval of messages,
leased channels and telex positions are described.

7c10

Louis Pouzin (IRIA-Institut de Recherche en Informatique et
Automatique, Rocquencourt, France). Presentation and Major
Design Aspects of the CYCLADES Computer Network. Submitted for
presentation at the Third Data Communications Symposium. 23p.
April 1973. NIC 18256.

CYCLADES, a general purpose heterogeneous computer
network launched in France in 1972, has as its purpose
the construction of a prototype network to foster
experiments in areas such as data communications,
computer interactions, cooperative research,
distributed data bases, in a realistic environment,
with a variety of operational services acceptable
to customer standards. Design is a carefully layered
architecture, providing for an extensible structure of
protocols and network services, tailored to various
classes of traffic and applications.

7c11

Louis Pouzin (CYCLADES, Institut de Recherche en Informatique
et Automatique – IRIA). INWG Note 35 – Efficiency of
Full-Duplex Synchronous Data Link Procedures. 9p. June 1973.
NIC 18255.

An examination of the efficacy of certain procedures for
transmission, some of which claim to be full-duplex,
but in actual practice, are not. An evaluation is made
based on their ability to sustain a full speed traffic
as offered by the bandwidth. This is of prime importance
for computer-to-computer traffic, where line speed will
be the major throttle and efficiency will be directly
related to proper use of the bandwidth. It will be
shown that the best procedures are a multiplexing of
independent channels, while others are only a lame
approximation of full duplex.

7c12

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7d

ARPANET News, Issue 9, November 1973

(n8) PLANS

8

No insert this month

8a

To return to contents outline type s[how]n1   CR

8b

(n9) OTHER NEWS

9

(net-people) Jon Postel relocates

9a

Jon Postel (JBP) [Co-chairperson for Protocols (with Alex
McKenzie of BBN)] has joined the technical staff at the MITRE
Corporation. His new address is:

Jon Postel
The MITRE Corporation -W185
1820 Dolly Madison Blvd.
Westgate Research Park
McLean, Virginia 22101

His telephone number is: (703) 893-3500 Ext. 2350.

The primary task that Jon will be responsible for is the
Evaluation of Network Control Programs.
........Editor

9a1

(telenet) Telenet Applies to Establish Network

9b

Telenet Communications Corp., a subsidiary of BBN, has filed an
application wth the FCC to establish and operate a
"value-added" network based on the packet switching technology
now being used in the ARPANET.

9b1

The system will use land-based and satellite communications
channels leased from other carriers. Customers will connect
their computers and terminals to Telenet switching centers.

9b2

Usage charges to customers will be based on the volume of data.
The proposed rate charge favors high-volume users, with rates
ranging from $4 to $0.48 per 1000 packets, depending on total

monthly traffic for each subscriber computer. Night usage
prices will be halved.

9b3

Computer connection links to Telenet will range from $500 to
$4500 per month for leased lines of from 4800 to 50,000 bit/sec
capacity.

9b4

Terminal connections will be priced on transmission speed, but
customers may use either dial-in or dedicated lines. Dial-in
use will cost from $0.50 to $2 per hour.

9b5

Dedicated terminal charges will range from $50 to $220 per
month, depending on transmission speed, in addition to leased
line cost.

9b6

Initially, there are to be IMPS and TIPS in 13 cities, to begin
operation with in 18 to 21 months after an FCC permit.

9b7

....abstracted by JBN from Computerworld, 17 Oct, p.17.   9b8

(n10) FORUM

10

To return to contents outline type s[how]n1   CR

10a

(u1) Update 13 November   11

(tenex) New Tenex Release

.....Extracted from <documentation>exec.blurb@case-10 and
from a Message from Bill Plummer@BBN by ji.

11a

The following represents recent changes made to the TENEX EXEC.
The standard changes are indicated first, and followed by
Case-10 specific changes which may also be of interest to the
general TENEX user community.

11a1

The following include the BBN implemented changes in the new
EXEC 1.51:

11a2

A single ↑T does nothing but ding, 2 ↑T's within 15 seconds
will request the old "verbose" typeout -- but this will be
honored only if at least a minute has elapsed since the
previous verbose typeout.

11a3

TRMSTAT command has been added. This command prints all
kinds of (interesting?) information about your teletype
such as whether you have tabs, your control character sets,
wake-up sets, etc, etc.

11a4

LENGTH command allows you to specify the page length
of your terminal.

11a5

Several new terminal types are supported; type a "?" to the
"TERMINAL" command in TENEX EXEC to see them.

11a6

Ephemerons: A .SAV file can be declared ephemeral or not
ephemeral by the commands:
ƏEPHEMERAL (file) <file-name>   and
ƏNOT EPHEMERAL (file) <file-name>
A file which is ephemeral shows on a directory listing with a
";e".   An ephemeral file, when run by typing its name
only to the Exec's "@" is run in a separate fork instead
of the regular user fork.   This means that after such a
program exits, the program you were running previously,
is still there.   The overall effect is to make a program
look like an Exec command.   If you ↑C out of an
ephemeral, you cannot continue it.   (just as you cannot
continue a TYPE or DIRECTORY command.)   You can however
↑C out of a regular program, run an ephemeral program,
and then CONTINUE the original program.

11a7

The AUTHOR subcommand has finally been added to the
DIRECTORY command.   This subcommand types the name of the last
person who wrote into a file.

11a8

The INTERROGATE command has been updated slightly - a
little smarter, and prints more information.

11a9

The changes made to EXEC 1.51 at case-10 in addition to the
above, include:

11a10

ARPANET News, Issue 9, November 1973

1) The SYSTAT command now prints the runtime, (in
milleseconds) the connected directory (if different from logged
in
directory) and the foreign host for network users. Also, the
detached jobs are listed last.

11a11

2) A WHO command has been added for the sake of those poor
people stuck on slow terminals who won't appreciate the
longer typeouts of the SYSTAT command. This command
lists job number, user name and teletype only.

11a12

3) The ASSIGN command has been modified to search for an
unassigned magtape or DECtape drive.

11a13

@ASSIGN (device) MTA   or DTA

will look for the first available device, then print

MTAn: assigned.   or DTAn:

to indicate which unit it found. Note: On DECtapes, unit 0 is
always skipped since monitor types like to keep the
system tape mounted on DTA0. Any DECtape which is mounted is
skipped even if not assigned since some people put up
a tape and fail to assign it.

11a14

4) Account number checking has finally been implemented
by BBN, and we have changed over to their system to
simplify Exec maintenance. From a user's
viewpoint, there should be no changes other than slower
response.

11a15

5) 10/50 compatible CCL commands have been added:

11a16

@COMPILE <stuff>
@LOAD <stuff>
@XQT <stuff>

where <stuff> is a list of file names and switches
calls the CCL subsystem, and hands it "command <stuff>".
CCL then generates the appropriate command files for
MACRO, SAIL, LOADER, etc. and then calls whatever
programs are needed. If any of these commands are typed

with no argument, the last argument typed is used. If
no argument has ever been used, Exec will complain.

NOTE: since these commands all work through CCL, all
10/50 restrictions apply to the argument. That is,
there is no recognition, files must be 6 character names
and 3 character extenstions, and other directories must
be specified as [0,directory-number] following the file
name. These commands were not meant to be correctly
implemented or lasting, but only a quick measure to
bring TENEX at least up to the human engineering level
of 10/50 in the program compiling/running area.

For more information on the format of CCL comnands,
see the DECsystem-10 users' handbook.

11a17

6) A DESCRIBE command has been added to provide descriptions
of Exec commands or other TENEX features. The format is

11a18

@DESCRIBE <item>

were <item> is the command or feature. ? may be typed to get a
list of items. (Be prepared for a long list.) The items
preceeded by a "-" are lists of items which
fall into various catagories. For example,

@DESCRIBE -ACCESS-COMMANDS
The access-commands are:
login, logout, change, detach, attach.

would indicate the access commands which can be described are
LOGIN, LOGOUT, ...

11a19

7) The autologout timing characteristics have been changed.
If a job is not logged in, and types a "LINK" command,
his autologout grace period is extended to 10 minutes. On a
BREAK (links) command, his period is cut back to the
usual shorter time.

11a20

8) A new command, NUMBER has been added to provide the
directory number given a directory name. This is useful
for compatibility programs (or CCL) where you cannot
use the usual <directory> construction. Format is:

11a21

@NUMBER (for directory name) <directory>
directory number n.

11a22

9) A new command NAME is the inverse of NUMBER.   Given a
directory number, it tells you the directory name.

11a23

@NAME (of user number) <number>
directory-name

11a24

10) Another new command, ERSTR gives you the error message
for a given error number. (For programs which don't do
the conversion themselves.)

11a25

@ERSTR (error number) 600123
OPENF: Write access not allowed

11a26

11a27

(ifi-forum) Institute for the Future : Computer Conferencing

...............Jacques F. Vallee

11b

The Institute for the Future, a small, nonprofit research
organization based in Menlo Park, California, has developed a
program for computer conferencing which is available on the
ARPA network. The program is called FORUM and will be fully
distributed in March 1974, but it can already be used in
pre-release form on the USC-ISI and BBN sites of the network.
Other PDP-10 sites interested in running FORUM under TENEX are
invited to contact Dr. Jacques Vallee at (415) 854-6322 to make
arrangements for transfer of the program.

11b1

FORUM is a re-entrant, assembly language program that uses a
fully-paged file system. It operates well interactively even
during peak loads. The system enables geographically
distributed users to interact on either a real-time or a
delayed basis under a variety of conference formats ranging
from free discussion to a full questionnaire structure.

11b2

The participant can gain a rapid view of all conferences open
to him-- both those in which he is a registered member and

those which are public. Within a given discussion, he can
interact in real-time with all active participants in the
group. He can submit anonymous entries, send private messages,
and follow changes in paticipant status. The numbering of
entries provides an easy reference to previous comments in the
discussion.

11b3

FORUM contains support software for a variety of CRT terminals.
Automatic pagination, scrolling, and cursor control in line
editing are among the support features.

11b4

Program documentation is provided online by typing a question
mark at any point. Users wishing to experiment with the
pre-release version of FORUM are welcome to contact us.

11b5

(u2) Update 18 November

12

(hostname)   Standard Host Name Policy Announcement
                         by Vint G. Cerf

12a

Recently there have been many inquiries and exchanges
concerning standard host names for the ARPANET, particularly
for TELNET and FTP implementation. A recent note from Clements
at BBN asking for a standard list of names, and a note from
Abhay Bhushan advising the community of the new name, 'MIT-DMS'
for MIT-DMCG underlines the revived interest in this subject.

12a1

In response to the need for more coordinated planning and
standardization, Steve Crocker recently assigned Mike Kudlick
(SRI-ARC/NIC) the responsibility of negotiating with all
present and new hosts to select a standard host name for each.
The intent is to have all protocols implement the standard host
names when host names are needed (e.g. TELNET and FTP). Local
implementors may want to make up short 'nicknanes' as well, and
this is not prohibited. The standard list is required and
others are permitted.

12a2

The target date for preparing the official standard host name
list is 31 December 1973. Of course, the list will grow as new
hosts are added. Mike Kudlick will arrange negotiations for
host names with each host technical liaison. A brief statement
of the naming conventions appears below for your information.

12a3

ARPANET News, Issue 9, November 1973

To recapitulate the simple rules, host names consist of up to
48 characters drawn from the alphabet (A-Z), the digits (0-9)
and the minus sign (-). There is no distinction made between
upper and lower case letters. The first character of the name
must be a letter and the last character must not be a minus
sign, otherwise no restrictions are imposed on the syntax of
host names. In order to accommodate multiple networks, we also
specify that a complete host name includes a prefix of up to 24
characters, enclosed in parentheses, designating the network in
which the host resides. The characters used in the network name
are drawn from the same set as for host names, and follow the
same syntax rules. No attempt has been made to impose any
further structure on these names. As an example of valid names,
we have:

12a4

(ARPANET)MIT-DMS   (CYCLADES)IRIA   Erewhon-FAKESITE

12a5

fUnNyNaMe-sameas-funnyname   (TYMNET)Host-186

12a6

(NPLNET)beebleberry-and-associates

12a7

The network name prefix need not be supplied for intranetwork
usage. The prefix is merely a means of indicating that a
foreign host (that is, one not in the network from which access
is being made) is being referenced.

12a8

Note that no embedded blanks are permitted.

12a9

When the first official host name list has been compiled (no
later than year's end) it will be published in the ARPANET
NEWS.   Some thought is also being given to establishing a
machine readable copy of this list with corresponding host
numbers so that TELNETs and FTPs can update their tables
dynamically on a periodic basis. Similarly, it will be
possible to interrogate the Resource Notebook online by host
name to find out important things such as responsible
personnel, how to get accounts, what services are available,
etc.

12a10

(u3) Update 20 November   13

    (sussex)   London TIP Connection

ARPANET News, Issue 9, November 1973

Typescript by ji

13a

The London TIP, SUSSEX, which is host forty two (42) decimal,
or fifty two (52) octal, can now be reached by users of the
ARPANET. To facilitate trial usage, the following TENEX Telnet
Typescript was constructed to show entry to the PDP-9 front end
to the Rutherford High Energy Laboratory IBM 360/195, and
subsequent entry and logout to the IBM 360/195. In the
experience of the author, exploration of this facility is very
straightforward in that the system provides adequate
information for the experimental user.

13a1

TELNET typescript file started at TUE 20 NOV 73 0743:00

#connection.to 52 is complete.#
INDRA COMPUTING SERVICE — 15 45 GMT   ON 20 NOV 73
TYPE %H<CR> FOR HELP

%h
THE HOST AT ULICS IS A PDP-9 AS FRONT END TO AN IBM 360/195
COMMANDS TO THE PDP-9 ARE :
%HELP (%H)
%LOGIN ID=**, ACCT=**
%LOGOUT
%OPERATOR (%O)
%STATUS (%S)

ALL COMMANDS TERMINATE WITH CARRIAGE RETURN
WHEN NOT LOGGED IN TO 360 ALL LINES GO TO OPERATOR

WILL USA USERS PLEASE TYPE A COUPLE OF LINES SAYING WHO THEY
ARE
BEFORE THEY LOG IN TO THE 360

FOR FURTHER HELP LOGIN TO THE 360 WITH:
%LOGIN GUEST
AND IF SUCESSFUL TYPE:
TYPE JB=HELP

THE IBM 360/195 IS UP

THE SYSTEM HAS NO PROMPT AND ONLY TWO CONTROL CHARS:
CTRL U   TO CANCEL A LINE
DELETE (177) TO DELETE A CHAR
%login guest
  USER 21 F7 BL=   140/   250 TL= 114 NL= 6 TG=   0 NG=   0 TJ=

```
        0.45 NJ=  9
        %logout
         OK       F7 BL=   140/   250 TL= 114 NL=  7 TG=    0 NG=  0 TJ=
        0.45 NJ=  9
```

13a2

Marcia,
I just got a Journal Message from Jeanne North saying that some sites
had agreed to get only one copy of future NIC Document distribution.
I can't remember having any conversations with anyone about this, and
therefore assume that BBN-NET is not such a site. Please correct me
if I'm wrong.
Regards,
Alex McKenzie

1

19722 Distribution
    Marcia Lynn Keeney,

On Additional Query Commands

Some thoughts about naming three proposed Query commands: 1

   1) To position the user at the "top" of the data base, the Query
   command could be any or all of these ---
      GO TO QUERY <cr>
      QUERY <cr>
      GO TO HELP <cr>
      HELP <cr>   1a

   2) To position the user at the same point he was at when he
   entered Query/Help, the command could be
      RESTART <cr>   1b

   3) To position the user at a place where he can get more general
   information about Query and/or Help, the command could be
      SHOW MORE HELP <cr>   1c

19724 Distribution
    Dirk H. Van Nouhuys, Harvey G. Lehtman, Kirk E. Kelley,

OCT 7-13. 1973: A WEEK IN REVIEW

Believe it or not, there is still a WAR (weekly analysis report)!
Apologies for the gap, but attribute it to AUGMENTATION. In the
upcoming week I plan to produce the backlog of reports beginning with
the most recent first. For the RADC people, only the most recent
report will have an account of disc usage.   -bah

WEEKLY ANALYSIS REPORT: 1

                                                                               2

WEEK: OCT 7 - 13, 1973 (24 HOURS/DAY)   3

                                                                               4

TOTAL SYSTEM CPU: 64.993   5

                                                                               6

    (ARC)   6a

IDENT	CPU HRS	CON HRS	CPU/CON	% SYS	CON/CPU:1	
						6a1
						6a2
(STAFF)						6a3
(JMB)	.554	16.268	.034	.852	29.365	6a3a
(DCE)	1.052	31.877	.033	1.619	30.301	6a3b
(SRL)	.352	11.779	.030	.542	33.463	6a3c
(NDM)	6.299	30.825	.204	9.692	4.894	6a3d
(JCN)	.536	27.297	.020	.825	50.927	6a3e
(DVN)	.752	23.675	.032	1.157	31.483	6a3f
(PR)	.104	3.745	.028	.160	36.010	6a3g
(RWW)	.045	1.751	.026	.069	38.911	6a3h
	-----	-----		-----		6a3i
TOTAL	9.140	147.217		14.916		6a3j
						6a3k
(PSO)						6a4
(JML)	.096	10.073	.010	.148	104.927	6a4a
(BAH)	1.492	28.713	.052	2.296	19.245	6a4b
(MEJ)	1.282	74.631	.017	1.973	58.215	6a4c

(KIR)	1.026	33.939	.030	1.579	33.079	6a4d
	-----	-----		-----		6a4e
TOTAL	3.896	147.356		5.996		6a4f
						6a4g
(NIC)						6a5
(JDC)	.077	13.706	.006	.118	178.000	6a5a
(EJF)	.587	15.844	.037	.903	26.991	6a5b
(CBG)	.161	3.642	.044	.248	22.621	6a5c
(MDK)	.321	6.064	.053	.494	18.891	6a5d
(MLK)	.350	18.491	.019	.539	52.831	6a5e
(JBN)	1.511	43.070	.035	2.325	28.504	6a5f
	-----	-----		-----		6a5g
TOTAL	3.007	100.817		4.627		6a5h
						6a5i
(HARDWARE)						6a6
(MEH)	.013	.173	.075	.020	13.308	6a6a
(JR)	-	-	-	-	-	6a6b
(EKV)	-	-	-	-	-	6a6c
	-----	-----		-----		6a6d
TOTAL	.013	.173		.020		6a6e
						6a6f
(TENEX)						6a7
(DIA)	.211	11.801	.018	.325	55.929	6a7a
(WRF)	.259	10.123	.026	.399	39.085	6a7b
(KEV)	1.623	29.418	.055	2.497	18.126	6a7c

(DCW)	1.247	38.288	.033	1.919	30.704	6a7d
	-----	-----		-----		6a7e
TOTAL	3.340	89.630		5.140		6a7f
						6a7g
(NLS)						6a8
(CFD)	2.595	45.516	.057	3.993	17.540	6a8a
(JDH)	.559	18.131	.031	.860	32.435	6a8b
(CHI)	1.488	31.376	.047	2.289	21.086	6a8c
(DSK)	-	-	-	-	-	6a8d
(HGL)	.626	16.754	.037	.963	26.764	6a8e
(EKM)	.420	9.258	.045	.646	22.043	6a8f
(JEW)	.542	10.071	.054	.834	18.581	6a8g
	-----	-----		-----		6a8h
TOTAL	6.230	131.106		9.585		6a8i
						6a8j

(GROUP) TOTALS					6b
GROUP	CPU HRS	CON HRS	CPU/CON	% SYS	6b1
					6b2
(STAFF)	9.140	147.217	.062	.852	6b3
(PSO)	3.896	147.356	.026	5.996	6b4
(NIC)	3.007	100.817	.030	4.627	6b5
(HARDWARE)	.013	.173	.075	.020	6b6
(TENEX)	3.340	89.630	.037	5.140	6b7
(NLS)	6.230	131.106	.048	9.585	6b8
	-----	------		-----	6b9

	TOTAL	25.626	616.299		26.220		6b10
							6b11

(STATS)   6c

HIGHEST CPU: NDM 6.299 hrs	LOWEST CPU: MEH .013 hrs	6c1
HIGHEST CON: MEJ 74.631 hrs	LOWEST CON: MEH .173 hrs	6c2
HIGHEST CPU/CON: NDM .204	HIGHEST CON/CPU:1: JDC 178	6c3
		6c4

(OVERHEAD)   6d

PETERS	1.820	39.867	.046	2.800	21.905	6d1
BACKGROUND	2.263	107.091	.021	3.482	47.323	6d2
CAT	11.835	30.450	.389	18.210	2.573	6d3
DOCB	-	-	-	-	-	6d4
DOCUMENTATION	.124	7.522	.016	.191	60.661	6d5
GILBERT	-	-	-	-	-	6d6
NETINFO	-	-	-	-	-	6d7
NIC-WORK	-	-	-	-	-	6d8
OPERATOR	.718	41.021	.018	1.105	57.132	6d9
PRINTER	6.605	106.297	.062	10.163	16.093	6d10
SYSTEM	.922	106.300	.009	1.419	115.293	6d11
SYSTEM	.547	152.557	.004	.842	278.898	6d12
SYSTEM	5.172	104.932	.049	7.958	20.288	6d13
CATALOG	.003	.063	.048	.005	21.000	6d14
	-----	-----		-----		6d15
TOTAL	30.009	696.100		46.175		6d16
						6d17

(XEROX)   6e

                                                                          6e1

NAME	CPU HRS	CON HRS	CPU/CON	% SYS	CON/CPU:1		6e2
							6e3
COWAN	.008	.323	.025	.012	40.375		6e4
DEUTSCH	.012	.174	.069	.018	14.500		6e5
SATTERTHWAITE	.279	8.252	.034	.429	29.577		6e6
SWEET	.050	3.118	.016	.077	62.360		6e7
	-----	-----		-----			6e8
TOTAL	.349	11.867		.536			6e9

                                                                          6e10

(RADC)   6f

                                                                          6f1

NAME	CPU HRS	CON HRS	CPU/CON	% SYS	CON/CPU:1	DIR	6f2
							6f3
BERGS	.396	28.643	.014	.609	72.331	51.000	6f4
BETHK	.121	7.850	.015	.186	64.876	73.000	6f5
CAVAN	.150	8.074	.019	.231	53.827	115.000	6f6
IUORN	.072	3.796	.019	.111	52.722	38.000	6f7
KENNE	.215	12.257	.018	.331	57.009	81.000	6f8
LAMON	.268	8.089	.033	.412	30.183	116.000	6f9
LAWRE	.164	16.888	.010	.252	102.976	40.000	6f10
MCNAM	.130	6.201	.021	.200	47.700	103.000	6f11
PANAR	.193	9.006	.021	.297	46.663	122.000	6f12
RZEPK	.032	2.709	.012	.049	84.656	66.000	6f13

SLIWA	.003	.053	.057	.005	17.667	11.000	6f14
STONE	.450	16.117	.028	.692	35.816	259.000	6f15
THAYE	.011	.640	.017	.017	58.182	26.000	6f16
TOMAI	.064	2.839	.023	.098	44.359	50.000	6f17
	-----	-----		-----		-----	6f18
TOTAL	2.269	123.162		3.490		1151.000	6f19
(PER CENT TOTAL DISK CAPACITY)						2.363%	6f20
							6f21

(NETUSERS) TOP FIVE   6g

                                                            6g1

NAME	CPU HRS	CON HRS	CPU/CON	% SYS	CON/CPU:1	
						6g2
						6g3
UCLA-NMC	1.100	22.210	.050	1.692	20.191	6g4
NSRDC	.898	41.333	.022	1.382	46.028	6g5
GUEST	.579	27.429	.021	.891	47.373	6g6
SAAC-TIP	.437	17.957	.024	.672	41.092	6g7
MITRE-TIP	.431	25.032	.017	.663	58.079	6g8
	-----	-----		-----		6g9
TOTAL	3.445	133.961		5.300		6g10
						6g11

(NET)	CPU HRS	CON HRS	CPU/CON	% SYS	CON/CPU?;1	6h
						6h1
TOTAL	5.190	228.168	.023	7.985		6h2
						6h3
(OTHER)	CPU HRS	CON HRS	CPU/CON	% SYS	CON/CPU:1	6i

						611
BAIR	.531	20.486	.026	.817	38.580	612
ENERGY	.052	6.856	.008	.080	131.846	613
JIMB	.352	12.049	.029	.542	34.230	614
MARRAH	.057	2.856	.020	.088	50.105	615
	-----	-----		-----		616
TOTAL	.992	42.247		1.527		617
						618
						7

19725 Distribution
   Susan R. Lee, Beauregard A. Hardeman, Douglas C. Engelbart, Don I.
   Andrews, Charles F. Dornbush, Elizabeth J. (Jake) Feinler, Martin E.
   Hardy, J. D. Hopper, Charles H. Irby, Mil E. Jernigan, Diane S. Kaye,
   Kirk E. Kelley, Michael D. Kudlick, Elizabeth K. Michael, Jeanne B.
   North, James C. Norton, Jeffrey C. Peters, Paul Rech, Dirk H. Van
   Nouhuys, Kenneth E. (Ken) Victor, Donald C. (Smokey) Wallace, Richard
   W. Watson, James E. (Jim) White, Duane L. Stone, Thomas F. Lawrence,
   James H. Bair, L. Peter Deutsch, James G. Mitchell,

Request for NGG Note Distribution

I wish to have the contents of the file <NBS-TIP>NGG-COTTON.NLS;1 distributed as a Network Graphics Group Note. Please destroy the file after you copy it for distribution. 1

19726 Distribution
   Marcia Lynn Keeney,

1

Please continue with GUFS!

Response to my message asking for help in gathering data on command
frequency has been varied, but it has been more positive than
negative. If all DNLS users would continue to use the measurements
command on Thursday and Friday I think we will have enough
information. Thanks, and again please direct any questions to me
(SRL).   1

19727 Distribution
     Donald C. (Smokey) Wallace, Richard W. Watson, Don I. Andrews,
     A. Jim Blum, A. Analysis, Meredith(Reddy) E. Dively, Jeanne M.
     Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Mark Alexander Beach,
     Judy D. Cooke, Marcia Lynn Keeney, Carol B. Guilbault, Susan R. Lee,
     Elizabeth K. Michael, Charles F. Dornbush, Elizabeth J. (Jake)
     Feinler, Kirk E. Kelley, N. Dean Meyer, James E. (Jim) White, Diane
     S. Kaye, Paul Rech, Michael D. Kudlick, Ferg R. Ferguson, Douglas C.
     Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper,
     Charles H. Irby, Mil E. Jernigan, Harvey G. Lehtman, Jeanne B. North,
     James C. Norton, Jeffrey C. Peters, Jake Ratliff, Edwin K. Van De
     Riet, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor

1

Delivery of message copies.

Alex, I did get the original copy of your reply, and I got
the second copy. Thank you very much. By the way, why didn't you
think I got the first copy? -- Ken   1

Delivery of message copies.   KTP   16-OCT-73 14:28   19728

1

19728 Distribution
    Alex A. McKenzie,

I suggest the subsystems be ordered either by general user experience
levels as below or else alphabetically which is almost the same and
and is consistent with the way verbs are ordered.
EDITOR
FORMAT
JOURNAL
CALCULATOR
PROGRAMS   1

19729 Distribution
    Jeanne M. Beck,

1