Request for L10 Documentation

Marcia : Could you possibly send us two copies of the L10 manuals
including also the L10 Reference Guide, (7052). Thank you,...Jean   1

Request for L10 Documentation

(J20458)   24-NOV-73 05:32;   Title: Author(s): Jean Iseli/JI;
Distribution: /MLK EHF JBP; Keywords: l10-documentation;
Sub-Collections: NIC; Clerk: JI;

** *************

ARPANET News

December 1973

Issue 10

NIC 20479

Published for the purpose of encouraging and fostering
intersite communication and interaction
in the ARPA Computer Network

(contents)   ARPANET NEWS   December 1973   Issue 10   NIC 20479

Cnline Viewing Instructions ---

To see any item, type: s[how] multics : (for example)
To print statement numbers, type: v[:Type V:]mG <CR>
To obtain hard copy, type: O[utput] D[evice] T[eletype] from NLS
   after first loading the file <help>arpanews.nls
Printing time, TI Silent 700 using ODT, as above, 00:52:07
To return to Contents, type: s[how] contents <CR>
To stop printing at any point, type: †O, Control O.
To exit from the NIC Query Subsystem, type quit<CR>

                ******** GREETINGS ********

From the Staff of the ARPANET News, we extend our very best wishes
for a MERRY CHRISTMAS and prosperous NEW YEAR and good health.

                ....The Staff   1

(memo)   To ARPANET News Readership

2

As a step towards improving the ARPANET News and ensuring its
on-going viability and ability to better serve the community, this
issue starts a new format and was developed with new procedures to
minimize unnecessary effort in providing it to you in a timely
fashion.

2a

Changes you will notice include:

   (1) A contents section itemizing all included articles [to
allow you to "get the news" online with less effort.]
   (2) A change in the hard-copy issue as well as the on-line
issue. We have reformatted to allow one file to answer the needs
of all distribution requirements as a step towards reducing
unnecessary expenses while ensuring earlier availability to you
the readership.
   (3) Deletion, within any issue, of mention to "Columns" if
there is no news within the column. This does not mean a
discontinuance of columns, just a desire to optimize the format
for each issue and eliminate frustration in accessing on-line, a
column that is vacuous.

2b

If any of these changes inconveniences your access to the news,
please send comments to ISELI@ISI or JI through the NIC Journal.
Any further suggestions on how to improve the quality and utility
of YOUR Newsletter would be appreciated and will receive
consideration.

              ......The Editor

2c

(information)   Information About the Publication

3

Hardcopy issue published monthly
Online updates available weekly
Sponsored by: ARPA/IPT
Distributed by: ARPA Network Information Center
               Stanford Research Institute
               Menlo Park, California 94025

3a

Editorial Staff:
Headed by Jean Iseli (MITRE) with volunteers who lend their
welcome and appreciated assistance, as occasion arises:
  Jeanne B. North (NIC
  David H. Crocker (UCLA)
  Mil Jernigan (NIC)
  Mike A. Padlipsky (MIT-MULTICS)
  Susan Poh (MITRE)
  The young ladies in the NIC Office
      Marcia Keeney
      Judy Cooke
      Carole Guilbault

3b

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.

3c

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.

3d

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.

3e

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.

3f

(calendar)   Events of Network Interest

1/3-4 74   * (using) USING Group Meeting at NIC
1/8-10 74   HAWAII-CON
1/10 74   * ARPANET INWG Mtg. after Hawaii Conf.
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
5/23 74   (trends) IEEE Comp. Soc. Trends and Applications
6/17-19 74   IEEE Intl Conf on Communications ICC74
7/15-17 74   (graph) Conf on Comp Graphics
8/5-10 74   (ifip) IFIP Congress '74, Stockholm

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.

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

                                                                   4

     (using) USING Group, ARPANET, meeting, 3-4 January 1974
     at NIC, Menlo Park, California.

                                                                  4a

     Please contact Dave Crocker@UCLA or Nancy Neigus@BBN regarding
     any questions concerning the meeting. Mil Jernigan@NIC (phone
     (415)326-6200, ext. 4775) will be happy to make local
     hotel/motel reservations for you. All USING members please try
     to attend.

                                                                 4a1

     (trends) IEEE Computer Society, Trends and Applications Symposium,
     Gaithersburg, Md., 23 May 1974.

                                                                  4b

     A symposium in Trends and Applications in Computer Networks,
     sponsored by IEEE Computer Society Eastern Area Committee and
     the Washington, D.C. Chapter. Papers invited describing trends
     in computer network design and economics, tradeoffs in network
     design and applications of existing and proposed networks.
     Abstracts of approximately 1000 words due by 15 December 1973
     to Kevin Casey, Catholic University, Computer Center,
     Washington, D.C. 20017.

                                                                 4b1

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

                                                                  4c

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.

4c1

(ifip) IFIP Congress '74, Stockholm, Sweden, 5-10 August 1974.

4d

To cover the whole range of information processing, including
computer hardware and architecture, software, mathematical
aspects of information processing, technological and scientific
applications, applications in the social sciences and the
humanities, systems for management and administration and
social implications of computers. Dr. Herbert Freeman,
Chairman, Programme Committee IFIP Congress '74, c/o AFIPS, 210
Summit Ave., Montvale, N.J. 07645.

4d1

(ucla-ph)   Interview with Dr. Bob Hetherington UCLA
                   School of Public Health

5

The purpose of this interview with Dr. Bob Hetherington, School of
Public Health, UCLA, is to provide community awareness of a
Network resident data base and access mechanism in the area of
mental health. The interview was conducted by Jean Iseli on 21
November 1973. Persons desiring more detailed information are
invited to contact Dr. Bob Hetherington, UCLA; (213) 825-5379.

5a

    [ji] : Dr. Hetherington, maybe we could start by your telling
the readership of the plans, progress, and expectations of your
effort in the area of mental health.

5b

    [RWH] : Our research group at UCLA has received a 4-year
grant from NIMH to survey the field of mental health evaluations.
We are primarily interested in programs designed by professionals
in the mental health field to meet problems in 18 areas of mental
health. Some of these areas are: alcoholism, drug abuse, suicide,
schizophrenia, autism, and divorce.

5c

    However, our interest is not limited to the strictly
psychiatric areas, since we also include programs designed to meet
social problems. The idea occurred to us during the first year of
operation that it might be a very exciting communications tactic
to employ the ARPANET in the dissemination of our findings. As we
visualize the method, we would establish our databank of program
evaluations in mental and social health here at UCLA and open it
to use by government officials, elected representatives,
practitioners, administrators, professors and researchers (and
students) via the ARPANET.

5d

    In this way, both published and unpublished research findings
in the area of our concern would be accessible to interested
parties according to their own needs since the user would be able
to sort and list any aspect of the databank he wished. With the
great delays presently encountered with publishing materials, it
is frequently the case that timely research findings do not reach
key people until the occasion for their use has long passed. We
also would be greatly interested in enhancing a 2-way flow of
communication between users and the databank via the network in
order that we can be as user oriented as possible.

5e

To summarize, we are surveying program evaluations in the broad area of mental and social health (presently from 1969 onward) in order to provide a computer-based databank of these evaluations coded on relevant aspects of study design, measurement techniques employed and outcome.

5f

In addition to the coded information for each evaluation, we will provide a formatted abstract of the evaluation. The user will be able to search the databank on the coded items (10), either separately or in combination. He will receive, as a result of his search, all evaluations in the databank which fit the codes he has specified. Each citation produced will contain authors, title, source and the formatted abstract (although the user may choose to have the abstract omitted if he wishes.

5g

[ji] : That is indeed a forward looking and fine use of the ARPANET to benefit this research community. Are the access mechanisms you envision to be employed by users to be interactive or will the user specify his search criteria and in turn have that submitted for batch execution?

5h

[RWH] : Let me describe the procedure from the layman's perspective. The program being developed here at CCN by Donald M. Long which we demonstrated last week for a site committee from HEW was fully interactive. In other words, the user merely responded to a series of questions built into the program until all specifications for the search were defined, and then the search was conducted immediately and the results printed out on our CRT console. It is our hope that this type of service can be arranged for all users of the databank, and therefore we plan to keep the databank on-line here at all times. Initial use of the databank should be about February or March of 1974.

5i

[ji] : Bob, could you discuss the various aspects of user feedback you envision to ensure a real user orientation for the capability. For example, will users be able to augment your basic databank with comments relative to their found utility for assorted citations?

5j

(RHW) The major difficulty I perceive with current databanks
such as MEDLARS is that the user is unable to define for himself
the specifications of the search. I would hope that reactions from
users would keep us informed of the flexibility and utility of the
setup, and suggest ways in which it might be improved.
Additionally I would hope users would help keep us updated as new
programs are enlarged and designed so that they may be entered
into the databank immediately.

5k

[ji] : Will Donald's program provide a means for users to
provide feedback on-line while they are interacting with it, or do
you envision a separate mechanism for that?

5l

[RWH] : Don Long is here so I'll ask him. He says, "I think
we would want a separate program for updating primarily so we can
edit what we get before it goes into the databank."

5m

[ji] : Yes, I can well understand the desirability of editing
user input to your databank — what I was wondering was, is there
going to be a mechanism provided for users to comment to you on
assorted reactions to the service you are providing or comment on
the appropriateness of the information they derive?

5n

[RWH] : Yes. That seems an essential part of our cconcept.
But in addition to users making comments about their use of the
databank, we will also want to provide them with information about
our procedures (planned and accomplished) hopefully through the
implementation of an on-line newsletter to be distributed over the
ARPANET.

5o

[ji] : Do you envision, in time, an interface between your
databank and its access mechanism and other data banks in allied
fields?

5p

[RWH] : From a programmer's perspective, such an interface is quite feasible. However, from a substantive perspective the problem is that other databanks do not contain the type of evaluative information which we require in our databank. Hence, practically such an interface will be provided through our searching of all other relevant databanks for a range of appropriate publications, and then coding them to our specifications. This has been a part of our methodology from the start in order to cover the 18 fields as thoroughly as possible.

5q

[ji] : Bob, is it possible at this time to give an indication of the size of the databank as it will be in January-February and maybe indicate how rapidly you envision its growth?

5r

[RWH] : When the databank is first opened for limited use, we think about 60 relevant journals. A citation at the moment runs about 2000 bytes. Variable length depends on the length of the formatted abstract. Don tells me that the practical upper limit for an on-line databank is about 6000 citations. Regarding rate of growth of the databank, I can only tell you that our project is funded currently for 4 years, and we are at the end of the first year now.

5s

[ji] : If I were a researcher in your area, and performed a search to find a list of relevant citations, would I be able to get additional help in obtaining the program evaluations themselves?

5t

[RWH] : We will keep a copy of all program evaluations in the databank in our project files. I don't anticipate we will have the funds and staff required to meet the need for copies to all users. However, the databank will provide complete bibliographic information and will also provide name and address of the source.

5u

[ji] : Bob, maybe you could say a few words about how you envision your user community and perhaps even the ARPANET community interacting with your databank. What would you like to see happen?

5v

[RWH] : We are mainly interested in users who have something
to do with the provision of mental health services or their
evaluation. We see the users acting independently with reference
to the databank. That means they would do their own searches,
rather than asking us to do the searches for them. The larger ARPA
community may be interested in the information retrieval aspects
of our use of ARPANET and perhaps can suggest ways in which it can
be improved.

                                                                    5w

[ji] : Are there any particular areas where the Network could
better assist you in the evolution of your databank and its access
mechanism?

                                                                    5x

[RWH] : We are starting to receive inquiries from potential
users regarding how they become ARPANET users. We need to develop
a response to these queries, and in some cases this will involve a
fair amount of user education for those who are not acquainted
with the system. Will there be any problem for users who wish to
gain access to the ARPANET?

                                                                    5y

[ji] : The most accurate response I can give to that is to
point to the example of NLM's MEDLINE service. Persons who are
interested in access to MEDLINE through ARPANET generally contact
the nearest TIP and attempt to negotiate access to the Net through
them. In general, if they are non-commercial organizations, they
evidence little trouble. With commercial organizations, there is
not a simple answer that I am aware of at this time. Those
commercial organizations that have Government contract sponsorship
may obtain entry through that sponsorship, those that do not,
unfortunately, there is no easy answer there.

                                                                    5z

[RWH] : The major portion of our users will be in the
non-commercial category, so it sounds like little problem. Would
private practitioners (psychiatrists, psychologists) be regarded
as commercial users?

                                                                    5a@

[ji] : Bob, I am afraid there is no good model for that. The
best approach may be to inquire formally of ARPA relative to a
policy in that area. To the best of my knowledge, this has not
come up yet. If you like, I would be happy to investigate that on
your behalf.

                                                                    5aa

[RWH] : Thank you. I would appreciate it. I don't think I
have further questions at this time. When we are ready to activate
the databank next year, I will be in touch.

5ab

[ji] : Fine. I would very much invite you to give the ARPANET
News an article at such a time as you are ready to accommodate
users.

5ac

(symposium)   Third Data Communications Symposium
                 A Report by Dr. David Wood [MITRE]

6

"Data Networks: Analysis and Design," was the theme of the Third
Data Communications Symposium sponsored by the IEEE Computer
Society and ACM, held 13-15 November 1973 in St. Petersburg,
Florida. The previous meetings, in 1969 and 1971, were known as
"Symposiums on Problems in the Optimization of Data Communications
Systems," so some progress in optimization has been made since
then.

6a

The beach resort location drew a capacity attendance in excess of
250. Testimony to the quality of the papers was shown by the
steady attendance throughout the meeting, despite the temptations
of sun and Gulf beaches.

6b

Summaries of some of the papers follow. The Proceedings are
available from the IEEE Computer Society, ACM and IEEE.

6c

(arpa) Review of papers on ARPANET

6d

Two papers dealt directly with ARPANET: one from the University
of Illinois and the other from Bolt, Beranek and Newman. The
subject of the Illinois paper, by W. Bouknight et al, is the
ARPA Network Terminal System (ANTS). ANTS, which is built
around a PDP-11, supports a wide range of terminals and
peripheral hardware, and provides users with access to the
various host computers on ARPANET. The hardware organization
and software organization are described in the paper, together
with the capabilities of the command language as seen by the
user. Finally, plans for future development of ANTS are
discussed. ARPANET sites currently or shortly employing ANTS
systems are, Belvoir, BRL, and Livermore, in addition to
Illinois. See the September 1973 issue of ARPANET News for an
interview on the subject of ANTS.

6d1

The BBN paper, by W. Crowther et al, entitled, "Reliability
Issues in the ARPA Network," recounts the various types of
reliability problems experienced since inception of the network
and approaches used to overcome them. Changes made to the IMP
communications subnet over the years in order to improve
reliability are summarized, and the current impact of failures
in the various components of the network are addressed.
Finally, the paper describes the reliability considerations in
the design of the new high-speed IMP.

6d2

(other)   Other selected Papers

6e

Papers were presented on a variety of aspects of networking,
including packet switching, circuit switching, loop networks,
data communications systems, teleprocessing systems, interfaces
and simulation.

6e1

Two networks previously rarely described in the literature were
discussed: a packet-switching network in France known as
Cyclades; and a loop network at the National Security Agency.

6e2

Much interest was shown in a data communications system known
as Data Route being offered by Bell Canada which essentially
multiplexes users data traffic, with notable savings to users
with low data rates, such as 110 and 300 baud. (not in
proceedings). One of the several papers from Japan presents a
good analysis of the trade-offs between circuit and packet
switching networks.

6e3

A paper by A.G. Fraser at Bell Laboratories continues the theme
of his July 1972 Communications of the ACM article, discussing
the need for a new communications interface between computers
and data communications systems. A particular interface which
meets the objectives of such a new interface is described. The
paper may prove to be one of the most significant at the
symposium if measured by the frequency of reference in the
future.

6e4

(extra)   ARPANET News Supplement [New Feature]

                                                                  7

    To serve the purpose of providing a forum for articles which may
    be inappropriate for the ARPANET News either because of length or
    because they are directed at a subset of the readership, a new
    feature is being added with this issue. The feature is a
    supplement to the News which will not be distributed to the
    hardcopy mailing but, which will be available for viewing online
    or for printing online. To view the supplement online, type when
    in NIC Query: b[ring]<help>extra<CR>, or for viewing and/or
    printing in NLS, L[oad] F[ile] <help>extra CA.

    Additionally, the supplement will serve the purpose of being an
    online repository of past ARPANET News articles of longer term
    informational value. These articles will be contained in a
    separate section.

    The current contents of the supplement are given in the following
    two contents listings:

                                                                  7a

    (supplement)   Supplementary Articles

    (humanities)   Article devoted to Human-Computer Interaction

                                                                  7b

    (cumulative)   Historical Past News Articles

    (illinois)   Description of University of Illinois Work
    (uk-ics)   The University College, London
    (usc-isi)   USC Information Sciences Institute
    (bbn-net)   Status Report on the TERMINAL IMP
    (using)   ARPANET USERS Interest Group Charter
    (kuo)   An Online Interview with Dr. Frank KUO [see aloha]
    (cmu)   Carnegie-Mellon Computer Science Department
    (aloha)   The ALOHA System
    (nbs)   Online Interview with IRA Cotton of NBS
    (netjour)   Network Journal Submission and Delivery

                                                                  7c

(bbn)   Featured Site: BBN-TENEX
                   ....by Jerry Burchfiel [BBN]

8

The BBN-TENEX site is operated by Bolt, Beranek and Newman's
Computer Science Division. The facilities and staff are separate
from those of BBN-NET, which is operated by the BBN Computer
Systems Division, and which will be surveyed in a future article.

8a

Started in 1948 as a two-man partnership, BBN became a
corporation in 1953 and a publicly held company in 1961; the
company was listed on the American Stock Exchange in 1970. In the
quarter of a century since BBN was founded, the Company has
earned an excellent reputation for the high quality of its
scientific and technical activities. The Company's original
activity of consulting in architectural acoustics and noise
control has flourished through the years and today the business
includes a wide diversity of other activities encompassing
services and special products related to acoustics and computer
technology. BBN employs more than 550 persons in six U.S. cities.
Each year the Company serves hundreds of clients, with results of
BBN's efforts to be found in countries throughout the world, in
space, and in the ocean.

8b

BBN's Computer Science Division has a staff of 50 full-time and 12
part-time employees. The bulk of the division's support comes from
the Advanced Research Projects Agency of the Department of
Defense, but a variety of research efforts are underway for other
sponsors. These areas of effort include intelligent computer aided
instruction, robot studies, transportation systems, programming
languages, and semantic networks.

8c

Our ARPA research falls into four main categories: the TENEX
Operating System, Distributed Computation, Speech Understanding,
and Speech Compression.

8d

1.   TENEX Operating System

8e

The TENEX system was developed in 1969 to serve as an inexpensive
research facility which is both powerful and flexible. TENEX
provides virtual memory, a hierarchy of processes for each job, a
pseudointerrupt system for interprocess communication, and a
highly human-engineered command language. This system has proved
to be such a popular research tool that there are (as of November
1973) twelve TENEX systems in operation, ten of which are
currently hosts on the ARPANET. The system is described in more
detail in [1], [2].

8f

We are currently engaged in an exploration of the impact of the
ARPANET on integrated multi-computer operations with respect to
the TENEX operating system. Two complementary areas of our
investigation are:

8g

How can TENEX systems be coupled across the ARPANET to provide a
more powerful and reliable distributed computing environment?

8h

How should the hardware and software modules of TENEX be mapped
onto a network environment to provide the most flexible and
cost-effective distributed computing service?

8i

Investigations in the second area are concerned with augmenting
the basic architecture of a TENEX system to make best use of a
network environment. This involves the modularization of the
system into stand-alone functional components which execute on
separate pieces of hardware, and which are connected only by
communications protocols across the ARPANET.

8j

The first such factorization is the separation of peripherals and
the device processes which control them from the facility which
provides user computation service. With this architecture, a
user's peripherals and the tightly coupled processes which control
them are local to him, while his user process can be executing at
any remote TENEX service site. If he happens to be local to some
service site, his device processes can execute there while his
user computation proceeds elsewhere.

8k

However, for reasons of economy of hardware and operation, these
device processes are better executed on a network mini-host rather
than a major TENEX service center.

8l

This approach also promises more reliable TENEX service through
flexibility: if a service site goes out of operation, the
mini-host can obtain the same computation service from any other
TENEX service site on the network. Conversely, since each service
site can provide computation service to many such mini-hosts on
the network, the loss of one such mini-host only means that a
small fraction of the users are isolated.

8m

The major research required in this area is the development of
protocols which are sufficiently powerful, efficient, extensible
and robust to couple the user processes and the device processes.

8n

2. Distributed Computatiion

8o

Distributed computing is a kind of computing in which two or more
separate (and possibly geographically remote) parts work
cooperatively to perform a particular computational function.

8p

In the area of distributed computation we are investigating issues
such as: what new requirements does the network environment place
on operating systems; what sort of functions are best implemented
in a distributed way; how can such functions best be partitioned
into parts; what sorts of interactions should occur between the
parts (protocol design, interprocess communication); how can the
collection of parts be controlled (i.e., started, stopped,
debugged); how should data bases be organized in a distributed
environment; what should the user interface to a distributed
system be? Our approach is to study these issues in a practical
context by constructing and experimenting with distributed systems
for the ARPANET. McROSS, a distributed system for air traffic
simulation studies [3] is one such system.

8q

We are developing the RSEXEC (Resource Sharing Executive) system
which acts to couple the individual TENEX hosts so that they
operate like a single multi-host TENEX system and, in addition,
serves as a sophisticated network command language interpreter for
TIP users [4,5,6].

8r

Our long term goal is to acquire an understanding of the issues
noted above so that we can develop techniques which will make it a
routine matter to program, debug and maintain distributed systems.

8s

3.   Speech Understanding

8t

The speech understanding project at BBN is part of a five year
ARPA effort which is being coordinated among several ARPA sites by
the Speech Understanding Research (SUR) Steering Committee. Our
research involves integrating capabilities in signal processing,
phonology, syntax, and semantics into a prototype system to
understand continuous spoken utterances in limited semantic
domains. We have developed a good feeling for the scope of the
problems through an approach of "incremental" simulation, and have
developed a design which we think will be effective. We are in the
process of implementing and evolving this design.

8u

Under the area of English Language Processing, we are continuing
research on understanding of natural language, including the
investigation of the properties of the transition network grammar
model, the continued development of a grammar of English within
the transition network formalism, the investigation of the
semantics of natural English, and the acoustical and phonological
analysis of continuous speech.

8v

Although each of these areas is an ongoing research area in its
own right, we will for the next few years be directing our studies
in such a way as to support the development of a prototype
computer system for answering spoken English questions and
responding correctly to spoken English instructions. We are
continuing developing this system and to perform experiments to
determine performance tradeoffs for different strategies and
different types of applications. In the past year we have made
considerable progress in designing and implementing our first cut
system, and have an operating prototype system. There still
remains considerable additional research, refinement and
improvement of programs, and incorporation of results of prosodic
and phonological research required in order to produce the viable
speech understanding prototype which is the target of the ARPA
five year development effort.

8w

4. Speech Compression

8x

In the speech compression project we have as our goal the design
of a time-asynchronous (i.e. variable transmission rate) digital
vocoder. The performance of the vocoder will be judged according
to three factors:

8y

The transmission bit rate.   8z

The quality of the synthesized speech.   8a@

The cost of implementation in terms of computation load.

8aa

Although the last factor is of considerable importance for a
hardware implementation, we have taken the attitude that hardware
computation costs are rapidly decreasing and hence we have placed
the cost of computation as the least crucial of the three factors
above. This is reflected in the fact that all our computations are
performed in floating point arithmetic on a 36-bit computer. Of
course, the transmitted parameters are all quantized to reduce the
transmission rate. Therefore, our main aim is to minimize the
transmission bit rate while maintaining the good quality of the
synthesized speech. We emphasize here that the transmission rate
is expected to be variable depending on the properties of the
changing speech signal. However, we expect the transmission rate
to have a low average as well as a low upper bound.

8ab

We are looking into the interesting possibility of using vocoded
speech as input to a speech understanding system. Much of the
acoustic analysis that is currently being performed at BBN is the
same for both the speech compression project and the speech
understanding project. So, the future possibility of using the
same analysis for both purposes is indeed a real one.

8ac

In addition to its research activities, the BBN Computer Science
Division also operates the BBN-TENEX Service Facility. Service is
provided to network users. Potential users should contact the
operations manager (Steve Chipman) at BBN.

8ad

The primary computer at this site is a PDP-10 with a memory size
of 192K 36-bit words. Also included is a hardware "pager" which
allows user access to a virtual memory of 256K for each process.

8ae

Peripheral equipment includes:

    Paging drum of 1.56 million words with an average
        access time of about 16.7 milliseconds
    8 Calcomp 215 disk packs — 74 million words
    A 64-line teletype scanner
    Two magnetic tape drives (7-track tape,
        200/556/800 bpi)
    Two DEC tape drives
    Paper tape reader and punch
    Line printer (132 columns, 600 lines/minute)
    Calcomp 695 11" Drum Plotter

                                                              8af

Network users and local users currently compete equally for use of
the resources of the system. Usual peak local usage is centered
around 1200 and 1800 EST or EDT on weekdays. BBN-TENEX is a seven
day a week, 24 hours a day service with the exception of eight
hours of hardware maintenance every Sunday night starting at 2300
EST.

                                                              8ag

Long-term online storage is available to network users on magnetic
disc. (The disc storage is backed up by daily tape dumps, but
offline magnetic tape storage is not currently available to
users.) A total of about 5 million 36-bit words of storage will be
available. Text is normally packed five 7-bit characters per
storage word.

                                                              8ah

The following is a list of available TENEX documentation.
Purchase of this documentation can be made with a purchase order
or check made out and sent to BBN.

                                                              8ai

The TENEX Users Guide (TUG) contains writeups on all subsystems
written at BBN except BBN LISP. The TUG index also contains a list
of subsystems not written by BBN with a reference to the manual
that contains the appropriate information.

                                                              8aj

The TENEX JSYS Manual defines all of the monitor calls which exist
in the TENEX system.

                                                              8ak

The TENEX Executive Manual contains all the EXEC commands that a
user needs to communicate with TENEX.

                                                              8al

BBN LISP Manual contains extensive documentation on the LISP system.

8am

E&S Display Software Manual contains information on the Evans & Sutherland Display System.

8an

The TENEX Monitor Manual is a technical summary of the TENEX monitor.

8ao

Manuals are updated periodically and new versions are announced via memoranda which are sent to all users of the system.

8ap

Manuals of interest to the beginner are the EXEC Manual, TENEX Users Guide, and the DECsystem 10 Handbooks. The following handbooks are available directly from DEC:

8aq

User's Handbook
Mathematical Handbook
Assembly Language
Cobol Language

8ar

REFERENCES

8as

[1] Bobrow, Daniel G., J. D. Burchfiel, D.L. Murphy, and R.S. Tomlinson, "TENEX, a Paged Time Sharing System for the PDP-10", Communications of the ACM, Volume 15, No. 3, March 1972.

8at

[2] Murphy, Daniel L., "Storage Organization and Management in TENEX," Bolt Beranek and Newman, Cambridge, Mass., FJCC 1972.

8au

[3] Thomas, Robert, D.A. Henderson, "McROSS — a multi-computer programming system", Proc 1972. AFIPS SJCC.

8av

[4] Thomas, Robert, "A Resource Sharing Executive for the ARPANET," Proc. 1973 AFIPS National Computer Conference.

8aw

[5] Thomas, Robert, "New RSEXEC Release", ARPANET News, September
1973, Issue 7.

                                                                    8ax

[6] McKenzie, A., "Status Report on the Terminal IMP", ARPANET
News, November 1973, Issue 9.

                                                                    8ay

(forum)   Institute for the Future : Computer Conferencing

                ....Jacques F. Vallee

9

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.

9a

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 questionaire structure.

9b

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.

9c

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

9d

Program documentation is provided on-line by typing a question
mark at any point. Users wishing to experiment with the
pre-release version of FORUM are welcome to contact The Institute
For the Future.

9e

(tenex)   New Tenex Release

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

                                                                        10

    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.

                                                                        10a

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

                                                                        10b

    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.

                                                                        10c

    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. 10d

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

                                                                        10e

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

                                                                        10f

    Ephemerons: A .SAV file can be declared ephemeral or not
    ephemeral by the commands:
    @EPHEMERAL (file) <file-name>   and
    @NOT EPHEMERAL (file) <file-name>

                                                                        10g

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 efect 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.

10h

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.

10i

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

10j

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

10k

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

10l

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.

10m

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

10n

```
@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.

10o

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.

10p

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

10q

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

10r

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.

10s

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 extensions, 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.

10t

For more information on the format of CCL commands,
see the DECsystem-10 Users' Handbook.

10u

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

10v

@DESCRIBE <item>

where <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
categories. 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, ...

10w

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.

10x

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:

10y

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

10z

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

10a@

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

10aa

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

                                                                10ab

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

                                                                10ac

(sussex)   London TIP Connection
       Copy of Typescript [Also see RFC #588/NIC 20217]

11

The London TIP, SUSSEX, Host 42 decimal, or 52 octal, can now be
reached by ARPANET users. See the following trial TENEX Telnet
Typescript, showing 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.

11a

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

11b

(ants)   Extracts from ANTS Users Group News for November

                                                                      12

   (steer)   Formation of ARPA-IPT ANTS Development
             Steering Committee

                                                                      12a

      At the request of Steve Crocker of the ARPA-IPT office, a
      committee of potential and planned ANTS users has been formed
      to represent ARPA's interests. The committee will provide
      technical suggestions for the extension and improvement of
      ANTS' capabilities. Any ANTS user (current, planned, or
      possible) may direct suggestions or comments to
      DCROCKER@USC-ISI or DHC thru NIC Journal. Readers are invited
      to see Volume 1, Number 3, November 1973, issue of the ANTS
      Users Group News for a list of ANTS General Specifications
      developed by the committee.

                                                                      12a1

   (users)   ANTS Users Group Meeting in March

                                                                      12b

      An ANTS Users Group Meeting will be held in late March. A date
      for a two-day session in Urbana will be announced in January.
      Anyone interested in ANTS design, development, acquisition, or
      support will be welcome. Inquiries should be directed to: Karl
      Kelley, NTS Project, Center for Advanced Computation, Advanced
      Computation Building, University of Illinois at
      Urbana-Champaign, Urbana, Illinois 61801.

                                                                      12b1

   (status)   ANTS II Development Status

                                                                      12c

      All level 0 and a few basic Level 2 functions have been checked
      out and appear operational. Completion of ANTS II.0 involves
      debugging of the terminal handler and the Level 1 functions
      which it exercises, which has begun; and transfer of TELNET and
      the NCP from ANTS I, which has yet to be done.

                                                                      12c1

   (staff)   New NTS Project Staff

                                                                      12d

On 1 November, Karl C. Kelley rejoined the staff of the
Center's Network Terminal Systems Project. Karl was formerly
Network Technical Liasion for the Center and will now be
responsible for project activities concerned with user
interface and, in particular, bringing much needed direction to
the area of documentation and user education. Karl will assume
editorship of the ANTS Users Group News with its next issue.

12d1

(multics)   Multics Address Change [MAP]

13

From: Padlipsky.CompNet at MIT-Multics

13a

We will be changing the Network address of MIT-Multics from 6 to
44 (decimal) on Monday, December 17, 1973. Please make any
necessary table and program changes then, and accept our apologies
for the inconvenience.

13b

The change was necessitated by the facts that 1) there were some
nine uses for the four ports on IMP 6, making a second MIT IMP
desirable; 2) there were four very active Hosts on IMP 6, making
the shift of at least one of them to the new, less busy IMP
desirable; and 3) the new Multics machine is some 2000 feet from
the old IMP, making it the logical candidate for the move.

13c

It is likely that we will have one or two additional test sessions
on the new IMP prior to the changeover date. These will be
announced in our "message of the day", and would only affect --
temporarily -- users who cannot employ numeric Host addresses
directly.

13d

(neted)   NETED Status Report [MAP]

14

Response to my RFC 569 proposing a simple, common context editor
for ARPA Network Servers has been extremely good. As of this
writing, there are four implementations of NETED reported as
running and two more which I've been told are being worked on.
Subject to possible glitch correction, available are:

14a

1) Multics version. This is the original of the proposal. Written
in PL/I, the implementation is documented in Chapter 4 of Part   I
of the Multics Programmers' Manual. For further information,
contact me.

14b

2) TENEX version. This was ready a day or two after the RFC was
published, probably because its implementer is an active member of
the Network User Interest Group who had seen the RFC in draft
form. Written in SAIL, it offers "prompts", a "q" request for
quitting out, and a "g" request for getting an old file, in
addition to the basic package. For further information, contact
Jim Calvin (Case-Western Reserve).

14c

3) TSS version. This implementation has an instructive history: it
is derived from the standard editor on the Ames 67, which derives
from the CP/CMS editor, which in turn derives from the original
CTSS editor, from which "eds" (NETED's original name on Multics)
was derived. The morals would seem to be that it's not all that
big a world, and that the Not Invented Here Syndrome is apparently
curable. Written in "bare bones 360 Assembly Language". For
further information, contact Wayne Hathaway (Ames-67).

14d

4) TSO version. I haven't checked this one out yet, but assume
that if it had any bugs they will have been taken care of by the
time you read this. Written in F level PL/I. For further
information, contact Chris Thomas or Bob Braden (UCLA-CCN).

14e

Of course, all of us would be quite willing to share our
implementations with other Servers. Presumably, the TENEX
version will be picked up by other TENEX Hosts now that they know
it's available -- and could be easily altered to suit 10/50 Hosts.

14f

The other two reported implementations are an NLS version (Dick Watson at the NIC), which will feature some sort of sensible way of establishing the end of an NLS "statement" (I've suggested either a line ending in a period or a question mark, or a line consisting of only a "%" as alternatives to treating newline as the end of statement indicator); and an ITS version (Mike Brescia at MIT-DMCG), which will bring the other three MIT Hosts into the fold.

14g

A small "users' manual" is currently in draft form in my home directory. I'll be submitting it to the NIC shortly for Resource Notebook distribution. (Contact me if you can't wait.)

14h

With any luck at all, there'll be more good NETED news in the next edition of the NEWS, but that's it for now.

                    Mike Padlipsky
                    MIT-Multics

14i

Editor's note: Mike, You forgot Dave Grothe's UCSD NETED that is going to be CRASH Proof....See him at Illinois-ANTS. We understand that the program is almost finished, still a bit to do on the crash proofing. When the B6700 version comes up, there will be: (1) a help verb which essentially parrots the description portion of RFC 569, and (2) the help text will include a description of the crash proofing technique for the skeptical [as recounted by Dave.]   14j

(abstracts)   Abstracts of Recent Documents of Interest

15

Mike Padlipsky (Massachusetts Institute of Technology,
MIT-MULTICS). NETED: A Common Editor for the ARPA Network, NWG/RFC
559, USING Note 7. 7p. NIC 18972, 19932.

A proposal and spec for a simple-minded text editor
that can be quickly and easily implemented on a network
wide basis, designed for the naive user of line
oriented systems. To the user NETED will appear
the same regardless of which system is maintaining
it. The draft of this document was published as
USING Note 1, NIC 16890.

15a

Abhay Bhushan, Neal D. Ryan (Massachusetts Institute of
Technology, MIT-DMS). Using MIT-MATHLAB MACSYMA From MIT-DMS
MUDDLE - An Experiment in Automated Resource Sharing. NWG/RFC 578.
13p. 8 October 1973. NIC 19501.

A description of an experiment in non-trivial
automated resource sharing between dissimilar
systems. The goal was to interface the MUDDLE
System at MIT-DMS to the MACSYMA System at MIT-MATHLAB,
in such a manner that the MUDDLE-user is not required
to know anything about the ARPANET, MATHLAB, or
even MACSYMA. The program performs all the required tasks
of connecting to MATHLAB, login, and using MACSYMA. The
resource-sharing program (whose existence the user need
not be aware of) does the translation from the MUDDLE
"prefix" form to the MACSYMA "infix" form on I/O.
This ability allows the MACSYMA resources to be completely
integrated into MUDDLE to the extent that parts of the
same computation can be performed by MACSYMA and other
parts by MUDDLE.

15b

W. L. Price (National Physical Laboratory, Division of Computer
Science, Teddington, Middlesex, England). Simulation of a
Packet-Switched Data Network Operating Under Isarithmic Control
With a Revised Link and Node Protocol. 28p. September 1973. NPL
Report COM 71. NIC 18927.

No extracts from this report may be reproduced.
Interested persons should contact the author.

15c

Lawrence G. Roberts (Advanced Research Projects Agency,
Information Processing Techniques). Dynamic Allocation of
Satellite Capacity Through Packet Reservation. In: Selected
Papers: International Advanced Study Institute, Computer
Communication Networks, edited by R. L. Grimsdale and Frank F.
Kuo. University of Sussex, Brighton, England (publisher). 17p.
September 1973. NIC 18920.

   A packet reservation system which takes full
   advantage of the multiaccess broadcast properties
   of satellite systems is described and analytically
   compared to four other techniques: A fully connected
   channelized net; a store and forward star net; a Time
   Division Multi-Access (TDMA) technique; and the ALOHA
   random access packet broadcast technique. Under almost
   all traffic loads, the packet reservation technique
   is 3 to 500 times cheaper for the same performance
   than the other techniques (unless less than .55
   second's delay is required, in which case the ALOHA
   technique is superior).

                                                              15d

Jacques Vallee, Robert Johansen, Hubert M. Lipinski, Richard H.
Miller (The Institute For the Future, Menlo Park, California).
ARPA Policy-Formulation Interrogation Network - Semiannual
Technical Report, 15 September 1973. 38p. NIC 18879.

   A review of practical experience in using the
   teleconferencing program FORUM, both at The Institute
   For the Future and within the ARPANET community. Three
   sections describe: (1) the current program status; (2)
   user experience to date; and (3) implementation plans
   beyond the present Release 4. An analysis of user
   reaction at USC-ISI is described and background data
   are given.

                                                              15e

Leonard Kleinrock (University of California at Los Angeles,
Computer Science Department). Performance Models and Measurements
of the ARPA Computer Network. In: Selected Papers: International
Advanced Study Institute, Computer Communication Networks, edited
by R. L. Grimsdale and Frank F. Kuo. University of Sussex,
Brighton, England (publisher). 25p. September 1973. NIC 18922.

   Described are some of the analytical modeling
   procedures found useful in predicting the
   performance of the ARPANET; these predictions are
   then related to simulation and measurements results.
   Performance evaluation methods found useful are
   summarized. Techniques developed have allowed
   better evaluation of system performance. Some
   of the remaining problems are described.

                                                              15f

Frank E. Heart, S. M. Ornstein, W. R. Crowther, W. B. Barker (Bolt
Beranek and Newman Inc.). A New Minicomputer/Multiprocessor for
the ARPA Network. In: Selected Papers: International Advanced
Study Institute, Computer Communication Networks, edited by R. L.
Grimsdale and Frank F. Kuo. University of Sussex, Brighton,
England (publisher). 46p. September 1973. NIC 18921.

   A new minicomputer/multiprocessor to serve as a
   switching node in the ARPANET involves 14 Lockheed
   SUE processors, interconnected with memory and I/O by
   "bus couplers" which serve as a distributed and
   expandable "switch". A novel control scheme permits
   complete elimination of processor specialization
   producing a highly modular system.

                                                              15g

Carnegie-Mellon University, Pittsburgh, Pennsylvania. Computer
Science Research Review 1972-73, Annual Report. 64p. September
1973. NIC 19202.

   Contains 4 original short papers on design augmentation,
   scheduling of concurrent processes, analytical
   models in the study of computing systems, cognitive
   psychology as applied to memory and problem
   solving.

                                                              15h

Vint G. Cerf (Stanford University, Engineering Research
Laboratory), D. D. Cowen, R. C. Mullin, and R. G. Stanton.
Topological Design Considerations in Computer Communication
Networks. In: Selected Papers: International Advanced Study
Institute, Computer Communication Networks, edited by R. L.
Grimsdale, Frank F. Kuo. University of Sussex, Brighton, England
(publisher). 18p. September 1973. NIC 18923.

   Describes use of a linear graph model to establish
   a lower bound on delay and vulnerability for
   computer communication networks. The lower bound on
   delay is characterized by measuring the average minimum
   path length in the regular-type graphs considered.
   Vulnerability of these networks is shown to be equal
   to the valence of one of the vertices for the trivalent
   graphs, and it is conjectured that this is true
   for higher valences. Designers may usefully measure
   this network against these so-called "ideal"
   networks.

                                                                   15i

John Barden (Case Western Reserve University, Cleveland, Ohio).
The Computing and Information Sciences and Engineering, Status
Report 1972-73. 55p. Summer 1973. NIC 19201.

   Describes facilities and functions of the Department
   of Computing and Information Sciences. There are two
   major computing systems, a Univac 1108 and the DEC
   PDP-10 (TENEX), which supports the CASE-10 node of the
   ARPANET. Work is mentioned of two related organizations,
   a programming consultant firm, Consultants in Computer
   Technology, Inc., operated by experienced undergraduates,
   and Chi Corporation, a wholly owned subsidiary of the
   University, which serves the larger community through
   wholesaling computer services. Contains a list of titles
   of 19 master's theses issued in 1972-73.

                                                                   15j

Susan Poh (MITRE Corporation, Westgate Research Park, McLean,
Virginia). Teaching and Learning Chinese in a Computer
Environment. 28p. October 1973. M73-207. NIC 19204.

An experimental system establishes a set of
instructional tools, designed to enable the
teaching and learning of Chinese in a systematic,
simple, and effective way. Computer graphics
display is used to present the basic strokes to
the student and shows how the strokes are
systematically combined to form Chinese ideograms.
The system consists of special purpose software,
LOGO, on a PDP-10, a TTY-like terminal for alphanumeric
input, and an IMLAC mini-computer as a graphic display
terminal.

15k

(packet)   PCI Receives FCC License

16

Packet Communications Inc. (PACKET) was authorized on November 14,
1973, by the Federal Communications Commission to institute and
operate a packet-switched communications network service in the
contiguous United States by leasing lines from established
communications common carriers.

16a

In a separate but related action, AT&T was granted a waiver of the
Rules to permit it to modify its private line tariff to allow
composite data service vendors such as PACKET to lease lines from
AT&T without resale and third party use restrictions.

16b

PACKET's customers will be able to connect their computers to the
PACKET network through a Packet Switching Processor (PSP). Access
from terminals will be provided through Terminal Access Processors
(TAPs). The entire network will be supervised and monitored by two
network operations centers (NOCs), one in the Boston area and the
other in the western United States. Channels leased from AT&T and
other carriers will be used to link the customer computers and
terminals to the PSPs and TAPs as well as to interconnect the
PSPs. Terminal connections may also be made through the dial
telephone network. Charges will be based on the number of packets
sent, independent of distance.

16c

The FCC said that the entry of "value added" carriers such as
PACKET into the communications market would provide new and
improved facilities to meet customer data communications
requirements. It noted that there remained a variety of issues to
be resolved with respect to the terms and conditions of such
"value added" proposals. including the use and resale of
facilities. The FCC said that it planned to institute a proceeding
in the near future to consider these and other "value added"
carrier matters.

16d

The Commission also said that it planned to follow a liberal
policy for authorizing multi-purpose packet switching networks,
pointing out that there was a growing market to be served which
existing common carrier service could not satisfy.

16e

All of the PACKET staff would like to take this opportunity to
thank all of our friends in the ARPA Network Community. The
pioneering efforts of those involved in the ARPANET has made it
possible for us to bring these plans for reliable and cost
effective computer communications to the commercial marketplace.
Our thanks to all those who have so generously supported us.

16 f

...... Received from Ralph Alter, 23 November 1973.   16 g

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

17

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.

17a

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 'nicknames' as well, and this is not
prohibited. The standard list is required and others are
permitted.

17b

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.

17c

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:

17d

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

17e

        fUnNyNaMe-sameas-funnyname   (TYMNET)Host-186

                                                                    17 f

        (NPLNET)beebleberry-and-associates

                                                                    17 g

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.

                                                                    17 h

Note that no embedded blanks are permitted.

                                                                    17 i

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.

                                                                    17 j

ARPANET Newsletter Revisions

MEMO :   ARPANET Newsletter revisions   NIC 20480

1

The purpose of this memo is to specify changes in the ARPANET
Newsletter and to re-formalize working relationships for its
development, reproduction and distribution both on-line and in
hard-copy.

2

These changes are intended to expedite development of the Newsletter
and at the same time eliminate many unnecessary steps. The following
changes are specified:

3

One copy of the Newsletter shall be employed for both hard-copy
and on-line distribution. Heretofore, four copies plus occasional
others, plus the file for the cover, plus the file for the
updates. usually seven online files for each current issue were
required. this necessitated more effort than needed, resulted in
unnecessary delays in making the news available to the readership
and used excessive directory disc space.

3a

The link for the ARPANET Newsletter and updates shall be moved to
the HELP directory. The NIC-WORK and NIC directories are not
available to MITRE and therefore preclude MITRE from easily
accomplishing its specified responsibility. This change will
provide for facile updates to the on-line version and will allow
MITRE, who is charged by ARPA to produce the Newsletter, to make
necessary editorial changes as required. This change will relieve
the NIC staff of the need to expend effort on the Newsletter
preparation and provide for more efficient publication.

3b

The on-line version of the Newsletter shall be available on-line
by the first (1st) of each month as opposed to the current date of
the fifth (5th). Masters for the hard copy issue shall be
available to the NIC on the first of each month and shall be
processed expeditiously. The hardcopy will be mailed by the tenth
(10th) of the month as opposed to the current date of the
seventeenth (17th). All contributions to the current months issue
will be submitted by the 27th of the prior month for
incorporation.

3c

To clarify working relationships, the following responsibilities
and volunteered effort are noted:

3d

The MITRE Corporation is charged by ARPA for overall direction
and production of the ARPANET Newsletter.

3d1

The NIC has assumed responsibility to assist in the issuance of
the Newsletter and for its hardcopy distribution to Liasions,
Station Agents, Network Associates, and other designated
persons. The NIC also supplies disc space for issuance and
storage of the Newsletter and for on-line access to it by the
ARPANET Community.

3d2

Jeanne B. North has assumed responsibility for production of
the Calendar of Events section of the Newsletter.

3d3

Mil E. Jernigan has assumed responsibility for the development
of the Abstracts of Documents of Current Interest section of
the Newsletter.

3d4

The following additional persons make contributions to the
on-going Newsletter effort as their time allows:

3d5

Dave H. Crocker (UCLA-NMC)   3d5a

Mike A. Padlipsky (Multics)   3d5b

Susan S. Poh (MITRE)

3d5c

From time to time, as experience in producing the Newsletter and
user feedback warrant, statements of editorial policy may be
formed to ensure increased utility to the community from the
ARPANET Newsletter. The promulgation of policy for the Newsletter
is the function of the MITRE Corporation; however, policy will be
developed as a cooperative venture under its direction, with final
approval by ARPA/IPT when required.

3e

The December issue is provided as an appendix to illustrate the new
format for the ARPANET Newsletter. It will be noted that this file
format will serve both the purpose of the on-line and hard copy
issues concurrently. Further, major rubrics under which articles and
news items were previously contained will only appear in future
issues containing such items or articles.

4

I would like to take this opportunity to extend my sincere thanks to the NIC for its support of the Newsletter this past year and to the staff who have made the Newsletter a viable vehicle for helping to get the network community to better understand itself. It is our sincere hope that these changes will result in a better Newsletter with less expenditure of resources.

5

Most sincerely, ...Jean

6

APPENDIX: December Issue

7

[Complete except for insertion of the Calendar of Events]

8

<HELP>ARPANETNEWS.NLS;5, 24-NOV-73 14:13 JI ;
The Monthly Online Newspaper for the ARPANET Online Community

****

ARPANET News

December 1973

Issue 10

NIC 20479

Published for the purpose of encouraging and fostering
intersite communication and interaction
in the ARPA Computer Network

Sponsored by: ARPA/IPT
Distributed by: ARPA Network Information Center
               Stanford Research Institute
               Menlo Park, California 94025

Produced by: Interested Volunteer
  Assistance from the ARPANET Community

ARPANET News, December 1973, Issue 10, NIC 20479

****
9

(contents)   ARPANET NEWS   December 1973   Issue 10   NIC 20479

Online Viewing Instructions ---

To see any item, type: s[how] multics : (for example)
To print statement numbers, type: v[:Type V:]mG <CR>
To obtain hard copy, type: O[utput] D[evice] T[eletype] from NLS
   after first loading the file <help>arpanetnews.nls;1
Printing time, TI Silent 700 using ODT, as above, 00:56:07
To return to Contents, type: s[how] contents <CR>
To stop printing at any point, type: ↑O, Control O.

                ******** GREETINGS ********

From the Staff of the ARPANET News, we extend our very best wishes
for a MERRY CHRISTMAS and prosperous NEW YEAR and good health.

                ....The Staff   9a

(memo)   To ARPANET News Readership

                                                         9b

   As a step towards improving the ARPANET News and ensuring its
   on-going viability and ability to better serve the community,
   this issue starts a new format and was developed with new
   procedures to minimize unnecessary effort in providing it to
   you in a timely fashion.

                                                         9b1

Changes you will notice include:

(1) A contents section itemizing all included articles [to allow you to "get the news" online with less effort.]

(2) A change in the hard-copy issue as well as the on-line issue. We have reformatted to allow one file to answer the needs of all distribution requirements as a step towards reducing unnecessary expenses while ensuring earlier availability to you the readership.

(3) Deletion, within any issue, of mention to "Columns" if there is no news within the column. This does not mean a discontinuance of columns, just a desire to optimize the format for each issue and eliminate frustration in accessing on-line, a column that is vacuous.

9b2

If any of these changes inconveniences your access to the news, please send comments to ISELI@ISI or JI through the NIC Journal. Any further suggestions on how to improve the quality and utility of YOUR Newsletter would be appreciated and will receive consideration.

......The Editor

9b3

(information) Information About the Publication

9c

Hardcopy issue published monthly
Online updates available weekly
Sponsored by: ARPA/IPT
Distributed by: ARPA Network Information Center
               Stanford Research Institute
               Menlo Park, California 94025

9c1

Editorial Staff:
Headed by Jean Iseli (MITRE) with volunteers who lend their
welcome and appreciated assistance, as occasion arises:
   Jeanne B. North (NIC
   David H. Crocker (UCLA)
   Mil Jernigan (NIC)
   Mike A. Padlipsky (MIT-MULTICS)
   Susan Poh (MITRE)
   The girls in the NIC Office
      Marcia Keeney
      Judy Cooke
      Carole Guilbault

9c2

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.

9c3

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.

9c4

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.

9c5

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.

9c6

(calendar)   Events of Network Interest

9d

This Column is incomplete and will be inserted prior to
publication.

9d1

Jan. 3-4, 1974 : USING Meeting : Network Information Center

9d2

(ucla-ph)   Interview with Dr. Bob Hetherington UCLA
                    School of Public Health

9e

The purpose of this interview with Dr. Bob Hetherington, School
of Public Health, UCLA, is to provide community awareness of a
Network resident data base and access mechanism in the area of
mental health. The interview was conducted by Jean Iseli on 21
November 1973. Persons desiring more detailed information are
invited to contact Dr. Bob Hetherington, UCLA; (213) 825-5379.

9e1

[ji] : Dr. Hetherington, maybe we could start by your
telling the readership of the plans, progress, and expectations
of your effort in the area of mental health.

9e2

[RWH] : Our research group at UCLA has received a 4-year
grant from NIMH to survey the field of mental health
evaluations. We are primarily interested in programs designed
by professionals in the mental health field to meet problems in
18 areas of mental health. Some of these areas are: alcoholism,
drug abuse, suicide, schizophrenia, autism, and divorce.

9e3

However, our interest is not limited to the strictly
psychiatric areas, since we also include programs designed to
meet social problems. The idea occurred to us during the first
year of operation that it might be a very exciting
communications tactic to employ the ARPANET in the
dissemination of our findings. As we visualize the method, we
would establish our databank of program evaluations in mental
and social health here at UCLA and open it to use by government
officials, elected representatives, practitioners,
administrators, professors and researchers (and students) via
the ARPANET.

9e4

In this way, both published and unpublished research findings in the area of our concern would be accessible to interested parties according to their own needs since the user would be able to sort and list any aspect of the databank he wished. With the great delays presently encountered with publishing materials, it is frequently the case that timely research findings do not reach key people until the occasion for their use has long passed. We also would be greatly interested in enhancing a 2-way flow of communication between users and the databank via the network in order that we can be as user oriented as possible.

9e5

To summarize, we are surveying program evaluations in the broad area of mental and social health (presently from 1969 onward) in order to provide a computer-based databank of these evaluations coded on relevant aspects of study design, measurement techniques employed and outcome.

9e6

In addition to the coded information for each evaluation, we will provide a formatted abstract of the evaluation. The user will be able to search the databank on the coded items (10), either separately or in combination. He will receive, as a result of his search, all evaluations in the databank which fit the codes he has specified. Each citation produced will contain authors, title, source and the formatted abstract (although the user may choose to have the abstract omitted if he wishes.

9e7

[ji] : That is indeed a forward looking and fine use of the ARPANET to benefit this research community. Are the access mechanisms you envision to be employed by users to be interactive or will the user specify his search criteria and in turn have that submitted for batch execution?

9e8

[RWH] : Let me describe the procedure from the layman's
perspective. The program being developed here at CCN by Donald
M. Long which we demonstrated last week for a site committee
from HEW was fully interactive. In other words, the user merely
responded to a series of questions built into the program until
all specifications for the search were defined, and then the
search was conducted immediately and the results printed out on
our CRT console. It is our hope that this type of service can
be arranged for all users of the databank, and therefore we
plan to keep the databank on-line here at all times. Initial
use of the databank should be about February or March of 1974.
                                                            9e9

[ji] : Bob, could you discuss the various aspects of user
feedback you envision to ensure a real user orientation for the
capability. For example, will users be able to augment your
basic databank with comments relative to their found utility
for assorted citations?
                                                           9e10

(RHW) The major difficulty I perceive with current
databanks such as MEDLARS is that the user is unable to define
for himself the specifications of the search. I would hope that
reactions from users would keep us informed of the flexibility
and utility of the setup, and suggest ways in which it might be
improved. Additionally I would hope users would help keep us
updated as new programs are enlarged and designed so that they
may be entered into the databank immediately.
                                                           9e11

[ji] : Will Donald's program provide a means for users to
provide feedback on-line while they are interacting with it, or
do you envision a separate mechanism for that?
                                                           9e12

[RWH] : Don Long is here so I'll ask him. He says, "I
think we would want a separate program for updating primarily
so we can edit what we get before it goes into the databank."
                                                           9e13

[ji] : Yes, I can well understand the desirability of
editing user input to your databank — what I was wondering was,
is there going to be a mechanism provided for users to comment
to you on assorted reactions to the service you are providing
or comment on the appropriateness of the information they
derive?
                                                           9e14

[RWH] : Yes. That seems an essential part of our cconcept.
But in addition to users making comments about their use of the
databank, we will also want to provide them with information
about our procedures (planned and accomplished) hopefully
through the implementation of an on-line newsletter to be
distributed over the ARPANET.

9e15

[ji] : Do you envision, in time, an interface between your
databank and its access mechanism and other data banks in
allied fields?

9e16

[RWH] : From a programmer's perspective, such an interface
is quite feasible. However, from a substantive perspective the
problem is that other databanks do not contain the type of
evaluative information which we require in our databank. Hence,
practically such an interface will be provided through our
searching of all other relevant databanks for a range of
appropriate publications, and then coding them to our
specifications. This has been a part of our methodology from
the start in order to cover the 18 fields as thoroughly as
possible.

9e17

[ji] : Bob, is it possible at this time to give an
indication of the size of the databank as it will be in
January-February and maybe indicate how rapidly you envision
its growth?

9e18

[RWH] : When the databank is first opened for limited use,
we think about 60 relevant journals. A citation at the moment
runs about 2000 bytes. Variable length depends on the length of
the formatted abstract. Don tells me that the practical upper
limit for an on-line databank is about 6000 citations.
Regarding rate of growth of the databank, I can only tell you
that our project is funded currently for 4 years, and we are
at the end of the first year now.

9e19

[ji] : If I were a researcher in your area, and performed
a search to find a list of relevant citations, would I be able
to get additional help in obtaining the program evaluations
themselves?

9e20

[RWH] : We will keep a copy of all program evaluations in the databank in our project files. I don't anticipate we will have the funds and staff required to meet the need for copies to all users. However, the databank will provide complete bibliographic information and will also provide name and address of the source.

9e21

[ji] : Bob, maybe you could say a few words about how you envision your user community and perhaps even the ARPANET community interacting with your databank. What would you like to see happen?

9e22

[RWH] : We are mainly interested in users who have something to do with the provision of mental health services or their evaluation. We see the users acting independently with reference to the databank. That means they would do their own searches, rather than asking us to do the searches for them. The larger ARPA community may be interested in the information retrieval aspects of our use of ARPANET and perhaps can suggest ways in which it can be improved.

9e23

[ji] : Are there any particular areas where the Network could better assist you in the evolution of your databank and its access mechanism?

9e24

[RWH] : We are starting to receive inquiries from potential users regarding how they become ARPANET users. We need to develop a response to these queries, and in some cases this will involve a fair amount of user education for those who are not acquainted with the system. Will there be any problem for users who wish to gain access to the ARPANET?

9e25

[ji] : The most accurate response I can give to that is to point to the example of NLM's MEDLINE service. Persons who are interested in access to MEDLINE through ARPANET generally contact the nearest TIP and attempt to negotiate access to the Net through them. In general, if they are non-commercial organizations, they evidence little trouble. With commercial organizations, there is not a simple answer that I am aware of at this time. Those commercial organizations that have Government contract sponsorship may obtain entry through that sponsorship, those that do not, unfortunately, there is no easy answer there.

9e26

[RWH] : The major portion of our users will be in the
non-commercial category, so it sounds like little problem.
Would private practitioners (psychiatrists, psychologists) be
regarded as commercial users?

9e27

[ji] : Bob, I am afraid there is no good model for that.
The best approach may be to inquire formally of ARPA relative
to a policy in that area. To the best of my knowledge, this has
not come up yet. If you like, I would be happy to investigate
that on your behalf.

9e28

[RWH] : Thank you. I would appreciate it. I don't think I
have further questions at this time. When we are ready to
activate the databank next year, I will be in touch.

9e29

[ji] : Fine. I would very much invite you to give the
ARPANET News an article at such a time as you are ready to
accommodate users.

9e30

(symposium)   Third Data Communications Symposium
                  A Report by Dr. David Wood [MITRE]

9f

"Data Networks: Analysis and Design," was the theme of the
Third Data Communications Symposium sponsored by the IEEE
Computer Society and ACM, held 13-15 November 1973 in St.
Petersburg, Florida. The previous meetings, in 1969 and 1971,
were known as "Symposiums on Problems in the Optimization of
Data Communications Systems," so some progress in optimization
has been made since then.

9f1

The beach resort location drew a capacity attendance in excess
of 250. Testimony to the quality of the papers was shown by the
steady attendance throughout the meeting, despite the
temptations of sun and Gulf beaches.

9f2

Summaries of some of the papers follow. The Proceedings are
available from the IEEE Computer Society, ACM and IEEE.

9f3

(arpa)   Review of papers on ARPANET

9f4

Two papers dealt directly with ARPANET: one from the
University of Illinois and the other from Bolt, Beranek and
Newman. The subject of the Illinois paper, by W. Bouknight
et al, is the ARPA Network Terminal System (ANTS). ANTS,
which is built around a PDP-11, supports a wide range of
terminals and peripheral hardware, and provides users with
access to the various host computers on ARPANET. The
hardware organization and software organization are
described in the paper, together with the capabilities of
the command language as seen by the user. Finally, plans for
future development of ANTS are discussed. ARPANET sites
currently or shortly employing ANTS systems are, Belvoir,
BRL, and Livermore, in addition to Illinois. See the
September 1973 issue of ARPANET News for an interview on the
subject of ANTS.

9f4a

The BBN paper, by W. Crowther et al, entitled, "Reliability
Issues in the ARPA Network," recounts the various types of
reliability problems experienced since inception of the
network and approaches used to overcome them. Changes made
to the IMP communications subnet over the years in order to
improve reliability are summarized, and the current impact
of failures in the various components of the network are
addressed. Finally, the paper describes the reliability
considerations in the design of the new high-speed IMP.

9f4b

(other)   Other selected Papers

9f5

Papers were presented on a variety of aspects of networking,
including packet switching, circuit switching, loop
networks, data communications systems, teleprocessing
systems, interfaces and simulation.

9f5a

Two networks previously rarely described in the literature
were discussed: a packet-switching network in France known
as Cyclades; and a loop network at the National Security
Agency.

9f5b

Much interest was shown in a data communications system known as Data Route being offered by Bell Canada which essentially multiplexes users data traffic, with notable savings to users with low data rates, such as 110 and 300 baud. (not in proceedings). One of the several papers from Japan presents a good analysis of the trade-offs between circuit and packet switching networks.

9f5c

A paper by A.G. Fraser at Bell Laboratories continues the theme of his July 1972 Communications of the ACM article, discussing the need for a new communications interface between computers and data communications systems. A particular interface which meets the objectives of such a new interface is described. The paper may prove to be one of the most significant at the symposium if measured by the frequency of reference in the future.

9f5d

(humanities)   Article devoted to Human-computer Interaction

9g

The Humanities Column is being initiated with this copy of the ARPANET News and will be devoted to articles, as the occasion arises, on the human use of computers and computer networks for exploratory research for the benefit of the social, cultural, and ecological environment. It is the desire of the editors to consider submissions for this column from both the ARPANET community and the readership of the News. The column is being initiated as a step in the direction of providing specific evidence that the technology being evolved within the ARPA community is being transfered to many areas wherein the life of man can be and is enriched.

9g1

The first article was selected as an example of how a portion
of the research conducted by Dr. Prentiss Knowlton and some
members of the University of Utah, Computer Science Department,
promises to provide human augmentation to the area of music.
The article, with the express permission of Dr. Knowlton of the
Jet Propulsion Laboratory in Pasadena, California, highlights
the innovative use of a Digital Equipment Corporation PDP-8, a
teletype terminal, a used pipe organ console, and seven ranks
of pipes from the Pasadena Neighborhood Church to augment the
human use of organs. Text for the article was extracted and
re-worded from the September issue of "The Console", a monthly
publication. Human relationships, founded at the University of
Utah, lead to research in the field of electronically and
computer augmented music. Through continued research and
development of the ARPANET facilities, these relationships
promoted privately conducted research in the computer driven,
human augmented musical system described here.

9g2

Background.......Dr. Prentiss Knowlton [Pren], a 28 year old
scientist and computer consultant at JPL, is the motivating
force behind the development of the organ-computer system. His
original stimulus was provided while a graduate student at the
University of Utah. A computer had been connected to the
Schober electronic organ and display scope for the purpose of
showing music notation as one played the organ keyboard, and
for programming the computer to actually play the organ. Other
students, along with Pren, who made valuable contributions to
this work include Alan Ashton, who devised methods for
programming a wide variety of music into the computer; David
Ashton, who explored the use of the system as a teaching tool;
and David Bennion, who designed the electronic circuits needed
to connect the computer to the organ.

9g3

After Pren obtained the necessary components, Robert Bennion
came to California to apply his electronics experience with the
computer-organ system in Utah to the pipe organ. The results
were so successful that it was possible to duplicate many of
the Utah results which were achieved under the aegis of a
National Endowment for the Humanities grant. In addition,
numerous pieces of music, such as organ works of Bach, which
had been programmed by music students at the University of
Utah, could be played on the pipe organ. This has made it
possible for Pren to use the many man-months of development
effort both at the University of Utah and in Pasadena as a
jumping off point for future development.

9g4

System Description......The system is designed for easy
electronic connection of the organ pipes. Each rank of pipes
is on a separate windchest. Windchests are easily separated one
from the other with wingnuts. A cable from the computer drives
a black box full of electronics. The box has 30 computer
connectors. Each computer connector can handle 24 pipes. In
total, the box can handle 720 pipes. The cable between the
computer and the box is 100 feet in length, thus allowing the
computer and organ to be separated by that distance.

9g5

The operation of the system is quite like that of a player
piano. One merely mounts the desired punched paper tape onto
the teletype and starts the computer. A command structure
enables the performance to be varied. The computer also
monitors and analyzes the music on the tape for correctness
(like number of beats per measure). Errors are punched on the
teletype so that they can be corrected. The computer reads a
dozen measures ahead to enable uninterrupted operations while
changing tapes. With the extension to magnetic tape as opposed
to paper tape, enough information could be recorded to drive
the organ for at least a week.

9g6

Certain philosophical goals have influenced the development of
this system. In contrast to previous computer music work which
employed automation to synthesize various electronic sounds,
this system uses the computer to control real mechanical and
natural sound. Natural sounds are very complex and difficult to
imitate. Thus, it seems more natural to control natural sounds
directly. Also, in contrast to other work focused on the
computer composition of music, this system focuses on human
compositions. Complex electronic sounds even for the duration
of only a second can take the largest computers available today
as long as a minute to compute, resulting in an hour of
computer time for the production of a minute's music. On the
other hand, very little computing is required to control a pipe
organ, since the sounds of the pipes are available to be turned
on and off like switches.

9g7

Applications of the Current System.........Possible
applications of this system are numerous, ranging from the
performance of rare and unusual music that could otherwise not
be performed because of lack of human skill, to serving as a
composer's aid. The following are a few possible application
instances:

9g8

At the University of Utah, the music department has considered
making it a requirement for a student who submits a musical
composition for a graduate degree to also submit a tape
recording of a computer performance of his piece.

9g9

The computerized organ has been used to accompany a solo
instrumentalist. For example, the system is programmed to play
the accompaniment for Haydn's Trumpet Concerto #1, and a live
trumpeter has played with the computer. By the same token, it
is possible to play music at the organ console on pipes plugged
into it. In this way, the computer can be used to augment or
assist an organist's playing. As an example of this training
aid, an aspiring young organist could have the computer leave
out the pedal part for him to add, or the student could play
the manuals.

9g10

The use of this computer music system to play music of
arbitrary complexity opens the door to new horizons for
experimental composers. Imagine for example, six independent
melodies being played on each of six ranks of pipes and in six
different rhythms. Such a composition would pose no difficulty
for the computer but would pose immense problems for the human.
9g11

New vistas in the field of music for this creation have just
begun to be opened. At the outset, it offers great, even
unlimited potential when applied commercially. The system can
be adapted to various methods of operation, and in compact form
can be used anywhere. But even more exciting are the potentials
inherent in having relieved man of his physical limitations and
having made possible the auditory realizations of the wildest
flights of his musical spirit.

9g12

Postscript........A native of California, Dr. Prentiss Knowlton
was born and raised in Alhambra. His education has taken him
around the country: a BS degree in Mathematics from California
State College, an MS degree in Applied Mathematics from Harvard
University, and a PhD from the University of Utah in Computer
Science. In the field of music, especially organ and piano, he
is well qualified, having studied classical piano and organ for
over ten years. Readers who desire more information on Pren's
work are invited to address inquiries to him, either through
the NIC Journal System to PHK, or to his adress at: 2310 El
Moreno Street, La Crescenta, California, 91214.

9g13

(bbn)   Featured Site: BBN-TENEX
                ....by Jerry Burchfiel [BBN]

9h

The BBN-TENEX site is operated by Bolt, Beranek and Newman's
Computer Science Division. The facilities and staff are
separate from those of BBN-NET, which is operated by the BBN
Computer Systems Division, and which will be surveyed in a
future article.

9h1

Started in 1948 as a two-man partnership, BBN became a
corporation in 1953 and a publicly held company in 1961; the
company was listed on the American Stock Exchange in 1970. In
the quarter of a century since BBN was founded, the Company
has earned an excellent reputation for the high quality of its
scientific and technical activities. The Company's original
activity of consulting in architectural acoustics and noise
control has flourished through the years and today the business
includes a wide diversity of other activities encompassing
services and special products related to acoustics and computer
technology. BBN employs more than 55 persons in six U.S.
cities. Each year the Company serves hundreds of clients, with
results of BBN's efforts to be found in countries throughout
the world, in space, and in the ocean.

9h2

BBN's Computer Science Division has a staff of 50 full-time and
12 part-time employees. The bulk of the division's support
comes from the Advanced Research Projects Agency of the
Department of Defense, but a variety of research efforts are
underway for other sponsors. These areas of effort include
intelligent computer aided instruction, robot studies,
transportation systems, programming languages, and semantic
networks.

9h3

Our ARPA research falls into four main categories: the TENEX
Operating System, Distributed Computation, Speech
Understanding, and Speech Compression.

9h4

1.   TENEX Operating System

9h5

The TENEX system was developed in 1969 to serve as an
inexpensive research facility which is both powerful and
flexible. TENEX provides virtual memory, a hierarchy of
processes for each job, a pseudointerrupt system for
interprocess communication, and a highly human-engineered
command language. This system has proved to be such a popular
research tool that there are (as of November 1973) twelve TENEX
systems in operation, ten of which are currently hosts on the
ARPANET. The system is described in more detail in [1], [2].

9h6

We are currently engaged in an exploration of the impact of the
ARPANET on integrated multi-computer operations with respect to
the TENEX operating system. Two complementary areas of our
investigation are:

9h7

How can TENEX systems be coupled across the ARPANET to provide
a more powerful and reliable distributed computing environment?

9h8

How should the hardware and software modules of TENEX be mapped
onto a network environment to provide the most flexible and
cost-effective distributed computing service?

9h9

Investigations in the second area are concerned with augmenting
the basic architecture of a TENEX system to make best use of a
network environment. This involves the modularization of the
system into stand-alone functional components which execute on
separate pieces of hardware, and which are connected only by
communications protocols across the ARPANET.

9h10

The first such factorization is the separation of peripherals
and the device processes which control them from the facility
which provides user computation service. With this
architecture, a user's peripherals and the tightly coupled
processes which control them are local to him, while his user
process can be executing at any remote TENEX service site. If
he happens to be local to some service site, his device
processes can execute there while his user computation proceeds
elsewhere.

9h11

However, for reasons of economy of hardware and operation,
these device processes are better executed on a network
mini-host rather than a major TENEX service center.

9h12

This approach also promises more reliable TENEX service through
flexibility: if a service site goes out of operation, the
mini-host can obtain the same computation service from any
other TENEX service site on the network. Conversely, since each
service site can provide computation service to many such
mini-hosts on the network, the loss of one such mini-host only
means that a small fraction of the users are isolated.

9h13

The major research required in this area is the development of
protocols which are sufficiently powerful, efficient,
extensible and robust to couple the user processes and the
device processes.

9h14

2. Distributed Computatiion

9h15

Distributed computing is a kind of computing in which two or
more separate (and possibly geographically remote) parts work
cooperatively to perform a particular computational function.

9h16

In the area of distributed computation we are investigating
issues such as: what new requirements does the network
environment place on operating systems; what sort of functions
are best implemented in a distributed way; how can such
functions best be partitioned into parts; what sorts of
interactions should occur between the parts (protocol design,
interprocess communication); how can the collection of parts be
controlled (i.e., started, stopped, debugged); how should data
bases be organized in a distributed environment; what should
the user interface to a distributed system be? Our approach is
to study these issues in a practical context by constructing
and experimenting with distributed systems for the ARPANET.
McROSS, a distributed system for air traffic simulation studies
[3] is one such system.

9h17

We are developing the RSEXEC (Resource Sharing Executive)
system which acts to couple the individual TENEX hosts so that
they operate like a single multi-host TENEX system and, in
addition, serves as a sophisticated network command language
interpreter for TIP users [4,5,6].

9h18

Our long term goal is to acquire an understanding of the issues
noted above so that we can develop techniques which will make
it a routine matter to program, debug and maintain distributed
systems.

9h19

3. Speech Understanding

9h20

The speech understanding project at BBN is part of a five year
ARPA effort which is being coordinated among several ARPA sites
by the Speech Understanding Research (SUR) Steering Committee.
Our research involves integrating capabilities in signal
processing, phonology, syntax, and semantics into a prototype
system to understand continuous spoken utterances in limited
semantic domains. We have developed a good feeling for the
scope of the problems through an approach of "incremental"
simulation, and have developed a design which we think will be
effective. We are in the process of implementing and evolving
this design.

9h21

Under the area of English Language Processing, we are
continuing research on understanding of natural language,
including the investigation of the properties of the transition
network grammar model, the continued development of a grammar
of English within the transition network formalism, the
investigation of the semantics of natural English, and the
acoustical and phonological analysis of continuous speech.

9h22

Although each of these areas is an ongoing research area in its own right, we will for the next few years be directing our studies in such a way as to support the development of a prototype computer system for answering spoken English questions and responding correctly to spoken English instructions. We are continuing developing this system and to perform experiments to determine performance tradeoffs for different strategies and different types of applications. In the past year we have made considerable progress in designing and implementing our first cut system, and have an operating prototype system. There still remains considerable additional research, refinement and improvement of programs, and incorporation of results of prosodic and phonological research required in order to produce the viable speech understanding prototype which is the target of the ARPA five year development effort.

9h23

4.   Speech Compression

9h24

In the speech compression project we have as our goal the design of a time-asynchronous (i.e. variable transmission rate) digital vocoder. The performance of the vocoder will be judged according to three factors:

9h25

The transmission bit rate.   9h26

The quality of the synthesized speech.   9h27

The cost of implementation in terms of computation load.

9h28

Although the last factor is of considerable importance for a
hardware implementation, we have taken the attitude that
hardware computation costs are rapidly decreasing and hence we
have placed the cost of computation as the least crucial of the
three factors above. This is reflected in the fact that all our
computations are performed in floating point arithmetic on a
36-bit computer. Of course, the transmitted parameters are all
quantized to reduce the transmission rate. Therefore, our main
aim is to minimize the transmission bit rate while maintaining
the good quality of the synthesized speech. We emphasize here
that the transmission rate is expected to be variable depending
on the properties of the changing speech signal. However, we
expect the transmission rate to have a low average as well as a
low upper bound.

9h29

We are looking into the interesting possibility of using
vocoded speech as input to a speech understanding system. Much
of the acoustic analysis that is currently being performed at
BBN is the same for both the speech compression project and the
speech understanding project. So, the future possibility of
using the same analysis for both purposes is indeed a real one.

9h30

In addition to its research activities, the BBN Computer
Science Division also operates the BBN-TENEX Service Facility.
Service is provided to network users. Potential users should
contact the operations manager (Steve Chipman) at BBN.

9h31

The primary computer at this site is a PDP-10 with a memory
size of 192K 36-bit words. Also included is a hardware "pager"
which allows user access to a virtual memory of 256K for each
process.

9h32

Peripheral equipment includes:

    Paging drum of 1.56 million words with an average
        access time of about 16.7 milliseconds
    8 Calcomp 215 disk packs - 74 million words
    A 64-line teletype scanner
    Two magnetic tape drives (7-track tape,
        200/556/800 bpi)
    Two DEC tape drives
    Paper tape reader and punch
    Line printer (132 columns, 600 lines/minute)
    Calcomp 695 11" Drum Plotter

9h33

Network users and local users currently compete equally for use
of the resources of the system. Usual peak local usage is
centered around 1200 and 1800 EST or EDT on weekdays. BBN-TENEX
is a seven day a week, 24 hours a day service with the
exception of eight hours of hardware maintenance every Sunday
night starting at 2300 EST.

9h34

Long-term online storage is available to network users on
magnetic disc. (The disc storage is backed up by daily tape
dumps, but offline magnetic tape storage is not currently
available to users.) A total of about 5 million 36-bit words of
storage will be available. Text is normally packed five 7-bit
characters per storage word.

9h35

The following is a list of available TENEX documentation.
Purchase of this documentation can be made with a purchase
order or check made out and sent to BBN.

9h36

The TENEX Users Guide (TUG) contains writeups on all subsystems
written at BBN except BBN LISP. The TUG index also contains a
list of subsystems not written by BBN with a reference to the
manual that contains the appropriate information.

9h37

The TENEX JSYS Manual defines all of the monitor calls which
exist in the TENEX system.

9h38

The TENEX Executive Manual contains all the EXEC commands that
a user needs to communicate with TENEX.

9h39

BBN LISP Manual contains extensive documentation on the LISP
system.

9h40

E&S Display Software Manual contains information on the Evans &
Sutherland Display System.

9h41

The TENEX Monitor Manual is a technical summary of the TENEX
monitor.

9h42

Manuals are updated periodically and new versions are announced
via memoranda which are sent to all users of the system.

9h43

Manuals of interest to the beginner are the EXEC Manual, TENEX
Users Guide, and the DECsystem 10 Handbooks. The following
handbooks are available directly from DEC:

9h44

 User's Handbook
 Mathematical Handbook
 Assembly Language
 Cobol Language

9h45

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9h46

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9h47

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9h48

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[4] Thomas, Robert, "A Resource Sharing Executive for the
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[5] Thomas, Robert, "New RSEXEC Release", ARPANET News,
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9h51

[6] McKenzie, A., "Status Report on the Terminal IMP", ARPANET
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9h52

(forum)   Institute for the Future : Computer Conferencing

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

9i

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.

9i1

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 questionaire structure.

9i2

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.

9i3

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

9i4

Program documentation is provided on-line by typing a question
mark at any point. Users wishing to experiment with the
pre-release version of FORUM are welcome to contact The
Institute For the Future.

9i5

(tenex)   New Tenex Release

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

9j

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.

9j1

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

9j2

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.

9j3

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.

9j4

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

9j5

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

9j6

Ephemerons: A .SAV file can be declared ephemeral or not
ephemeral by the commands:
@EPHEMERAL (file) <file-name>   and
@NOT EPHEMERAL (file) <file-name>

9j7

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 efect 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.

9j8

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.

9j9

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

9j10

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

9j11

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

9j12

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.

9j13

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

9j14

@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 skiped 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.

9j15

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

9j16

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

9j17

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

9j18

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 arugment has ever been used, Exec will complain.

9j19

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.

9j20

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

9j21

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

9j22

@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, ...

9j23

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 extened to 10 minutes.   On a
BREAK (links) command, his period is cut back to the
usual shorter time.

9j24

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

9j25

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

9j26

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

9j27

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

9j28

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

9j29

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

9j30

(sussex)   London TIP Connection
     Copy of Typescript [Also see RFC #588/NIC 20217]

9k

The London TIP, SUSSEX, Host 42 decimal, or 52 octal, can now
be reached by ARPANET users. See the following trial TENEX
Telnet Typescript, showing 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.

9k1

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

                                                            9k2

(ants)   Extracts from ANTS Users Group News for November

                                                            9l

      (steer) Formation of ARPA-IPT ANTS Development
               Steering Committee

                                                            9l1

At the request of Steve Crocker of the ARPA-IPT office, a
committee of potential and planned ANTS users has been
formed to represent ARPA's interests. The committee will
provide technical suggestions for the extension and
improvement of ANTS' capabilities. Any ANTS user (current,
planned, or possible) may direct suggestions or comments to
DCROCKER@USC-ISI or DHC thru NIC Journal. Readers are
invited to see Volume 1, Number 3, November 1973, issue of
the ANTS Users Group News for a list of ANTS General
Specifications developed by the committee.

911a

(users)   ANTS Users Group Meeting in March

912

An ANTS Users Group Meeting will be held in late March. A
date for a two-day session in Urbana will be announced in
January. Anyone interested in ANTS design, development,
acquisition, or support will be welcome. Inquiries should be
directed to: Karl Kelley, NTS Project, Center for Advanced
Computation, Advanced Computation Building, University of
Illinois at Urbana-Champaign, Urbana, Illinois 61801.

912a

(status)   ANTS II Development Status

913

All level 0 and a few basic Level 2 functions have been
checked out and appear operational. Completion of ANTS II.0
involves debugging of the terminal handler and the Level 1
functions which it exercises, which has begun; and transfer
of TELNET and the NCP from ANTS I, which has yet to be done.

913a

(staff)   New NTS Project Staff

914

On 1 November, Karl C. Kelley rejoined the staff of the
Center's Network Terminal Systems Project. Karl was formerly
Network Technical Liasion for the Center and will now be
responsible for project activities concerned with user
interface and, in particular, bringing much needed direction
to the area of documentation and user education. Karl will
assume editorship of the ANTS Users Group News with its next
issue.

914a

(multics)   Multics Address Change [MAP]

9m

From: Padlipsky.CompNet at MIT-Multics

9m1

We will be changing the Network address of MIT-Multics from 6
to 44 (decimal) on Monday, December 17, 1973. Please make any
necessary table and program changes then, and accept our
apologies for the inconvenience.

9m2

The change was necessitated by the facts that 1) there were
some nine uses for the four ports on IMP 6, making a second MIT
IMP desirable; 2) there were four very active Hosts on IMP 6,
making the shift of at least one of them to the new, less busy
IMP desirable; and 3) the new Multics machine is some 2000 feet
from the old IMP, making it the logical candidate for the move.

9m3

It is likely that we will have one or two additional test
sessions on the new IMP prior to the changeover date. These
will be announced in our "message of the day", and would only
affect -- temporarily -- users who cannot employ numeric Host
addresses directly.

9m4

(neted)   NETED Status Report [MAP]

9n

Response to my RFC 569 proposing a simple, common context
editor for ARPA Network Servers has been extremely good. As of
this writing, there are four implementations of NETED reported
as running and two more which I've been told are being worked
on. Subject to possible glitch correction, available are:

9n1

1) Multics version. This is the original of the proposal.
Written in PL/I, the implementation is documented in Chapter 4
of Part I of the Multics Programmers' Manual. For further
information, contact me.

9n2

2) TENEX version. This was ready a day or two after the RFC was
published, probably because its implementer is an active member
of the Network User Interest Group who had seen the RFC in
draft form. Written in SAIL, it offers "prompts", a "q"
request for quitting out, and a "g" request for getting an old
file, in addition to the basic package. For further
information, contact Jim Calvin (Case-Western Reserve).

9n3

3) TSS version. This implementation has an instructive history:
it is derived from the standard editor on the Ames 67, whcih
derives from the CP/CMS editor, which in turn derives from the
original CTSS editor, from which "eds" (NETED's original name
on Multics) was derived. The morals would seem to be that it's
not all that big a world, and that the Not Invented Here
Syndrome is apparently curable. Written in "bare bones 360
Assembly Language". For further information, contact Wayne
Hathaway (Ames-67).

9n4

4) TSO version. I haven't checked this one out yet, but assume
that if it had any bugs they will have been taken care of by
the time you read this. Written in F level PL/I. For further
information, contact Chris Thomas or Bob Braden (UCLA-CCN).

9n5

Of course, all of us would be quite willing to share our
implementations with other Servers. Presumably, the TENEX
version will be picked up by other TENEX Hosts now that they
know it's available -- and could be easily altered to suit
10/50 Hosts.

9n6

The other two reported implementations are an NLS version (Dick
Watson at the NIC), which will feature some sort of sensible
way of establishing the end of an NLS "statement" (I've
suggested either a line ending in a period or a question mark,
or a line consisting of only a "%" as alternatives to treating
newline as the end of statement indicator); and an ITS version
(Mike Brescia at MIT-DMCG), which will bring the other three
MIT Hosts into the fold.

9n7

A small "users' manual" is currently in draft form in my home
directory. I'll be submitting it to the NIC shortly for
Resource Notebook distribution. (Contact me if you can't wait.)
9n8

With any luck at all, there'll be more good NETED news in the
next edition of the NEWS, but that's it for now.

                    Mike Padlipsky
                    MIT-Multics

9n9

Editor's note: Mike, You forgot Dave Grothe's UCSD NETED that
is going to be CRASH Proof....See him at Illinois-ANTS.   9n10

(abstracts)   Abstracts of Recent Documents of Interest

9o

Mike Padlipsky (Massachusetts Institute of Technology,
MIT-MULTICS). NETED: A Common Editor for the ARPA Network,
NWG/RFC 559, USING Note 7. 7p. NIC 18972, 19932.

A proposal and spec for a simple-minded text editor
that can be quickly and easily implemented on a network
wide basis, designed for the naive user of line
oriented systems. To the user NETED will appear
the same regardless of which system is maintaining
it. The draft of this document was published as
USING Note 1, NIC 16890.

9o1

Abhay Bhushan, Neal D. Ryan (Massachusetts Institute of
Technology, MIT-DMS). Using MIT-MATHLAB MACSYMA From MIT-DMS
MUDDLE - An Experiment in Automated Resource Sharing. NWG/RFC
578. 13p. 8 October 1973. NIC 19501.

A description of an experiment in non-trivial
automated resource sharing between dissimilar
systems. The goal was to interface the MUDDLE
System at MIT-DMS to the MACSYMA System at MIT-MATHLAB,
in such a manner that the MUDDLE-user is not required
to know anything about the ARPANET, MATHLAB, or
even MACSYMA. The program performs all the required tasks
of connecting to MATHLAB, login, and using MACSYMA. The
resource-sharing program (whose existence the user need
not be aware of) does the translation from the MUDDLE
"prefix" form to the MACSYMA "infix" form on I/O.
This ability allows the MACSYMA resources to be completely
integrated into MUDDLE to the extent that parts of the
same computation can be performed by MACSYMA and other
parts by MUDDLE.

9o2

W. L. Price (National Physical Laboratory, Division of Computer
Science, Teddington, Middlesex, England). Simulation of a
Packet-Switched Data Network Operating Under Isarithmic Control
With a Revised Link and Node Protocol. 28p. September 1973. NPL
Report COM 71. NIC 18927.

No extracts from this report may be reproduced.
Interested persons should contact the author.

9o3

Lawrence G. Roberts (Advanced Research Projects Agency,
Information Processing Techniques). Dynamic Allocation of
Satellite Capacity Through Packet Reservation. In: Selected
Papers: International Advanced Study Institute, Computer
Communication Networks, edited by R. L. Grimsdale and Frank F.
Kuo. University of Sussex, Brighton, England (publisher). 17p.
September 1973. NIC 18920.

A packet reservation system which takes full
advantage of the multiaccess broadcast properties
of satellite systems is described and analytically
compared to four other techniques: A fully connected
channelized net; a store and forward star net; a Time
Division Multi-Access (TDMA) technique; and the ALOHA
random access packet broadcast technique. Under almost all
traffic loads, the packet reservation technique is 3 to
500 times cheaper for the same performance than the other
techniques (unless less than .55 second's delay is
required,
in which case the ALOHA technique is superior).

9o4

Jacques Vallee, Robert Johansen, Hubert M. Lipinski, Richard H.
Miller (The Institute For the Future, Menlo Park, California).
ARPA Policy-Formulation Interrogation Network - Semiannual
Technical Report, 15 September 1973. 38p. NIC 18879.

A review of practical experience in using the
teleconferencing program FORUM, both at The Institute
For the Future and within the ARPANET community. Three
sections describe: (1) the current program status; (2)
user experience to date; and (3) implementation plans
beyond the present Release 4. An analysis of user
reaction at USC-ISI is described and background data
are given.

9o5

Leonard Kleinrock (University of California at Los Angeles,
Computer Science Department). Performance Models and
Measurements of the ARPA Computer Network. In: Selected Papers:
International Advanced Study Institute, Computer Communication
Networks, edited by R. L. Grimsdale and Frank F. Kuo.
University of Sussex, Brighton, England (publisher). 25p.
September 1973. NIC 18922.

   Described are some of the analytical modeling
   procedures found useful in predicting the
   performance of the ARPANET; these predictions are
   then related to simulation and measurements results.
   Performance evaluation methods found useful are
   summarized. Techniques developed have allowed
   better evaluation of system performance. Some
   of the remaining problems are described.

                                                             9o6

Frank E. Heart, S. M. Ornstein, W. R. Crowther, W. B. Barker
(Bolt Beranek and Newman Inc.). A New
Minicomputer/Multiprocessor for the ARPA Network. In: Selected
Papers: International Advanced Study Institute, Computer
Communication Networks, edited by R. L. Grimsdale and Frank F.
Kuo. University of Sussex, Brighton, England (publisher). 46p.
September 1973. NIC 18921.

   A new minicomputer/multiprocessor to serve as a
   switching node in the ARPANET involves 14 Lockheed
   SUE processors, interconnected with memory and I/O by
   "bus couplers" which serve as a distributed and
   expandable "switch". A novel control scheme permits
   complete elimination of processor specialization
   producing a highly modular system.

                                                             9o7

Carnegie-Mellon University, Pittsburgh, Pennsylvania. Computer
Science Research Review 1972-73, Annual Report. 64p. September
1973. NIC 19202.

   Contains 4 original short papers on design augmentation,
   scheduling of concurrent processes, analytical
   models in the study of computing systems, cognitive
   psychology as applied to memory and problem
   solving.

                                                             9o8

Vint G. Cerf (Stanford University, Engineering Research
Laboratory), D. D. Cowen, R. C. Mullin, and R. G. Stanton.
Topological Design Considerations in Computer Communication
Networks. In: Selected Papers: International Advanced Study
Institute, Computer Communication Networks, edited by R. L.
Grimsdale, Frank F. Kuo. University of Sussex, Brighton,
England (publisher). 18p. September 1973. NIC 18923.

   Describes use of a linear graph model to establish
   a lower bound on delay and vulnerability for
   computer communication networks. The lower bound on
   delay is characterized by measuring the average minimum
   path length in the regular-type graphs considered.
   Vulnerability of these networks is shown to be equal
   to the valence of one of the vertices for the trivalent
   graphs, and it is conjectured that this is true
   for higher valences. Designers may usefully measure
   this network against these so-called "ideal"
   networks.

                                                            9o9

John Barden (Case Western Reserve University, Cleveland, Ohio).
The Computing and Information Sciences and Engineering, Status
Report 1972-73. 55p. Summer 1973. NIC 19201.

   Contains a list of titles of 19 master's theses
   issued in 1972-73.

                                                            9o10

Susan Poh (MITRE Corporation, Westgate Research Park, McLean,
Virginia). Teaching and Learning Chinese in a Computer
Environment. 28p. October 1973. M73-207. NIC 19204.

   An experimental system establishes a set of
   instructional tools, designed to enable the
   teaching and learning of Chinese in a systematic,
   simple, and effective way. Computer graphics
   display is used to present the basic strokes to
   the student and shows how the strokes are
   systematically combined to form Chinese ideograms.
   The system consists of special purpose software,
   LOGO, on a PDP-10, a TTY-like terminal for alphanumeric
   input, and an IMLAC mini-computer as a graphic display
   terminal.

                                                            9o11

ARPANET Newsletter Revisions

(J20480) 26-NOV-73 06:30;   Title: Author(s): Jean Iseli/JI;
Distribution: /JBN JCN DCE DHC JSP SDC2 JBP MEJ MDK RWW MAP SSP;
Keywords: ARPANET-NEWS-Revisions; Sub-Collections: MITRE-TIP NIC
SRI-ARC; Clerk: JI;
Origin: <HELP>MEMO.NLS;2, 25-NOV-73 11:45 JI ;

new procedures within XNLS

please read

1

The following is a list of some new procedures (and some extracted documentation) that ive added to ioexec that were needed to support some of the file manipulation commands.

2

Ive sumitted this to the journal in the hope of improving knowledge about the existance of procedures within NLS.

3

If any of these procedures are similar in function to existing procedures i would appreciate being informed of this so the appropriate action can be taken.

4

% ---- %

5

 (parseinput)   % parse input file link from user %

5a

  PROCEDURE

5a1

    (dp1, % text pointer to start of directory name %

5a1a

    dp2, % text pointer to end of directory name %

5a1b

    fp1, % text pointer to start of file name %

5a1c

    fp2, % text pointer to end of directory name %

5a1d

    udirname,   % address of string to get directory name %

5a1e

    ufilname,   % address of string to get file name %

5a1f

    uextname,   % address of string to get extension name %

5a1g

    uverno,   % address of string to get version
    number %

5a1h

    ulftovr,   % address of string to get remaining
    input %

5a1i

    uname,   % address of string to get completed
    file name %

5a1j

    flags   % bits saying which file fields had *s in them
    %

5a1k

    );

5a1l

  % FUNCTION %

5a2

% this procedure parses the input file link entered by a
user.   5a2a

the following defaults are supplied: 5a2b

   directory field defaults to null   5a2b1

      (this will force standard TENEX default of connected
      directory to apply.)   5a2b1a

   file name field has no defaults and null is an error   5a2b2

   extension name field defaults to NLS if not supplied   5a2b3

   version number field defaults to *   5a2b4

      (this will cause all versions of a file to be dealt
      with)   5a2b4a

   other fields default to null   5a2b5

      (this will force standard TENEX defaults to apply.)   5a2b5a

terminating a field with a ↑F forces recognition of that
specific field.   5a2c

terminating a field with a <ALT> forces recognition of that
specific field and causes remaining unspecified fields to
default to the above defaults.   5a2d

terminating a field with unspecified a space or an <EOL>
completes that specific field and causes remaining fields to
default to the above defaults. %   5a2e

(unprseinpt)   % parse jfn into individual strings %   5b

   PROCEDURE   5b1

      (fjfn,   % jfn of concerned file %   5b1a

      jfnflgs,   % left-half bits returned by gtjfn %   5b1b

      udirname,   % address of string to receive directory name
      %   5b1c

      ufilname,   % address of string to receive file name %   5b1d

      uextname,   % address of string to receive extension name
      %   5b1e

```
            uverno,              % address of string to receive version      5b1f
            number %

            ulftovr,             % address of string to receive
            remaining stuff %                                                 5b1g

            uname,               % address of string to receive
            complete name %                                                   5b1h

            flags            % address of cell to receive # indicating bits
            %                                                                 5b1i

            );                                                                5b1j

    (gthstn)    % returns host number for input string text pointers %       5c

        PROCEDURE                                                            5c1

            (hp1, % text pointer to start of host name %                      5c1a

            hp2   % text pointer to end of host name %                        5c1b

            );                                                                5c1c

        % ALGORITHM %                                                        5c2

            % if the input text pointers point to a null string then the
            host number of the local host is reaturned.                      5c2a

            This procedure also sets up the following globals:               5c2b

                hostni.LH - gets table number of HOSTN table for getab
                jsys                                                          5c2b1

                hostni.RH - gets number of entries in HOSTN table            5c2b2

                hostsi.LH - gets table number of HSTNAM table for getab
                jsys                                                          5c2b3

                hostsi.RH - gets number of entries in HSTNAM table           5c2b4

            %                                                                 5c2c

        % RETURNS %                                                          5c3

            % returns host number for input texp pointers (local host
            number if text pointers delimit a null string) or -1 for
            invalid host name input %                                        5c3a
```

3

(chkdev)   % returns FALSE if not a supported (disk) file %   5d

    PROCEDURE   5d1

        (fjfn % jfn of file to check %   5d1a

        );   5d1b

(chkpcs)   % check if * for extname and extname = "PC" %   5e

    PROCEDURE   5e1

        (fjfn,   % jfn of file to check %   5e1a

        flags % left half jfn flags of input %   5e1b

        );   5e1c

    % RETURNS %   5e2

        % returns FALSE if * was input for the extension name and
        the extension name is "PC" (i.e. this file is a partial
        copy); returns true otherwise %   5e2a

(jfnflink) % converts jfn to file link string %   5f

    PROCEDURE   5f1

        (fjfn,   % jfn of file %   5f1a

        jfnname,   % address of string to receive file link %   5f1b

        flags % flags for jfns jsys for which fields to put in link
        %   5f1c

        );   5f1d

(getpcjfn) % get jfn for pc of passed jfn %   5g

    PROCEDURE   5g1

        (fjfn,   % jfn of file %   5g1a

        pcjfn,   % address of variable to receive PC jfn %   5g1b

        errstring   % address of string to receive error messages
        %   5g1c

        );   5g1d

4

% FUNCTION %   5g2

   % get a jfn for the partial copy (if one exists) for the
   passed jfn %   5g2a

% RETURNS %   5g3

   % returns TRUE if no partial copy exists, or if partial copy
   exists and the file is locked by this user, or if a partial
   copy exists and this user is an enabled wheel; returns FALSE
   otherwise. %   5g3a

(isenabled) % determine if this user is an enabled wheel %   5h

   PROCEDURE;   5h1

   % RETURNS %   5h2

      % returns TRUE if this user is an enabled wheel; FALSE
      otherwise %   5h2a

(delflandpc)   % delete file (and partial copy) for input
jfns %   5i

   PROCEDURE   5i1

      (fjfn,   % jfn of file %   5i1a

      pcjfn,   % jfn of PC (or 0) %   5i1b

      erstrng   % address of string to receive error messages
      %   5i1c

      );   5i1d

   % ALGORITHM %   5i2

      % deletes files by changing the deleted bit in the FDB %   5i2a

   % RETURNS %   5i3

      % returns TRUE if file(s) deleted properly. On FALSE
      returns, writes erstrng with reason for failure and nothing
      is deleted %   5i3a

(undflandpc)   % undelete file (and partial copy) for input
jfns %   5j

   PROCEDURE   5j1

                (fjfn,   % jfn of file %   5j1a

                pcjfn,   % jfn of PC (or 0) %   5j1b

                erstrng   % address of string to receive error messages
                %   5j1c

                );   5j1d

        % ALGORITHM %   5j2

            % undeletes files by changing the deleted bit in the FDB %   5j2a

        % RETURNS %   5j3

            % returns TRUE if file(s) undeleted properly. On FALSE
            returns, writes erstrng with reason for failure and nothing
            is undeleted %   5j3a

(triflandpc)   % trim file (and partial copy) for input jfns
%   5k

        PROCEDURE   5k1

                (fjfn,   % jfn of file %   5k1a

                pcjfn,   % jfn of PC (or 0) %   5k1b

                nver, % number of versions to keep for each file %   5k1c

                erstrng   % address of string to receive error messages
                %   5k1d

                );   5k1e

        % ALGORITHM %   5k2

            % TRIMS files by using the DELNF jsys %   5k2a

        % RETURNS %   5k3

            % returns TRUE (and number of files deleted) if file(s)
            trimmed properly. On FALSE returns, writes erstrng with
            reason for failure and nothing is trimmed %   5k3a

new procedures within XNLS

(J20481) 24-NOV-73 18:23;   Title: Author(s): Kenneth E. (Ken)
Victor/KEV; Distribution: /NPG DCW; Sub-Collections: SRI-ARC NPG; Clerk:
KEV;
Origin: <VICTOR>NEW-PROCEDURES.NLS;3, 24-NOV-73 18:22 KEV ;

Mil and Jean:

    My rough skeleton article is in (uk-ics,anart,). I have filled
it out at the beginning to let you see style etc. If this does not
fit in with what you had in mind gentle criticism will be accepted   1

I forgot to ask one or two things... How long should it be? What
format do you want it in?   Plain NLS or with output processor
directives?   I hope to get it finished by about mid week as Peter K.
is visiting the US the following week, and would I feel sure like to
look at it first.   2

As I said all comments gratefully received

    Cheers .. Steve   3

ARPANET News Article

(J20482)   25-NOV-73 04:10;   Title: Author(s): Stephen R. Wilbur/SRW;
Distribution: /JI MEJ; Sub-Collections: NIC; Clerk: SRW;
Origin: <UK-ICS>MES2.NLS;1, 25-NOV-73 04:02 SRW ;

General Documentation

Marcia:

    Dean Meyer sugested that I contact you over L10 documentation.
However, I have been able to pick that up on-line. Our main problems
at present are general documentation of the network, and I thought
you might be able to help, or forward this on to someone who can.   1

At present we in the UK are trying to set up a collection of
generally useful documents for UK users. The bulk of the collection
is at present envisaged as being user manuals for various hosts and
systems on the network. Much of this information may be on-line, but
in looking around the NIC it seems that you mainly keep your own
documentation on-line and other hosts have their own systems. The
exception to this seems to be that almost all general network
documentation is on-line in some form at the NIC, but as I say our
primary interests at present are manuals.   2

Whilst we are willing to pick up any documentation which is on-line,
the real problem is in finding it. Is there any group in the
Journal sense which I can contact to request such information, or do
I have to go via the Resource notebook? Even that is not over
helpful, as sites do not generally list anyone responsible for
documentation. Have you any ideas? Is there anyone at the NIC who
would have a list of useful contacts in this sense?   3

If you have any ideas on this front, please contact me via Journal
ident (SRW).

    Cheers .. Steve Wilbur
            U. of London   4

(J20485) 25-NOV-73 04:56;   Title: Author(s): Stephen R. Wilbur/SRW;
Distribution: /MLK; Sub-Collections: NIC; Clerk: SRW;
Origin: <UK-ICS>MES.NLS;2, 24-NOV-73 08:48 SRW ;

Content Analyser Program Comments

Dean:
    Well I now seem to have met with a reasonable amount of success in
using CA programs. My present attempt is in (uk-ics,ca2,) and if you
have any comments on style or efficiency I would be grateful to hear
them.   1

One point I am aware of in it is that the unanchored scan appears to
search from the statement front each time. I think the solution for
my loop would be after the first tab change to have "FIND pt2 ..." so
that the search starts from pt2? In order to set pt2 initially, is
it permitted to have a statement of the form
    ↑pt2;
eh?   2

One point which I did have a bit of trouble with was
    FIND (($PT SP $PT) / $PT) ↑pt 2$SP ↑pt2 and
    FIND $PT ((SP $PT) / TRUE) ↑pt 2$SP ↑pt2
which both matched patterns of the form
    $PT 2$SP but did not match for
      $PT SP $PT 2$PT.
Any ideas why not?   3

I picked up the new L10 manual, but I have not yet had a chance to
read in and compare its differences with the old one. I also tried
to get some sort of listing of commonly useful routines but
(nls,sysgd,) is so enormous   It is also peculiarly uninformative
for the most part. Sorry about the criticism.   4

One other construct which I came across in one of the sort key
programs is
    ↑pt.char;
What does it do? Does it replace one character in a string, or does
it set the pointer, or what?   5

Thats about all for now, I shall try an executable program shortly
when I have studied a few more progs from <user-progs>
    Cheers .. Steve   6

Content Analyser Program Comments

(J20486) 25-NOV-73 05:22; Title: Author(s): Stephen R. Wilbur/SRW;
'Distribution: /NDM; Sub-Collections: NIC; Clerk: SRW;
Origin: <UK-ICS>MES.NLS;3, 25-NOV-73 04:56 SRW ;

This is a message to myself to see if I really got my NIC ident put in correctly.   1

It seems that NIC was crashing at the time I last tried, since I got weird disk allocation errors when I had no files allocated, and so I logged out and got instruction traps when I tried to log in again.   2

Sure hope all this junk I'm typing doesn't end up all over NIC's disks, I'd rather have it arrive at PARC   3

Ed   4

(J20488) 25-NOV-73 06:03;   Title: Author(s): Edward A. Taft/EAT3   ;
Distribution: /EAT3 ; Sub-Collections: NIC; Clerk: EAT3;

Comment for SRW

Steve, The article, thus far, is precisly the type of article we had
in mind. Your giving us a "feel" of what it is like as a user of
ARPANET and its assorted resources will be of great assistance. As
for the style, I find it welcome

Any comments you might make relative to suggestions for new
resources, or enhancements to existing resources that would render
them of greater utility to you would, I believe, be quite germane. I
believe any discussion of areas where you might invite collaboration
would also be appropriate.

I am very much looking forward to the entire article and would like
to express our very warm appreciation for your interest and
consideration. Your style is both direct and enchanting and a very
welcome contrast to the cold style we tend to adopt in the states.
Thanks Steve,....Jean.   1

Comment for SRW

(J20489)   25-NOV-73 09:09;   Title: Author(s): Jean Iseli/JI;
Distribution: /SRW; Keywords: article-news-srw; Sub-Collections:
MITRE-TIP NIC; Clerk: JI;

Further re OP Cue Card (20446,)

Dean-   1

Maybe we'll both see the product of the directives you improved if
and when Beau runs them. Running the catalogs and directories has
been postponed. An effort is under way to completely reformat the
directory. The catalog is in limbo. My suggestion was not meant to
publicize old directory and catalog directives, which were not what
Jean Iseli needs, but to give him and others access to general
headings which I assumed Kirk's collection would do.   2

Re the OP User Guide, the fault I find with it is that there is a
large user population who will not be using COM, and for them the COM
instructions make the document unnecessarily bulky and unnecessarily
instructive. For these users, a smaller guide is indicated. And I
like the concept of a cue card, I just find that there are traps in
such an abbreviated tool. But a cue card containing complete info on
a subset of frequently-used directives would be fine.   3

        -Jeanne N   4

Further re OP Cue Card (20446,)

(J20490) 25-NOV-73 17:54; Title: Author(s): Jeanne B. North/JBN;
Distribution: /NDM MDK JI; Sub-Collections: NIC SRIARC ; Clerk: JBN;
Origin: <NIC-WORK>NDMREPLY.NLS;1, 25-NOV-73 17:42 JBN ;

Suggestion for Change in Journal Hardcopy Format

Are there over-riding reasons for the present use of three and
sometimes four pages for file hardcopy of Journal items? The
drawbacks I find are: 1

   Bulk of staples in the Journal binders   1a

   Three or four sheets to handle and read   1b

   Evident waste of paper   1c

I would find it desirable to have two forms of hardcopy output, to be
specified by the journalizer.   2

   For a formal document a one-page transmittal sheet: 2a

      To: Name(s) of recipient(s)   DATE   NUMBER   2a1

      From: Sender   2a2

      Title: 2a3

      Commments: 2a4

   For an informal file or message a heading of the above, preceding
the file or message.   2b

I would like to see subcollection and keyword information appended
to the text. Also the name of the clerk appended, but only when it
differs from the sender.   2c

The journalizer could be given the format options: 2d

   REPORT format (separate transmittal letter)   2d1

   MEMO format (To, From, heading)   2d2

                                                                             3

Suggestion for Change in Journal Hardcopy Format

(J20492)   25-NOV-73 20:42;   Title: Author(s): Jeanne B. North/JBN;
Distribution: /SRI-ARC NP; Sub-Collections: SRI-ARC NP; Clerk: JBN;
Origin: <NORTH>JOURFORM.NLS;1, 25-NOV-73 19:57 JBN ;

SITE QUESTIONNAIRE FOR NORSAR TIP

(SITE NAME) THE NORWEGIAN SEISMIC ARRAY   1

                                                                          2

                                                                          3

(FUNCTION)   4

TIP   HOST ADDR. 169   IMP 41   HOST 2   5

PORT: 2 NORSAR (DATA DYNAMICS 390)   6

PORT: 4 BLINDERN-KJELLER COMPUTING FACILITY (RBK) (DATA DYNAMICS 390)   7

PORT:41 NORWEGIAN DEFENCE RESEARCH ESTABLISHMENT (NDRE) (TERMINET
300)   8

(ADDRESS)   9

NTNF/NORSAR   10

P.O. BOX 51   11

N2007 KJELLER   12

NORWAY   13

TIP PHONE (02)714570   14

(PERSONNEL)   15

STATION AGENT   16

       ODDMUND A HANSEN (OAH)   (02)714570   17

LIAISON   18

       PER TVEITANE (PT)   (02)714570   19

PRINCIPAL INVESTIGATOR   20

       NILS MARAAS (NM)   (02)716915   21

OTHER   22

  DAG RIEBER-MOHN (DRM)   (02)714570   23

  YNGVAR LUNDH,NDRE (YL)   (02)712660   24

SVEIN A OEVERGAARD, RBK ("NONE")   (02)714570   25

(INTERESTS)   26

 NORSAR, WHICH IS A PROJECT UNDER THE ROYAL NORWEGIAN COUNCIL FOR   27

 SCIENTIFIC AND INDUSTRIAL RESARCH (NTNF), IS PRIMARILY INTERESTED   28

DETECTION AND CLASSIFICATION OF SEISMIC EVENTS, SIGNAL PROCESS-   29

ING TECHNIQUES AND PROCESSING OF ARRAY DATA.   30

                                                                    31

                                                                    32

THE TIP ALSO SERVES AS AN ARPANET ACCESS FACILITY FOR USE BY   33

RESEARCH INSTITUTIONS SPONSORED BY THE NORWEGIAN GOVERNMENT.   34

(DOCUMENTATION)   35

BUNGUM, H. ET AL. : THE NORSAR ARRAY AND PRELIMINARY   36

RESULTS OF DATA ANALYSIS, GEOPHYS.J.R. ASTR. SOC. (1971) 25, 115-126 37

(SITE NAME)   NORWEGIAN SEISMIC ARRAY   38

(FUNCTION)   39

TIP   HOST ADDR. 169   IMP 41   HOST 2   40

PORT: 2   NORSAR (DATA DYNAMICS 390)   41

PORT: 4   BLINDERN-KJELLER COMPUTING FACILITY(RBK) [DATA DYNAMICS
390)   42

PORT: 41   NORWEGIAN DEFENCE RESEARCH ESTABLISHMENT [NDRE) (TERMINET
300)   43

(ADDRESS)   44

NTNF/NORSAR   45

(PERSONNEL)   46

    STATION AGENT   47

DAG RIEBER-MOHN   (02)714570   48

SITE QUESTIONNAIRE FOR NORSAR TIP

YNGVAR LUNDH, NDRE   49

ODDMUND A HANSEN (OAH)   (02)714570   50

    LIAISON   51

PER TVEITANE (PT)   (02)714570   52

    PRINCIPAL INVESTIGATOR   53

NILS MARAAS (NM)   (02)716915   54

                                                                     55

P.O. BOX 51   56

N2007 KJELLER   57

NORWAY   58

TIP PHONE (02)714570   59

Elizabeth J. (Jake) Feinler, Dag Rieber-Mohn,   1a

SITE QUESTIONNAIRE FOR NORSAR TIP

(J20494)   26-NOV-73 04:34;   Title: Author(s): Dag Rieber-Mohn/DRM;
Distribution: /JAKE DRM; Sub-Collections: NIC; Clerk: DRM;
Origin: <NORSAR-TIP>SITEQUESTIONNAIRE.NLS;1, 26-NOV-73 04:32 DRM ;

tickler for week of 26 November

Please note that Form 2s are due this week

tickler for week of 26 November

(nm5) 26 November - Monday   1

    0830 hrs. Branch Chief's Meeting   1a

    Due Date - ISI/FJT - Management Support for R&D Program from DDR&E
    - Completed   1b

(nt5) 27 November - Tuesday   2

(nw5) 28 November - Wednesday   3

    Representatives from AFDSC will visit RADC/Bergstrom (Focal Point)
    to begin testing of DM-1 System - Will be here through the 30th   3a

    Due Date - ISIS/ISIM - Project Engineers Bimonthly Review of Tech
    Completions - due in ISM 29 Nov   3b

    Due Date - ISIS/D. Marks - Technical Evaluation of PR-B-4-3232   3c

(nth5) 29 November - Thursday   4

    0830 hrs. Branch Chief's Meeting   4a

    Laboratory Activity Reports due today: Bucciero must have them by
    1000, ISM must have them by 1100, and DOT must have them by 1600.   4b

    Due Date - ISIM/Bergstrom - Joint Services Electronics Program
    (JSEP) Proposal Review. Completed   4c

    0900 - 1000 hrs. - Officer's Commanders Call - Bldg. 106 -
    Auditorium   4d

(nf5) 30 November - Friday   5

    Form 2's (employee time expenditures) are due today.   5a

    Form 6's (projected manpower) are due today.   5b

    Bobbie: Travel figures due by noon.   5c

    Due Date - ISI/ISIS/ISIM - Course Forms for Data Base due today
    into ISI/Bobbie   5d

Larry M. Lombardo, Anna A. Cafarelli, Roberta J. Carrier, Donna R.
Robilotta, David L. Daughtry, Richard H. Thayer, Frank J. Tomaini,
Mike A. Wingfield, Edmund J. Kennedy, Ray A. Liuzzi, John W. Johnson,
Donald Van Alstine, Dean F. Bergstrom, William P. Bethke, Frank S.
LaMonica, William E. Rzepka, Rocco F. Iuorno, Frank P. Sliwa, Thomas
J. Bucciero, Robert E. Doane, David A. Luther, Roger B. Panara, John
L. McNamara, Joe P. Cavano, Duane L. Stone, Marcelle D. Petell,
Josephine R. Stellato, Robert K. Walker, Thomas F. Lawrence, James H.
Bair,   1a

tickler for week of 26 November

(J20495) 26-NOV-73 05:24;   Title: Author(s): Roberta J. Carrier/RJC;
Distribution: /RADC; Sub-Collections: NIC RADC; Clerk: RJC;

Biography - Frank J. Tomaini

Col Thayer - A hard copy is being provided

FRANK J. TOMAINI

1

2

Frank J. Tomaini serves as Chief of the Information Processing
Branch, Information Sciences Division of the Rome Air Development
Center located at Griffiss Air Force Base in Rome, New York.

3

A native of Long Branch, New Jersey, Mr. Tomaini completed graduate
work at Polytechnic Institute of Brooklyn and Syracuse University.
He received his B.S. in Electrical Engineering from Northeastern
University.

4

Mr. Tomaini served for two years in the U.S. Navy as an Electronic
Technician before joining Watson Laboratories in Eatontown, New
Jersey in April 1946 as a Research and Development Project Engineer
with the Air Force.

5

In 1950, Mr. Tomaini transferred from Eatontown, New Jersey to
Griffiss AFB NY as Chief of the System's Test Equipment Unit when
Watson Laboratories became the Rome Air Development Center. In this
capacity, he served as a member of the Test Equipment Sub-Panel of
the Joint Communications Electronics Committee of the Research and
Development Board responsible for standardization of ground
electronic test equipment for all branches of the DOD.

6

In 1953, Mr. Tomaini was made Chief of the Electronic Counter
Measures — Intelligence and Reconnaissance Branch of the DCS/Plans
and Programs, Rome Air Development Center responsible for
intelligence and reconnaissance plans and programs. Such programs as
the long range missile detection radar AN/FPS-17; document storage
and retrieval system (Minicard); and the electronic intercept digital
data processing system (Finder) were programmed and successfully
developed by mission Directorates.

7

As an added assignment in 1954, Mr. Tomaini, working with Syracuse
University, successfully established Griffiss AFB as an accredited
off-campus Graduate Center. The convenience and quality of this
center has insured RADC's continued technical competence.

8

In 1958, Mr. Tomaini was made Chief Engineer responsible for the
development of a multimillion dollar ground data handling system in
support of an advanced satellite collection system. Interactive data
processing concepts formed the basis for resulting follow-on
developments for strategic and tactically intelligence Data Handling
Systems.

9

In 1961, Mr. Tomaini was made Chief of the Information Processing
Branch, Intelligence and Information Processing Division, Rome Air

Biography - Frank J. Tomaini

Development Center. Under his management, the Rome Air Development
Center attained national recognition in the areas of Computer
Technology and Intelligence and Reconnaissance data processing
technology. User oriented, on-line Data Processing, was the
development theme. The first "on-line" Strategic Targeting System
and "on-line" Limited War Intelligence Reduction Complexes were
developed; the only major Government Computer Laboratory for
experimentation in user oriented programming systems and multi-use,
on-line concepts was established.   10

Since assuming his present post as Chief of the Information
Processing Branch, Information Sciences Division, Rome Air
Development Center in 1970, the Rome Air Development Center has
attained the position of Air Force center of expertise on Computer
Software and Higher Order Language Acquisition, Research and Control. 11

EDUCATION: 12

   B.S. - Electrical Engineering - Northeastern University, Boston,
   MA   12a

   Graduate Studies - Brooklyn Polytechnic Institute, NYC   12b

   Syracuse Universty, Griffiss AFB NY   12c

QUALIFICATIONS: 13

   Project Engineer, Watson Labs - Responsible for research and
   development of Broadband Microwave Test equipment to be used in
   the evaluation and operation of newly developed radar. (6 1/4
   years)   13a

   Assistant to the Signal Corp Electronic Test Equipment Coordinator
   under the Office of the Director of Engineering, SCEL, with
   responsibility for current and long range planning of the
   development, standardization, and procurement programs for
   electronic test equipment. (3/4 year)   13b

   Chief, Intelligence & Electronic Warfare Plans Office, RADC,
   responsible for long range research and development plans in the
   area of Intelligence and Reconnaissance Data Processing. (3 2/3
   years)   13c

   System 438L Chief Engineer, RADC, responsible for development of
   Intelligence Information Processing Capabilities for the USAF. (1
   year)   13d

   Chief, RADC System Project Office for Subsystem I, responsible for

3

Biography - Frank J. Tomaini

the development of a large USAF Reconnaissance Data Processing
System.   (3 1/2 years)   13e

Supervisory Physical Scientist responsible for the development of
Information Processing Systems, Computer Technology and
Programming Techniques.   (June 1961 to present)   13f

4

20496 Distribution   1
   Frank J. Tomaini, Richard H. Thayer,   1a

Biography - Frank J. Tomaini

(J20496) 26-NOV-73 06:08; Title: Author(s): Roberta J. Carrier/RJC;
Distribution: /FJT RHT2; Sub-Collections: NIC; Clerk: RJC;
Origin: <CARRIER>BIBO.NLS;1, 26-NOV-73 05:28 RJC ;

KS TO BN

HI THIS IS KEITH BPO HOW IS THE WORK ON MODELLING GOING?   1

KS TO BN

(J20497)   26-NOV-73 07:19;   Title: Author(s): Keith N. Sandum/KNS;
Distribution: /BN; Sub-Collections: NIC; Clerk: KNS;

NLS command proposal

    I would like to propose for your consideration a new command
(or process) for NLS. I believe that a method of telling the user
how much time it will take to ouput a file on a tty, for example,
would be a worthwhile addition to NLS. Many times I have had the
unfortunate experience of trying to print a file via the Network and
found to my dismay that I had either run out of paper or hadn't the
time to finish the file. Great accuracy would not be required; nor
would
specific terminal interrogation. I think that an algorithm for a
generally used tty like the TI 700 or the like, would be adequete.
Thanks.   1

20498 Distribution   1
Douglas C. Engelbart, Michael D. Kudlick, James C. Norton, Charles H.
Irby, Don I. Andrews, David M. Grothe, John D. Day, Alan R. Hill,
Clayton A. Greer, Jean Iseli, Jim O. Calvin, Mil E. Jernigan, Kenneth
E. (Ken) Victor, David H. Crocker,   1a

NLS command proposal

(J20498)   26-NOV-73 07:31;   Title: Author(s): Alan R. Hill/ARH;
Distribution: /DCE MDK JCN CHI DIA I KEV DHC; Sub-Collections: NIC;
Clerk: ARH;

trip report form

I am sending to you all the trip report format. You can make a copy
of it and keep it in your directory or copy it from my directory
whenever you want to use it. The directory name is trip. Also, in
Block 1d - Also put in the project number that was used on your
travel orders and who directed the trip (AFSC, RADC, etc.etc.)

TRAVEL DUTY REPORT   1

   Name(s) of Traveler(s):   1a

   Name and address of place(s) visited: 1b

   Period covered   1c

      From: 1c1

      To: 1c2

      # of days: 1c3

   Purpose of visit: 1d

   Persons contacted: 1e

   Minutes available? (yes or No--if yes when and where):   1f

   Contract Number(s):   1g

   Project Number: 1h

   Task Number: 1i

   Commitments made? (yes or no):   1j

   Follow up requirements? (yes or no--if yes complete next 3 items)   1k

      Date Required: 1k1

      Responsible agency or individual: 1k2

      Action Item   1k3

   Summary of events: 1l

   Date: 1m

   Symbol: 1n

   Traveler: 1o

Larry M. Lombardo, Anna A. Cafarelli, Roberta J. Carrier, Donna R. Robilotta, David L. Daughtry, Richard H. Thayer, Frank J. Tomaini, Mike A. Wingfield, Edmund J. Kennedy, Ray A. Liuzzi, John W. Johnson, Donald Van Alstine, Dean F. Bergstrom, William P. Bethke, Frank S. LaMonica, William E. Rzepka, Rocco F. Iuorno, Frank P. Sliwa, Thomas J. Bucciero, Robert E. Doane, David A. Luther, Roger B. Panara, John L. McNamara, Joe P. Cavano, Duane L. Stone, Marcelle D. Petell, Josephine R. Stellato, Robert K. Walker, Thomas F. Lawrence, James H. Bair,   1a

trip report form

(J20499) 26-NOV-73 07:34;   Title: Author(s): Roberta J. Carrier/RJC;
Distribution: /RADC; Sub-Collections: NIC RADC; Obsoletes Document(s): ;
Clerk: RJC;
Origin: <CARRIER>TRIP.NLS;1, 26-NOV-73 06:15 RJC ;

AFSC Procurement Policy Briefing

On 29 Nov, Thursday in Bldg. 106, Auditorium from 1000 hrs. - 1400
hrs. there is an AFSC Procurement Policy Bfg being held.   All
engineers involved with purchase requests should attend this meeting
per F. Tomaini.   1

20500 Distribution   1

Larry M. Lombardo, Anna A. Cafarelli, Roberta J. Carrier, Donna R.
Robilotta, David L. Daughtry, Richard H. Thayer, Frank J. Tomaini,
Mike A. Wingfield, Edmund J. Kennedy, Ray A. Liuzzi, John W. Johnson,
Donald Van Alstine, Dean F. Bergstrom, William P. Bethke, Frank S.
LaMonica, William E. Rzepka, Rocco F. Iuorno, Frank P. Sliwa, Thomas
J. Bucciero, Robert E. Doane, David A. Luther, Roger B. Panara, John
L. McNamara, Joe P. Cavano, Duane L. Stone, Marcelle D. Petell,
Josephine R. Stellato, Robert K. Walker, Thomas F. Lawrence, James H.
Bair,   1a

AFSC Procurement Policy Briefing

(J20500)   26-NOV-73 08:23;   Title: Author(s): Roberta J. Carrier/RJC;
Distribution: /RADC; Sub-Collections: NIC RADC; Clerk: RJC;