protect file command in xnls

ive changed the protection command so that rather than just typing in a number (when appropriate) you say "SET" L1 <"to"> and then give a number

1

protect file command in xnls

(J21634)   28-JAN-74 00:34;   Title: Author(s): Kenneth E. (Ken)
Victor/KEV; Distribution: /JMB; Sub-Collections: SRI-ARC; Clerk: KEV;

protect file command is alive and unwell in xnls

the protect file command in xnls should be working
        with the following glitches however:
                if you use the SET subcommand to ALLOW or FORBID
options, it must be the last suboption specified
                when using the SET subcommand at any level, it is
currently not possible to bug a number due to bugs in cml
        have fun and let me know of any problems   1

protect file command is alive and unwell in xnls

(J21635)   28-JAN-74 00:41;   Title: Author(s): Kenneth E. (Ken)
Victor/KEV; Distribution: /NPG DIRT; Sub-Collections: SRI-ARC NPG DIRT;
Clerk: KEV;

Visit to US/NBS/Ncc

I sent you a poorly written message via the NBS mailbox at BBN.   I am
now sending you another.

I had not planned to attend the NCC — having been in the US in
December, and going again in February, I have no funds available to
go again in May.   I do not know whether your invitation included
fares; if it does I would be happy to come; if not I will have to
decline.   I will be in the US in February, and was planning to visit
NBS in the last week of February.   I will call you about the whole
thing the week after next when I am in the US

    Peter Kirstein   1

Visit to US/NBS/Ncc

(J21636)   28-JAN-74 01:48;   Title: Author(s): Peter Kirstein/PK;
Distribution: /IWC; Sub-Collections: NIC; Clerk: PK;

ARC Support for ARPA/NMRO Projects

ARC has been discussing with our Nuclear Monitoring Research Office
(NMRO) provision of NLS support for two NMRO projects. The principal
one is the development of a Defense Energy Information System; a
second interest is support for indices of information available in
the seismic data management system which NMRO is constructinb.
Information on these topics is available in (MJOURNAL,21170,1:w) and
(GJOURNAL,21372,1:w). Further information can be obtained from Jim
Norton. Since the most expeditious way for us to fund such augmented
ARC work would be through add-ons to the existing RADC contracts, I
think it would be good for you to become familiarized with the
discussions which have transpired thus far. We'll see that you
remained plugged into the discussions and planning from now on. I'd
welcome any comments from you on the plans we have evolved. ... John   1

ARC Support for ARPA/NMRO Projects

(J21637)   28-JAN-74 05:42;   Title: Author(s): John S. Perry/JSP;
Distribution: /DLS JCN(fyi) DCE(fyi) DCR2(fyi); Sub-Collections: NIC;
Clerk: JSP;

MAP   28-JAN-74 09:31   21638
there's a bit of a draft

hi--
I think I managed to put an ascii copy of a draft
for section 2 of the informan report into:
<mit-multics>mapinfo.runout on NIC
Please inspect it as you think best (ftp to your own
line printer, "TYPE" or whatever). (As its 4-5 pgs
single-spaced, I couldn't face the prospect of trying
to send it through the Journal.)
(And, of course, let me know if you can't get at it
for some reason.)
cheers, map   1

MAP   28-JAN-74 09:31   21638

there's a bit of a draft

(J21638)   28-JAN-74 09:31;   Title: Author(s): Michael A.
Padlipsky/MAP ; Distribution: /INFORMAN ; Sub-Collections: NIC
INFORMAN; Clerk: MAP;

Status of NLS with respect to MST

sent to the following attendees of the upcomming MST organizational
meeting at BBN (Jan-31--Feb-1-1974): Al Vezza (av@dmcg), John Perry
(perry@isi), Craig Fieldts (fields@bbn), Frank Heart (heart@bbn),
Bert Sutherland (sutherland@bbn), Tom Merril (tom@cca), Kiet4
Uncapher (uncapher@isi), Bob AndYrson (anderson@rand-rcc), Lipinski
and Vallee (@isi), dce, rww, jcn, mdk, pr

Status of NLS with respect to MST

This document was prepared to help people at ARC orient themselves
with respect to the MST wish list recently distributed by John Perry
and Craig Fields. It is being distributed now in hopes that it will
be of help in evaluating the current status of MST related projects
and not as a sales pitch for NLS. Please excuse the rough nature of
the document.   1

Reaction to JLP/CF wish list and ARC/NLS status with respect to it: 2

  General Characteristics   2a

    Highly reliable   2a1

      We recognize this as an extremely important aspect of such a
      system. It was this consideration that led us to set up an
      expandable TENEX facility with TYMESHARE (they had a 95%
      uptime last year). Even our R&D user's require stable,
      dependable support. User's must have dependable access to
      their working notes, communication and other tools.   2a1a

    continuous operation   2a2

      Bursts of high activity may be a problem on any system, but
      continuous availability is a good objective -- ready access
      to one's working notes, etc., is very important. Some
      aspects of our Group Loggin Allocation system may be useful
      here.   2a2a

    active partnership   2a3

      We have given some thought to this need. Smokey may be able
      to write up his thinking about a proposed reminder facility.
      Also, the Journal's ability to deliver mail for "Action" or
      for "Information only" is important here. An additional
      facility to allow the Journal to deliver things repeatedly
      or based on certain events (like time or approval of a
      previous recipient) would be very easy.   2a3a

    help   2a4

      We have been spending much of our resources on this aspect
      of the system for the past few months. We now provide   2a4a

        1) system prompting (both in terms of semantic noise word
        and syntactic prompts),   2a4a1

        2) in response to the user typing '? anywhere in a
        command (except in middle of textual typein), a list of
        alternatives is presented to him,   2a4a2

using the same mechanism, we can trivially provide the
user with a complete syntax for a given command, and
may even be able to create examples dynamically from
this description.   2a4a2a

3) in response to tying Control-q, the user is
automatically put into a help subsystem with very simple
command interaction to allow him to find out more about
the command he was executing, general concepts of the
system, descriptions of all commands, subsystem
breakdowns, meaning of prompts, examples, etc. This is a
structured data base that will hopefully allow the the
user to get answers to his questions more rapidly than an
approach which simply types lots of text at the user,
asking periodically if he has had enough.   2a4a3

human engineering   2a5

This aspect of the system is of utmost importance to us and
had occupied much of our time and dominated any decisions we
have made concerning command language, terminal design and
system archetecture.   2a5a

always available   2a6

The user should always be able to get access to his
information and working notes -- couldn't agree more, but
this must be tempered with tae realistic appraisal of the
limitations of the ARPANET's current comuptational
facilities.   2a6a

unified environment   2a7

We have been preaching this for over a decade. This is the
backbone of our phillosophy. A major goal of our work is to
be able to provide users with a coherent and consistent
front end to a large variety of tools and facilities
utilized through the network. Although the specific command
vocabulary will vary with the nature of the tools, the
command language discipline should remain constant. This
includes the way in which the user is prompted, the kinds of
interactions he can have with the system, and the kind and
manner of invokation of help facilities. It should be
noted, that this command discipline may vary from one user
to another. The important thing is that it is complete and
consistent at all times for an individual user, given his
prefered interaction discipline.   2a7a

Io insure adaquate response time to the user (a most

important human engineering consideration) we are planning
for experimentation with a mini-computer based front end to
NLS. This front end system will support   2a7b

   1) a command language interpreter,   2a7b1

   2) several command language (subsystem) grammers (when a
   user invokes a tool (subsystem), then the grammer for
   that tool is fetched through the net if a copy is not
   already available in the front end system),   2a7b2

   3) user specific data, and   2a7b3

   4) a number of display and hardcopy terminals.   2a7b4

The basic scheme is that a subsystem should consist of a
grammer and an (or many) execution module(s). The command
language interpreter also maintains user-specific
information that describes the user's prefered interaction
discipline, the facilities that he wants available to him,
and any other data (such as virtual/physical file directory
locations) that will allow the system to be adaptive to his
preferences. The command language interpreter interprets
the grammer and, based on the user-specific data, interacts
with the user to a
help him specify his command. The grammer also indicates
when and how the execution module(s) (which are expected to
be distributed on various network hosts) should be invoked
in any command.   2a7c

We now have a version of this running on our TENEX system
and have ordered a PDP-11 to act as the front end. We are
now using our PDP-10 for both front end and execution
modulues and have not yet determined a protocol for front
end/execution module interation. This will be done within
the next few months.   2a7d

   (see also help above.)   2a7e

personality   2a8

   Some of our user's are now using a new version of NLS which
   maintains for the user what we call his USER-PROFILE. This
   file is used as part of NLS's run-time environment (it is
   not an NLS file) and allows the user (or someone on his
   behave) to describe the way in which the system should
   interact with him, what character translations he would like
   to take place on different terminals, etc. This is a very
   new mechanism that should be useable for keeping track of

arbitrary data about the user, so that the system can adapt
to him.   2a8a

The state of this user-profile is not effected by
login/logout, but rather is maintained until the user
changes it again.   2a8b

range of services for different offices   2a9

This effects both the types of terminals (displays,
typewriter, tape cassette/offline text preparation) and the
range of services the system makes available to them. This
is effected by economics as much as by level of user
experience and need.   2a9a

paper i/o   2a10

We have long recognized this fact. We have devoted
considerable effort to development of a sophisticated
formating capability, which can produce hardcopy output of
standard or very high quality (on a COM device). We look
forward to the appearance of hardcopy devices on the network
which can handle mixed text and graphics (merge in black and
white photos?), proportionally spaced fonts, etc, and yet
give very clean copy for a reasonable cost.   2a10a

Perhaps a single COMP-80 and several XGP's would do. We
also feel that someone should be trying to develop a
display-based "proofing" terminal, so that one can debug his
formats before incurring the cost (in time and money) of
actually producing the hardcopy.   2a10b

secrecy   2a11

We recognize the need and are begining to provide solutions.
However, we may never be able to completely lock burglers
out without increasing the cost of the system prohibitively.   2a11a

future technology   2a12

We view this as one of the primary design considerations for
such a system.   2a12a

analog i/o   2a13

One of the reasons we chose to use a close-circuit TV system
in our local display systems was that it was felt important
to allow us to corner-insert the image of a person's face
when working together in "shared screen" mode (the system

maintains the same image on the screens and both user's can control the system and point to things on the screen, using a tracking spot). This video mixing scheme also, of cource, allows for the showing of micro fische and slides.   2a13a

We have extended the screen sharing facility to network user's of (display) NLS, but of course, had to drop the video mixing capability. It would seem very desireable to develop ways of transmitting video, voice, or other analog data over the net, but the representation of that data to the user is very important to its usefullness.   2a13b

documentation   2a14

Documentation and training are considered to be vitally important to the graceful introduction of new users to the system or old users to new facilities. We are attempting to build up our documentation and training staff to meet this need.   2a14a

technology transfer   2a15

The transfer of this technology to environments where it can significantly enhance the performance of people in dealing with complex problems is our highest goal.   2a15a

text control   2a16

NLS has obviously been finely tuned in this respect. Two-dimensional symbol manipulation is viewed as central to almost any other intelectual activity. There is, however, much that could be added to aid joint authorship.   2a16a

multiple filing   2a17

We have not given enough thought to this problem; file management is seen to be an area needing considerable work. We have, for example, given consideration to a file structure that would allow one to deal with virtual files, which actually consist of pieces of several files, laced together in such a way that one can treat it as a normal file or can control which pieces are include or not. Note, that the pieces would not be copied into another file unless the user wished that to happen. In this way, one could conceive of a file system in which one had a single file, that included (in the manner just discussed) all of his other files. This scheme would allow the user to include a file at many times as he wished in whatever structure he wished.   2a17a

Status of NLS with respect to MST

Also, some ideas for a personal information management system have been outlined by Paul Rech (see -- 17394,). 2a17b

active documents 2a18

We have redesigned the Journal in terms of completely separate network services such as archiving, delivery, and cataloging. The delivery service could be used directly to deliver items (not just Journal items) to whomever one wishes. This mechanism could be so constrcted that delivery was dependent on certain specified events having occured. 2a18a

We have also proposed a sequential delivery scheme to be used for such things as document approval. 2a18b

content filing 2a19

The reader is again refered to the personal information management thoughts in 17394. Also, we might mention that this is done in a primitive way for Journal items, in that an item can be retrieved on the basis of non-trivial words in its title, its author(s), and its accession number. 2a19a

highlights 2a20

This facility is badly needing in joint authorship situations, to depict what has changed. Although we have done little work in this are, we recognize it as being very important. 2a20a

security 2a21

We are beginging to provide some facilties in this area, but it is by no means burglar-proof. 2a21a

structure 2a22

We have been utilizing structured files for many years and consider it a must (although perhaps too restrictive in some cases -- the tree should really be re-entrant). We have developed a number of techniques for allowing the user to quickly browse through a structured file, using a display screen as his viewing window. These techniques are dependent on the ability of the user to specify View Parameters, which dictate how the information is preseented to the him). 2a22a

Another extremely important facility is what we call "links". This is a textual string which descibes a

Status of NLS with respect to MST

particular location within another file and the view
parameters to put into effect if the user views that
location through this link.   2a22b

We have been considering two augmentations to our file
system which are of interest here: 2a22c

  1) Property lists. The design for this is nearly
  complete. It allows the system to associate a LISP-like
  property list with each node in a structured file. The
  properties can contain various formats of information
  (such as graphical, numerical, format directives),
  identified by the "type" of the property.   2a22c1

  2) inclusion nodes. These are essentially links that are
  automatically followed by formatters that are building a
  view of the "file" for the user. This gives the user the
  ability to have "virtual" files actually consisting of
  pieces of other files, but viewed and edited by the user
  just as though it was one file. The inclution nodes
  contain the links to the included structure (from another
  or the same file), acess priviledges, and descriptive
  text used to descibe what is included. The user can
  control (via view parrameters) wheteher the included
  material or the description is shown to him.   2a22c2

browsing and flipping   2a23

  We have for a couple of years allowed the user to subdivid
  his display screen into several "windows", through which
  separate files may be viewed. Separate view parameters are
  associated with each window. The user may freely edit
  between files (e.g., move text from one file to another) by
  simply selecting arguments to his commands from different
  windows.   2a23a

  When the system is not heavily loaded, one can very
  effectively browse and flip though views of files using this
  scheme. The most severe limitation is the screen size,
  which can be compensated for in large part by snappy system
  response. Even if one had a large screen (e.g. enough to
  hold a whole typed page -- which would be heavenly), one
  would still want the view parameter control over what he is
  shown.   2a23b

audit trail   2a24

  NLS now retains with each node in a file the time and date
  of the last edit as well as the identification of the person

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Status of NLS with respect to MST

> who made the edit. This information can be included in
> content-based searches through a file. This does not extend
> to nodes which are completely deleted from the file (see
> description of proposed undo facilities under structure
> above).   2a24a

> Auditing reading as well as changing implies writing data
> somewhere (on the file being read?). This may slow things
> down unbearably and may be in conflict with file protection
> mechanisms and certain privacy issues.   2a24b

destruction   2a25

> Auto destruct files could be arranged via a background
> process (for time-dependent deletion) and NLS (for read-once
> deletion).   2a25a

>> Note: expunge will be necessary to really destroy it --
>> may loose other things as well since there is no FILE
>> expunge, only DIRECTORY expunge.   2a25a1

> For Journal items, we must be able o destroy thee catalog
> citation also.   2a25b

clues of importance   2a26

> This sounds like a fine idea. It shares phillosphy with the
> Journal change to distinguish between Action items and
> Information-only items in delivering mail to users.   2a26a

delivery   2a27

> Although the delivery flow and conditions should be
> controlable by the user, the system should provide
> reasonable default for the usual cases.   2a27a

storage hierachy   2a28

> We have supported this phillosophy for several years. We
> have yet to utilize network file storage capability, but
> plan to do so in the future. Reasonably fast and dependable
> retrieval mechanisms are essential.   2a28a

two-dimensional text interaction   2a29

> We could hardly agree with this more. However, we also feel
> that this must be augmented by reasonably fast and reliable
> hardcopy facilities.   2a29a

form documents   2a30

I am not sure I understand the meaning here, but we have
several users who make use of incompleted forms for
frequently generated types of text, such as letters, memos,
and comuter language constructions, like procedure blocks
and IF-THEN-ELSE blocks.   2a30a

Also, we are in the preliminary stages of a Forms system
that interacts with users to describe a form or collection
of forms and then, based on this description, interacts with
users attempting to fill out the forms. This system
accounts for redundant information (only asks once) and can
handle inter-relationships between form entries. It is also
planed that it will be able to print the information on
hardcopy versions of the form. This is planned to fit
within the context of an information retrieval system (we
are investigating the DATA COMPUTER) so that completed forms
may be queried and analyzed.   2a30b

Secretarial services   2b

tasks management   2b1

Although this is a very useful tool, our experience with our
Baseline Management System indicates that the problems are
mostly ones relating to 1) making it really useful to the
people inputing and correcting the information, 2) keeping
the information up-to-date, and 3) being able to generate a
large variety of views from the same data.   2b1a

scheduling   2b2

Such a facility would be very useful (see -- 17394,)

                                                                  2b2a

telephone   2b3

I believe there is available hardware to do this. It is
mostly a hardware problem, if the user is willing to do the
talking once the party answers.   2b3a

personal preferences   2b4

Status of NLS with respect to MST

We believe this is very important, see unified environment
discussion above.   2b4a

judgement   2b5

With a baseline-like data base a program could clearly
compute the load on individuals but it would have to be told
about such things as interchageability, etc. this sounds a
bit subtle.   2b5a

Help for the computer   2b6

NLS is so structured that it will, in general, allow the
user to correct errors in a command specification without
having to specify the whole command over again.   2b6a

spelling and grammar   2b7

Sounds like a good thing for an AI group to takle as a
separate tool.   2b7a

travel   2b8

mostly a political/hardware/protocol issue.   2b8a

Teleconferencing   2c

There are several types of teleconferencing facilities now
available. These include Forum/Turroff-like systems,
unrecorded message sending/reading systems, recorded message
Journal-like systems, connected typewriter terminal
interaction, connected screen display terminal interaction,
U.S. Mail, and telephone calls. All of these types of
facilities need to be brought together within a consistent
framework. One has to be able to utilize whatever is deemed
the appropriate media for his current need. If the
interactions are being recorded, they need to be done so that
one can get indecies that cover the whole set of interation
media.   2c1

Terminals   2d

We at ARC use the term "work station" to describe the
collection of devices one uses while interacting with the
system.   Consideration of spacial organization, types of
interaction devices, freedom for the user to adjust the
organization to his own preference, good keyboards, legible
display screens, etc., are all very important in specifying a
work station.   2d1

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Status of NLS with respect to MST

The small terminal sounds good. We will have to learn much
about how to make effective use of a small display screen.   2d2

What about large terminals too? Large projection system at use
at ARC is quite useful for groups of people working together or
presentations of new material to groups.   We can't possibly be
the only ones with this need.   2d3

Although we can get started with currently available display
terminals. new high quality ones sound great.   2d4

horizontal terminal will need human engineering for problems of
comfort, glare, clarity, etc. It is not clear there is much
payoff here.   2d5

In addition to the substantial ARC experience in this area, we
should also evaluate the work of Xerox PARC and the proposed
ISI/System Concepts display system.   2d6

General business functions   2e

Although special tools can be built by separate groups, all
must integrate into the system in a smooth way.   2e1

Interface to large scale data management and analitical
programs is right on our vector.   We are currently
experimenting with the Data Computer and other data management
systems.   2e2

management   2f

Development of the proposed system will require close
coordination to ensure that all the peices fit together
smoothly and that the resulting system is actually useful.   2f1

Assessment   2g

We at ARC feel strongly that this is a very important area.
The impact of such a system of tools on am organization's
structure and methodology need careful study. Our aim is to
help them not to destroy them. ARC has established its own
(admittedly embryonic) Analysis group to attempt to do just
this sort of thing.   2g1

Discussion that seems to be missing from JLP/CF wish list   2h

Integration of online, hardcopy, micro-fische, video tape,
audio tape media into a coherent information management system.   2h1

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Status of NLS with respect to MST

Mixed text and graphics in hardcopy and at display terminals.   2h2

Computer-Based Instruction in Help facilities.   2h3

Facilities for building Cross references, indecies,
bibliographies, etc.   2h4

A system, used in conjuction with mail and document routing, to
keep track of people , organizations, and formal or informal
groups of people and their mail-boxes. We call this our
Identification system.   2h5

Need for a COM device somewhere in the net for
pulication-quality hardcopy or micro-fische production.   2h6

Command language programming. The ability for the user to
build a collection of macro-commands by combining commands that
are currently available to him through the normal command
language with iterative and conditional facilities into command
language macros or programs. All the attendant debugging
facilities should be provided, of course. We are currently
working on this.   2h7

Programming facilities. The work done by programmers is not
substantially different from that done by any other MST user.
We should make compilers and debugging facilities available as
just another set of (National Software Works) tools.   2h8

Status of NLS with respect to MST

(J21640) 28-JAN-74 12:05; Title: Author(s): Charles H. Irby/CHI;
Distribution: /DCE JCN RWW PR MDK; Sub-Collections: SRI-ARC; Clerk: CHI;
Origin: <IRBY>MST.NLS;4, 27-JAN-74 15:01 CHI ;

Corrections to ARPANET Directory

The ARPANET Directory (NIC 19275) is clearly a most useful document. Its convenient size makes it much more practical than the voluminous and cumbersome volumes it replaces. The present edition, however, contains a number of errors, particularly in the individual listings. I'll list the ones which were apparent to me: 1

   BA. Aldridge has retired, left NASA/Ames, and should no longer be listed.   1a

   BAD. Dolan has retired, left ARPA, and should no longer be listed.   1b

   RF, RMF. Rod Frederickson is listed twice with the same address and phone number.   1c

   GG. Glen Grazier left ETAC a long time ago.   1d

   JCRL. Prof Licklider is now Director, IPTO, ARPA. Address, etc. now same as old listings for Larry Roberts.   1e

   SJL2. Dr. Lukasik has a mailbox LUKASIK at ISI.   1f

   TO. Mailbox is O'Sullivan at ISI.   1g

   EPP. Mrs. Pigott has left ARPA and should no longer be listed.   1h

   LGR. Dr. Roberts has left ARPA. Unless other arrangements have been made, I don't think he should be listed. He is now President of Telenet Corp., Washington, D. C.   1i

   RJS. Dr. Slutz can be reached as NOAA at I4-Tenex   1j

   TGS. Mailbox is STOCKHAM at UTAH-10.   1k

   AJT. Mailbox is TACH at ISI.   1l

   JFV. Mailbox is VALLEE at ISI.   1m

                                                                        1n

Corrections to ARPANET Directory

(J21641) 28-JAN-74 14:00; Title: Author(s): John S. Perry/JSP;
Distribution: /NIC; Sub-Collections: NIC; Clerk: JSP;

New Stuff in XNLS

Two new features are now available in XNLS
   USER-OPTIONS subsystem
      The USEROPTIONS subsystem is now generally available
      to users of XNLS. This subsystem allows you to alter
      system standard settings for a wide variety of parameters.
      Your modified profile is maintained in a file (in your
      directory) and will live across NLS sessions.
         TRY IT YOU'LL LIKE IT
   SECONDARY recognition modes
      If your Primary recognition mode is EXPERT you may now
      select the recognition mode invoked after typing the
      "escape" to secondary recognition mode character (SP).
      The significant difference is that in EXPERT EXPERT mode
      only secondary commands are recognized (and shown) after
      typing a space
   Bugs and Troubles to Smokey...   1

New Stuff in XNLS

(J21642)   28-JAN-74 14:30;   Title: Author(s): Donald C. (Smokey) Wallace/DCW; Distribution: /SRI-ARC; Sub-Collections: SRI-ARC; Clerk: DCW;

NIC User Directories for OFFICE-1: A modification

This note modifies (GJOURNAL,21159,1:wz), to specify certain
directories which should be "copied" (not "moved") to OFFICE-1, and
certain other minor corrections to my previous note.

NIC User Directories for OFFICE-1: A modification

Ferg ... per our conversation Friday, here's a list of directories
that require "special handling" during the move to OFFICE-1:   1

   NOTE: some, but not all, of this info already exists in my
   previous main note to you, (GJOURNAL, 21159,1:wz)   1a

Directories To Be "COPIED" (not "Moved")
                                                                                2

   CAT   2a

   CAT-PROGRAMS   2b

   CATALOG   2c

   NETINFO   2d

   NIC   2e

New Directories To Be CREATED
                                                                                3

   GUEST   (password arbitrary, size 50, account #1)   3a

   KELLEY   (password KK, size 100)   3b

   KUDLICK (password MDK, size 50)   3c

   SRI-ARC (password ARC, size 50)   3d

Directories NOT To Be Copied OR Moved
                                                                                4

   NORSAR-TIP   ... Note: I inadvertently requested this one be
                     moved; but I want it to remain at ARC   4a

   UK-ICS   4b

NIC User Directories for OFFICE-1: A modification

(J21643) 28-JAN-74 14:53;   Title: Author(s): Michael D. Kudlick/MDK;
Distribution: /RWW JCN WRF JEW JAKE KIRK JBN MLK; Sub-Collections:
SRI-ARC; Clerk: MDK;
Origin: <KUDLICK>FERG.NLS;3, 28-JAN-74 14:48 MDK ;

A NEW ARPANET SUBSCRIPTION SERVICE:
THE WORKSHOP UTILITY at OFFICE-1

A NEW ARPANET SUBSCRIPTION SERVICE:
THE WORKSHOP UTILITY at OFFICE-1

This document will appear in the ARPANET News. Jean Iseli is
taking care of getting it into that medium. I plan a secondary
distribution to ARC when more is learned from Iseli about the
timing. Jim Norton

A NEW ARPANET SUBSCRIPTION SERVICE:
THE WORKSHOP UTILITY at OFFICE-1

INTRODUCTION   1

On Friday, January 18, 1974, a new service was added to the
ARPANET by the Augmentation Research Center (ARC) of Stanford
Research Institute. This service is called the WORKSHOP
UTILITY SERVICE and provides the first subscription-based
availability of the SRI-ARC NLS system to using organizations.   1a

   The computer portion of this service is accessed by
   subscribers either by ARPANET connection through the
   "OFFICE-1" PDP-10 TENEX system at the TYMSHARE-TIP (host 43
   decimal, 53 octal) or by direct telephone lines (in the
   case of non-ARPANET using organizations).   1a1

Initial subscribing organizations are: 1b

   ARPA, to be used by special groups of ARPA's selection   1b1

      One such group is the set of NIC users who have
      previously been served through the SRI-ARC machine.
      Their on-line NIC service will be provided from
      OFFICE-1.   1b1a

   Rome Air Development Center (RADC)   1b2

   Bell Canada   1b3

   Several other organizations are now seriously considering
subscribing to the service.   1c

THIS NEW SERVICE WILL PROVIDE SUBSCRIBERS WITH: 2

   1) Computer access 16 hours a day, Monday through Saturday, to
   be supplied from a PDP-10 TENEX system operated by a
   commercial supplier, TYMSHARE, INC. The primary user program
   will be NLS, the SRI-ARC "on-line system".   2a

   2) Training in the use of Display NLS (DNLS), Typewriter NLS
   (TNLS), and Deferred Execution (DEX) software subsystems.   2b

   3) Technical assistance in analyzing the Utility services,
   including developing procedures, documentation, and
   methodology for their particular application purposes.   2c

      This assistance will include help in the development of:
      NLS use strategies suitable to the organization's
      environment; procedures within the organization for

A NEW ARPANET SUBSCRIPTION SERVICE:
THE WORKSHOP UTILITY at OFFICE-1

implementing these strategies; and possible
special-application NLS extensions (or simplifications) to
handle the mechanics of particular user needs and
methodologies.   2c1

INFORMATICN ABOUT SUBSCRIBING   3

The initial service is almost fully subscribed for at this
time. As additional subscription applications are forthcoming,
ARC will add appropriately to the computer facility and also
will add to the ARC staff that provides technical services to
subscribing organizations.   3a

During this first year, ARC has set the minimum subscription
level at about 5% of the initial configuration's capacity for
a full year's service. Each minimum subscription unit gives a
guaranteed access to what is now estimated to be one user job
(slot) at all times during the 16 hour, 6-day service period,
in addition to a proportionate share of direct and indirect
technical assistance.   3b

Later this year, ARC plans to develop a means for
potential user organizations to purchase service for trial
use in smaller amounts.   3b1

Also, as the Workshop Utility user community grows in size
and as further technical developments occur, it is
anticipated that the cost per unit of computer service will
decrease significantly. ARC's goal is to cut it by 50% each
year.   3b2

Until some operating experience is gained, relative to the
load-carrying capacity of the initial OFFICE-1 computer
configuration and the consumption characteristics by the
initial users, ARC is very roughly estimating that about 20
user jobs (non-system jobs) can be supported simultaneously
with reasonable system responsiveness. ARC will try to
maintain a load average of under 6.0 in TENEX load terms.   3c

A NEW ARPANET SUBSCRIPTION SERVICE:
THE WORKSHOP UTILITY at OFFICE-1

Access to subscribed-to job slots will be guaranteed through
use of the "group allocation system" that was developed and
used at SRI-ARC during the past year.   3d

Information about subscribing to the Workshop Utility Service
may be obtained by writing or calling: 3e

   Mr. Jim Norton, Assistant Director
   Augmentation Research Center
   Stanford Research Institute
   333 Ravenswood Avenue
   Menlo Park, California 94025

      Telephone: (415) 326-6200 ext 2124.   3e1

   or by ARPANET mail to: 3e2

      NORTON@SRI-ARC or
      NORTON@OFFICE-1   3e2a

   or through the NLS Journal system to ident: JCN   3e3

                                                                              3e4

SCOPE OF THE SERVICE   4

   Applications being suggested for exploratory use by Utility
   users are described in a paper by D.C.Engelbart, R.W.Watson,
   and J.C.Norton: 4a

   (14724,) "THE AUGMENTED KNOWLEDGE WORKSHOP," AFIPS
   Proceedings National Computer Conference, June 1973.   4a1

   and in an earlier paper by D.C.Engelbart: 4a2

   (12445,) "COORDINATED INFORMATION SERVICES FOR DISCIPLINE-
   AND MISSION-ORIENTED COMMUNITIES," Stanford Research
   Institute, Augmentation Research Center, 12 December
   1972.   4a3

   Copies of these documents may be obtained through the ARPA
   Network Information Center (NIC).   4a4

The suggested types of workshop services that OFFICE-1 can
begin to support, at varying levels of capability, are: 4b

   Collaborative Dialog

A NEW ARPANET SUBSCRIPTION SERVICE:
THE WORKSHOP UTILITY at OFFICE-1

Document Development, Production, And Control
Research Intelligence
Community Handbook Development
Computer-Based Instruction
Meetings And Conferences
Community Management And Organization
Special Knowledge Work By Individuals And Teams   4b1

For each area, there is an immediate applicability of the
basic NLS provisions for composing, modifying, studying,
publishing, collaborating, etc., and ARC has additional
special provisions specifically supporting almost every area.
ARC is dedicated to continuing the evolution of each area in a
persistent, year-after-year strategy where the profile of
evolutionary effort expended at any given time over the array
of application specialties is to be responsive to the profile
of application needs and values of the user communities.   4c

ARC'S OBJECTIVES   5

A key part of the Workshop Utility service will include
working with subscribers' personnel in the mutual development
and use of procedures, methodology, software features, and
other computer tools; and in the training of users to allow
their exploratory use of Augmented Knowledge Workshop systems.   5a

ARC has three main objectives in this activity: 5b

1) To provide a straightforward means for each client
group to get the computer support and technical assistance
necessary for exploring the applicability of the "Augmented
Knowledge Workshop" techniques within their own domain of
people and activities.   5b1

2)   To build a user clientele who will find real value in
exploring the potential of the service, and whose
participation will promise long-term benefit to both ARC
and the clients--by making the users' activities more
effective, and by accelerating the maturation and
acceptance of Augmented Knowledge Workshop techniques.   5b2

3) To develop the know-how and capability for combining
innovation with new-development transfer.

                                                                 5b3

ARC'S APPROACH TO THE CHALLENGE OF TECHNOLOGY TRANSFER   6

A NEW ARPANET SUBSCRIPTION SERVICE:
THE WORKSHOP UTILITY at OFFICE-1

ARC is beginning to transfer technology from its local group
of experienced users to a wider group of less experienced (in
our technology), geographically separate users within the user
community. This technology consists of computer software
capabilities; a coordinated repertoire of computer-assistance
tools; associated concepts and language additions dealing with
the tools and with the information organization and task
processes associated with their use; and new aspects to
intra-group organization and working methodology. Training a
group in these new matters is necessary to the transfer; and
to help others learn to train people in the new technology
requires a transfer of the additional technology used to
support the training.   6a

The process of technology transfer is not a simple process,
judged by ARC's and others' experience. ARC bases its current
strategy upon experience that indicates that there are at
least two main requirements for the transfer process both to
be successful and to proceed at a reasonable speed and cost: 6b

1) The group originating the technology and having the
experience, enthusiasm, and initial commitment to its value
must follow through with training and application support
of "external" user groups until a critical mass of
equivalently experienced and enthusiastic end users has
developed.   6b1

2) Each end user group must have at least one properly
placed, active supporter of the transfer process. ARC has
been using the term "local Workshop Architect" for this
role.   6b2

The function of this person is to be familiar in detail with
the needs of his organization, with the special NLS-based
workshop capabilities being offerred, and with other
alternative, complementary systems. This person, knowing his
(or her) group's needs and available capabilities, will help
introduce a workshop system meeting these needs into his
organization in the appropriate evolutionary stages.   6c

ARC personnel will work closely with each Workshop
Architect--in training him, in giving him significant help in
his role, and in a continuing exchange of technical
information.   6d

A NEW ARPANET SUBSCRIPTION SERVICE:
THE WORKSHOP UTILITY at OFFICE-1

(J21645) 28-JAN-74 15:33;   Title: Author(s): Stanford Research
Institute , James C. Norton/&SRI-ARC JCN; Distribution: /DCE JI RWW MDK
JHB; Sub-Collections: SRI-ARC; Clerk: JCN;
Origin: <NORTON>M.NLS;2, 28-JAN-74 10:31 JCN ;

The Monthly Online Newspaper for the ARPANET Online Community
****

ARPANET News

February 1974

Issue 12

NIC 21646

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

(contents)   ARPANET NEWS   February 1974   Issue 12   21646

  : The ARPANET vehicle for world understanding, for forming :
  :   a meeting ground of the world networking community to   :
  :   express their ideas and share their evolving will   :
  :   toward a universal sharing and cooperative work   :
  :   environment for world good   :

For Online Viewing at:
   NIC - type nic<CR>.
   CASE-10 - type: <calvin>news<CR>, then ?, for help instructions.
   ISI - type: <iseli>news<CR>, then ?, for help instructions.
   BBN - type: <poh>news<CR>, then ?, for help instructions.
   SRI-AI - type: <arpanews>news<CR>, the ?, for help instructions.

(info)   Information About the Publication

                                                                      2

     Sponsored by ARPA/IPT.
     Editorial Staff:
     Headed by Jean Iseli (MITRE) with volunteers who lend their
     welcome and appreciated assistance, as occasion arises:
       Ira W. Cotton (NBS   David H. Crocker (UCLA)
       Mil Jernigan (SRI-ARC)   Mike A. Padlipsky (Multics)
       David Wood (MITRE)
                     NIC Office Personnel:
                         Marcia Keeney
                         Judy Cooke
                         Carol Guilbault

                                                                      2a

     New online version available on 1st of month at:

       NIC - Login, type: nic<CR>, then follow instructions in the NIC
     Query Language.
       CASE-10 - Login, then type: <calvin>news<CR>, type a ? for
     available commands. A "describe" command will explain the commands
     and their usage.
       ISI - Login, then type: <iseli>news<CR>, then a ?. Uses CASE-10
     program.
       BBN - Login, then type: <poh>news<CR>, then ?. Uses CASE-10
     program.
       SRI-AI - Login, then type: <arpanews>news<CR>, then ?. Uses
     CASE-10 program.

                                                                      2b

     Online version contains month's basic issue plus weekly updates.
     To obtain a print of the online file, login to NIC, enter NLS,
     load file <help>arpanews.nls; and output to your printing device
     or teletype. Viewspecs are already set.

                                                                      2c

     Hardcopy printed at SRI, mailed from NIC on the 5th of the month
     to: each Liaison, Principal Investigator, Station Agent, Network
     Associate, and certain other Network related persons. Local
     reproduction of multiple copies is encouraged.

                                                                      2d

Contributions to the NEWS may be forwarded to JI at NIC through
the NIC Journal, by SNDMSG 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
MFJ through the NIC Journal, by SNDMSG to JERNIGAN@NIC, or mailed
to Mil Jernigan, Stanford Research Institute, Augmentation
Research Center, 333 Ravenswood Ave., Menlo Park, California.
94025.

2e

(editorial)   Editorial - Networks and Evolution

3

Once upon a time when computer jockeys weren't born yet and a
jockey was a small gentleman who rode a racehorse instead of a big
guy with lots of hair and a beard who punches console buttons and
spins tapes, a strange beast called a horseless carriage came into
being. It was a substitute for a horse, and a poor one. The phrase
"spend more time under it than riding in it" became a buzz phrase
of the day. Its unreliability was legendary.

3a

Then some wise and hard-nosed businessmen put some semblance of
dependability and predictability into the beast, and it was known
as the automobile, or car, and became the foundation of a new
culture.

3b

Now a new strange beast has arrived on the scene -- a venturesome
surrogate pencil. When strung together with wires and satellites
it is known as a computer network. Like the early days of the
other strange beast, this multi-pencil substitute also has a
legendary unreliability. "Sorry, about that--we crashed " is the
current buzz phrase.

3c

Now has come the time when the sponsors might logically expect
this strange beast to start growing up and showing some sense of
responsibility. Accounting systems, charges, and noises like
expecting a little more dependability are being heard from every
side.

3d

Inherent in the concept of a resource sharing computer network is
the idea of cooperative, collaborative working mode. This calls
for a very special "place for people's heads" -- a special ability
to be cognizant of and concerned for the welfare of the whole.
This long-term objective and viewpoint requires a personal feeling
of responsibility for the welfare of the Network instead of the
short-sightedness of acquisitive self-interest.

3e

A good beginning was made in Menlo Park this past month when the
USING Group formed a series of Subcommittees (see story, this
issue) to address some of the Network problems and developments.
The USING Group consists of people from the Network who are
interested in promoting the interest of the users of the Network.
One of the groups formed is to study the proposed set-up of a
Network Performance Measurements Lab, or as they phrased it, a Net
Consumers Union Committee. This is a badly needed operation and
one from which much benefit should come for both the users and the
Network, itself.

3f

It is anticipated that an outgrowth of this Net Consumers Union
will be such ideas as testing and certification of both systems
and software before their release as a public service, according
to certain basic criteria of excellence (to be researched and
possibly established for the Net by another group, the Service
Center Definition Committee).

3g

With the backing of ARPA-IPT in this endeavor (and this backing
was very apparent at the USING meeting), the ARPANET shows every
promise of becoming the global tool for enhanced communication and
understanding between nations and their scientists and people that
was envisioned for it in its beginning.

3h

(netedbox)   Boxscore of NETED Sites

                                                                        4

            --   4a

                       NETED BOXSCORE   4b

            --   4c

                                                                        4d

     CASE-10   - Neted up and running;
                    call as a subsystem.   4e

     Multics   - New version being debugged   4f

     UCSD   - Up shortly; being crash-proofed.   4g

     AMES-67   - New version thought to be up   4h

     SRI-ARC   - Rumors of NLS compatible version; ???   4i

     MIT-ITS   - Rumors of own version   4j

     SDC   - Will pick up CCN version   4k

     UCLA-CCN - New version being debugged   4l

     NOTE: All TENEX Systems may run NETED by
       FTPing a copy and installing in their
       subsystems. Contact Jim Calvin or A. J.
       Rosenfeld at CASE-10.

                                                                        4m

(available)   New ARPANET News Online Availability

5

With the collaborative help of three network citizens: Al
Rosenfeld, Josi Althouse, and Jim Calvin of CASE-10, the ARPANET
News is now available at the following sites [invocation
information is supplied].

5a

SITE	INVOCATION Procedure
BBN	@<poh>news<CR>
ISI	@<iseli>news<CR>
CASE-10	@<calvin>news<CR>
NIC	@NIC<CR>
	-A[rpanews]<CR>
SRI-AI	<arpanews>news<CR>

5b

The CASE-10 folk adapted a module of their Delphi system to enable
online viewing of the News at any TENEX site willing to support
the capability. It is hoped that accounts may be set-up for the
News at each TENEX site so that the user will only need to type
the command: ARPANews<CR> to see the online version. Non-TENEX
sites have been and are being approached to consider implementing
a command consistent version of the current program.

5c

The current program [exclusive of the NIC Query version], responds
to the "?" for a list of possible commands, and contains a
describe command for help on the use of any command. It allows
users to peruse an index of the current issue, examine subtopics
for pertinent index entries, selectively read indexed articles,
or, just browse through the News. Printing of any article can be
terminated with a control O, ↑O. Remember that the "read command"
only works for articles below the current one, so, when
selectively reading the news, it is good practice to go to "top"
prior to ensuing use of the read command.

5d

The following is a Telnet Typescript scenario of use of the
program at ISI to view the January issue:

5e

    TELNET typescript file started at SUN 27 JAN 74 1231:13

    #isi (settings loaded) is complete.#
     ISI-TENEX 1.31.65, ISI-TENEX EXEC 1.51.2
    @<iseli>news
     ARPAnet News Letter
    %%?
    One of the following:
    <CR>
    all
    browse
    describe
    quit
    read
    show.contents
    show.subtopics
    top

                                                                    5f

    %%show.contents
    ABSTRACTS   Abstracts of recent documents of interest
    CALENDAR   Events of Network Interest
    CASE-10   Update on DELPHI
    <↑O>

                                                                    5g

    %%show.subtopics (for topic) NORWAY   Norway-TIP
    NDRE   Norwegian Defence Research Establishment
    NORSAR   The Norwegian Seismic Array
    NORSAR-TIP   Norwegian SITE - An Introduction
    RBK   The BLINDERN-KJELLER Computer Facility

                                                                    5h

    %%top
    %%read (topic) X3S37   Ad Hoc group on Packet Switching
    Networks
     x3s37   Ad Hoc Group on Packet Switching Networks
    <↑O>
    %top
    %%browse

                                                                    5i

TITLEPAGE   The ARPANET News
The Monthly Online Newspaper for the ARPANET Online Community
****

The ARPANET News

January 1974, Issue 11, NIC 21212

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

<10>
%%quit
@logo

5j

(office-1)   A New ARPANET Subscription Service

The Workshop Utility at OFFICE-1

6

.........by J. C. Norton, SRI-ARC

6a

INTRODUCTION

6b

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6x

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6y

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6z

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6a@

SCOPE OF THE SERVICE

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training him, in giving him significant help in his role, and in a
continuing exchange of technical information.

6av

(alex)   Interview With Alex McKenzie, BBN-NET

7

        Following is an online interview conducted on 23-24 January
1974 in which Alex McKenzie, BBN-NET, discusses IMPs, TIPs, the
ARPANET, and research philosophy in general.
        "(aam)" is Alex McKenzie
        "(ji)" is Jean Iseli, Editor of the ARPANET News
        "(Mil)" is Mil Jernigan, reporter for the ARPANET News.

7a

        (aam) What can I tell you about the IMP/TIP development
efforts going on here?

7b

        (ji) Alex, first I wanted to thank you for the really
informative and complete article you gave us in November. It has
been of real value to many of the new users we talk to.

7c

        (Mil) The high quality of the articles coming from BBN has
been a very great source of pride in the personnel of the Net
nodes and pleasure in being able to print them. We realize that
you people have put in a good bit of effort along that line and
done it very well, indeed. However, those were TECHNICAL reports
as opposed to the human story of the Net which is one of the jobs
of the News to print. We feel very strongly that if the Network
people learn to know each other as people working in allied tasks,
then the work of making a cohesive and strong Network will be
advanced. So today, we wanted to talk to you about the human side
of the job of keeping up the TIPs/IMPs. We would like the Net
users to become acquainted with the less technical side, and the
story of how you do it, problems you run into, what it takes to
keep up the work and things of this nature.

7d

(aam) I suppose I should first talk a bit about the staff.
The Network Control Center is manned around the clock by a staff
of computer operators. Things have progressed to the point that it
requires two or three operators on duty during the day to handle
problems, although nights and weekends still have only single-man
coverage. Backing up the operations staff and their supervisor is
the technical staff, both hardware and software people, who can be
called in to help with especially difficult problems. Of course,
we can only deal with problems that we know about, so a large
amount of effort has gone into making it easy to learn of
problems. The methods include; instrumentation of the IMPs and
TIPs themselves, with automatic reporting to the NCC via the
Network, The willingness of the NCC to accept collect calls from
any user at the NCC number —(617) 661-0100 — the "GRIPE" facility
of the RSEXEC (TIP users can get this via the "@n" command) and
the recent installation of a TENEX-driven "Autodialer" which calls
every modem on a TIP (if we know its number) periodically and
reports possible troubles to the operators.

7e

(ji) Alex, we have experienced users coming into the
MITRE-TIP and changing speeds so that other users, at 30CPS, can't
get in after the different speed user hangs up; I understand that
the next version of the software will take care of this problem.
Are there other problems you can cite that are recurring in nature
that create hardship for the NCC maintenance people?

7f

(aam) There are some other user actions (or inactions) that
cause us recurring trouble. For example, the TIP is designed to
handle interactive terminals, with input at typing speeds, but
people persist in trying to attach computers to the terminal
ports. Each time this happens, it costs our TIP programmer at
least 1/2 a man-month trying to make it work. Further the sites
then complain every time we change the TIP command structure to
make it easier for PEOPLE to use the TIP. Another problem is that
the TIP code is written to support a wide, but not infinite,
variety of terminals. We ask the sites to tell us what terminals
they're using so that we don't hurt performance by subsequent code
changes, but many sites don't bother. Recently we changed the code
supporting 2741's and ended up making some other "totally
compatible" terminal unusable. Of course, we had no details about
this other terminal.

7g

(Mil) This is interesting about the terminal compatibility. I have often wondered why among the terminals you have listed as "compatible" and "taken care of in coding for the TIPs", you do not ever list TI terminals. I think there are more TI's on the Net than any other kind of terminal.. wonder why?

7h

(aam) The latest version of the TIP Users Guide (Appendix D) now lists the "TI Silent 700". This page was revised 11/73. Part of the reason it was not listed previously is because no one had sent us the documentation for the terminal so we couldn't tell if it was supported or not

7i

(Mil) Alex, have you seen the new TI terminal they are coming out with? The keyboard is completely changed. They also have some non-ASCII keys on it.

7j

(aam) No, I haven't seen it, but people better not expect it to work with the TIP, at least until someone sends us specs and we get a chance to review them. Of course, I'm not saying people shouldn't experiment, just that they shouldn't expect perfection.

7k

(ji) Alex, an area that is hard to formulate a reasonable question to but of great interest, is the area of fault isolation so that corrective steps can be taken. Is the interface between an IMP and a host computer such that softwware bugs are easily detected as belonging to the IMP or Host NCP, or is that an area of recurring difficulty?

7l

(aam) Neither, I suspect. The IMP knows nothing about Host/Host protocol, so bugs in that area have to be worked out between Hosts.

7m

(ji) I understand that. What I was trying to address, is that from a TIP user's point of view, it is often difficult to tell what a problem really is. For example, when you get OPEN T OPEN R, and never get the computer herald and just stay hung. Sometimes it is almost impossible to tell if the problem is with a computer or the IMP. I was just curious about the possible ambiguities in fault isolation.

7n

(aam) Until recently, we have taken the point of view that Host problems were not an area of our authority, and thus not our responsibility. Recently ARPA has suggested that we modify this view somewhat, and we are now beginning to look into the problems of fault detection and isolation in this area (perhaps for only a few selected Hosts). I'm sure techniques will be worked out, we just haven't even tried much in the past (except, of course, for wanting to be sure the TIPs and IMPs themselves were functioning correctly). Let me suggest that the next time that a problem occurs, leave the terminal connected and call the NCC. We really do want to get rid of our own bugs, and assist the Hosts in isolating problems which are theirs (if any). We can't usually do much, though, unless the diagnosis can be done while the problem exists; hearing about it an hour, day, or month later doesn't help much.

7o

(ji) Alex, could you give us some insight into what you have found, relative to users finding problems, through the TIP GRIPE facility. Has the facility shown a reasonable payoff?

7p

(aam) It makes some people happy, and we have learned about some problems that way. Not enough people use it though. I wouldn't want to remove it, but if more users would take advantage of the facility we might be able to help them more. One problem is that many users don't leave us an unambiguous return address or telephone number, so we can't call them or contact them for more information.

7q

(ji) What problems would there be in prompting users for the minimum necessary information to remove these ambiguities?

7r

(aam) None, I suppose. It's a question of whether to put our scarcest resource, manpower, on that improvement or some other job.

7s

(ji) The recent USING meeting formed a committee to look at the overall feedback problem, maybe useful software will be an outcome of their efforts. I will make sure you are kept advised; maybe a little collaboration can be affected.

7t

(aam) Nancy Neigus, from this group, is also involved in the
USING group, and I think she is aware of the types of problems we
have with the "GRIPE" system.

7u

(ji) Right. In fact she recently sent a fairly comprehensive
note that was of invaluable assistance to that committee's work. I
am curious to know your opinion on the topic of the Network's
evolution relative to overall reliability and availability issues.
Would you say the Net is going through a substantial improvement
cycle at this time?

7v

(aam) It's really a question of what ARPA wants and is
willing to pay for. The Network has never been funded as anything
other than an R&D project (from which ARPA has gotten enormous new
insight into technological possibilities). Right now ARPA is
having us develop the SIMPs, HSIMPs, FLIs, RJE mini-Hosts,
expanded Network capabilities in routing, growth, etc. This isn't
the way to make the Network more reliable in my opinion. If one
wants a reliable Network, one should stop all changes, provide
back-up machines and back-up power, stop all software development;
in short, act like an electric power company or a telephone
company rather than like an R&D project. This would have the
unfortunate effect of slowing new development down to the rate of
(say) one new thing every 10 years, but would probably buy better
reliability and availability. BBN as an R&D company isn't pushing
that plan, but you can't really have your cake and eat it too.

7w

(ji) Do you see the new companies TELENET and PCI as healthy
alternatives? I.e., the tradeoff between R&D and reliable Net
operations can now be made more intelligently with their
emergence?

7x

(aam) I think TELENET, and probably PCI, will be just as
conservative as existing carriers, once they have customers to
satisfy. I don't think that significant innovations will come out
of their "normal" operations, but will be done, if at all,
separately from their service. Remember, Bell Labs doesn't operate
any central offices, and the Palo Alto telephone office isn't
experimenting with research.

7y

(Mil) We were discussing possible changes to the Network that
some of the recent additions and recent "trends" seem to indicate.
You made some very good comments about research vs. development
and service organizations, in particular, the point of the
tradeoffs between system reliability and research. This was
discussed at the USING meeting and Craig Fields made the comment
about reliability, that it was not optimum to the purposes of ARPA
and the ARPANET, as a research agency/network, to achieve one
hundred percent reliability. Innovation must be continued, and one
hundred percent reliability precluded change.

7z

(aam) First, let me try to reassure everyone that in spite of
our R&D charter we have ALWAYS taken reliability very, very
seriously. We believe that the availability of the "average" IMP
and its connections to the rest of the network (perhaps excluding
Hawaii, Norway, and London where we have only single circuits) is
better than 98%. We feel that this is better than most of the
"service" Hosts, and certainly better than most of the "research"
Hosts. Nevertheless, people are still somewhat unhappy with the
availability and reliability. I'm not really sure that it will be
feasible to raise the availability SIGNIFICANTLY above the current
(>98%) figure without making some rather drastic "goal" changes in
the operation. As the employee of an R&D company, I'm pleased to
hear that Craig isn't eager to cancel all R&D, but I wonder if the
user community can then have its expectations fulfilled.

7a@

(ji) Alex, along the line of availability, isn't BBN looking
at a way to make files available even when the subject host is
down, so that a user could access his files and programs from a
different machine and do useful work even though his usual host is
unavailable?

7aa

(aam) That might be a part of the TENEX RSEXEC project. As
you know, the TENEX project is a different division of BBN;
although I of course talk to the people there I don't know their
plans or progress in any detail.

7ab

(aam) I should point out that the IMPs and TIPs can have a
lot of short (1-3 minute) problems which, because of their
duration, don't affect PERCENT availability figures at all but are
sure annoying to users. On the other hand, we in the Network
project also believe that many of the users' difficulties are
caused by Host problems rather than subnet problems. We must, of
course, try to avoid pointing the finger at others too often, so
we usually try to suspect our equipment first. As I said earlier,
ARPA has recently hinted that it would be desirable for this group
to actively concern itself with Host problems as well.

7ac

(ji) Alex, as a user of the Net, I have experienced real
frustration from the inability to ascertain the status of a given
host and plan my work around reasonable estimates of its
availability. It has occurred to a number of us that something
like a dynamic resource map might greatly facilitate usage of the
net. For example, the message "because HOST is disconnected"
although informative, leaves no information about when the host
might become available again. Recently, when one of the Network
sites was having disc problems, it was unavailable to users for
extended periods of time. As a user, if it were possible to access
such a status map, it would have been extremely useful to have
been able to get an estimate of when the host was to become
available again. In your opinion, is this type of concept a
practical one to view as an extension to the type of monitoring
that the NCC does?

7ad

(aam) Our operators are already pretty busy, so I hate to
think of having them do it manually very much. We have always
encouraged the Hosts to give their users as much information as
possible, and one approach to this type of thing might be through
something like the TENEX RSEXEC. For our part, we are currently
specifying a change to the IMP/Host protocol in the following
ways: 1) The Host will be given the ability, in the "Host Going
Down" message to say how soon, until when, and why 2) The IMP will
tell a sending Host, in the "Destination Host Dead" message,
whatever the destination Host told the IMP about when it will be
up and why it is down. Of course, there will not be much detail in
the "why down" field since it will have to fit in a few bits to be
backward compatible. The NCC operators WILL have the ability to
modify this data in the destination IMP. After all this is
specified and implemented in the IMPs, it will still remain to the
Hosts to send the right information to the IMPs, and to interpret
information received from the IMPs for the benefit of the users;
again we can't control whether this gets done or not, except that
we can make the TIPs do it.

7ae

(ji) That seems like a very good step forward. Although it would mean more load for the NCC, I can see real utility in Hosts sending the necessary information to the NCC when catastrophic crashes or other unforeseen exigencies occur. This capability could become a very significant help to network users; I am delighted to hear it is in process.

7af

(aam) The data will not be stored at the NCC (what if the NCC goes down?). It will be distributed through the IMP subnet in the same way that routing and other subnet functions are distributed.

7ag

(ji) Right, I understood that. What I was referring to was when a host crashes, unless the local people can enter it through the dedicated TTY, then the only other way to insert the data would be through a call to the NCC, since your people will have the ability to insert the data in the appropriate IMP.

7ah

(aam) Of course.

7ai

(ji) Alex, although it is somewhat afield from our conversation thus far, are there any new developments or status information that you might like to give at this time relative to developments potentially affecting network users?

7aj

(aam) We continue to expect to deliver IMPs and TIPs at an AVERAGE rate of about one a month. We are currently working on area routing, and other changes which would be necessary to expand the net beyond 63 nodes. We continue to be working on changes to the current system necessary for incorporation of new equipment like the HSMIMP. We are continuing the development of the HSMIMP, and expect to have some in the field this year. We have had two SIMPs ready for delivery for some time (there are a number of economic and political problems which ARPA must solve before they can be installed) and we are continuing to work on more sophisticated algorithms for the SIMPs. We are also involved in the development of a few types of "minihosts", among them an "RJE" device which will allow the connection to the network of a few IBM 2780's (or equivalent) and the "PLI" which will allow the connection of a very simple-minded Host without having to bother knowing about the network (it can continue to think it's communicating over a leased line).

7ak

(ji) The mini-host development effort for given functional
uses is very exciting. Alex, we would like to express our warm
appreciation for this interview.

7al

(aam) I'm glad to be able to do it.

7am

(neted)   NETED Current Status

8

25-JAN-74 14:55:01,3127
Net mail from site MIT-MULTICS rcvd at 25-JAN-74 14:54:36
From: Padlipsky.CompNet at MIT-Multics
Date: 01/25/74 1454-edt

8a

NETED Status

8b

At the recent USING meeting (reported on elsewhere in this issue),
it was felt by many that regular status reports on NETED would be
worthwhile. Because of both its inherent interest and its interest
as a harbinger of other common user interfaces to come, I suppose
I must agree with the feeling -- despite the fact that it means
I'll have to produce the reports. So, cheered up by the
understanding that as soon as everybody has one I'll be off the
hook (provided we don't change the spec again), here goes:

8c

Point one really ought to be a reminder of what a NETED is,
especially in view of the fact that many readers of the NEWS are
not avid followers of the Network Working Group's "Requests for
Comments". A NETED is a text editor, then; but not "just another
text editor". Rather, it's a text editor which presents the same
interface to the user on a number of Network Server Hosts (the
goal is all). A major motivation is to minimize the learning
investment for new users of the Net. The original spec was
published as RFC 569.

8d

Point two is that we've changed the spec a bit (or two). To
forestall design and implementation difficulties, we initially
agreed to use an existing, consciously "stripped down" editor as a
model. At a post-USING meeting meeting where four of the five
existing NETED's were represented, we decided that this compromise
had served its purpose (we can essentially cover the Net with the
existing and promised implementations discussed here last time),
and that some "dressing up" was in order. Therefore, we added some
requests, resolved some ambiguities, and agreed upon some changes
to make life simpler on some Hosts. The detailed description of
NETED usage will be published as soon as I can finish debugging my
new version and discharge some of the other obligations I
undertook at the pre-NETED meeting meeting. In the meantime,
particularly eager interested users can employ RFC 569 as a guide.

8e

The final point is what I think of as the Case of the
Serendipitous Snowstorm. That is, on the way back from the West
Coast, I had to stay an extra day because Logan Airport was snowed
in. This gave me the chance to visit two additional sites, from
which I extracted one promise to pick up a NETED and one
half-promise. Don't want to put undue pressure on the latter, but
the former Good Network Citizen was SDC (Mort Bernstein,
promisor). The moral of all this is that if your favorite Host
doesn't have a NETED yet, ask your Technical Liaison why not. And,
Liaisons, for the NETED nearest you, simply look in your ARPANET
DIRECTORY for

        Mike Padlipsky
        MIT-Multics

                                                                8f

(using)   ARPANET Users Interest Working Group

9

The second meeting of the ARPANET Users Interest Working Group was
convened on the 3rd and 4th of January 1974 at the Network
Information Center, Menlo Park, California. In attendance were:

9a

Dave Crocker [UCLA-NMC]   Nancy Neigus [BBN-NET]
Jean Iseli [MITRE]   Bob Braden [UCLA-CCN]
Barbara Noble [UCLA-CCN]   Jim Calvin [CASE-10]
Alan Rosenfeld [CASE-10]   Mike Padlipsky [MIT-MULTICS]
John Day [ILL-ANTS]   Alan Hill [SDAC-TIP]
Clayton Greer [UCSB]   Wayne Hathaway [AMES-67]
Mike Kudlick [NIC]   Jake Feinler [NIC]
Harvey Lehtman [SRI-ARC]   Jim White [SRI-ARC]
Dick Watson [SRI-ARC]   Mil Jernigan [SRI-ARC]
Craig Fields [ARPA/IPT, Mar. '74]

9b

At the beginning of the meeting, Craig Fields indicated an
increase in ARPA-IPT's interest in Network performance and
user-level issues. He suggested that USING might serve in an
advisory capacity for activities directed at dealing with those
issues. He also suggested that, rather than have the entire group
discuss individual issues, special-purpose committees should be
used. As a result, seven such committees were formed; their goals
and membership are indicated below. The NIC has created a common
directory (<USING>) and special group idents, to facilitate
collaboration.

9c

The Service Center Definition and the Feedback Mechanisms
Committees were commissioned to generate reports by the end of
January, in time for the ARPA Principal Investigator's meeting.
The other committees have more extended deadlines.

9d

In the following list of committee's, the group ident is indicated
after the committee name and the first named person is the
chairperson for the committee.

The next USING meeting is currently scheduled for July 11-12,
1974, at Boulder, Colorado.

9e

Common Command Language Definition Committee (CCL)

9f

Mike Padlipsky, Nancy Neigus, Alan Rosenfeld, Jim Calvin, Clayton
Greer, and Bob Thomas [BBN-TENEX].

9g

First-pass formulation of basic structure and function for CCL.

9h

Definition of Users Committee (UDEF)

9i

Nancy Neigus, Wayne Hathaway, and Jake Feinler.

9j

Describe the different classes of users and the differences in
their needs.

9k

Feedback Mechanisms Committee (FEEDBACK)

9l

Jean Iseli, Dave Crocker, Alan Rosenfeld, Jim Calvin.

9m

Describe general and specific mechanisms needed to facilitate
communications with "users". Describe factors motivating those
mechanisms.

9n

Help and Documentation Mechanisms Committee (HELPDOC)

9o

Alan Hill, Clayton Greer, Harvey Lehtman, Alan Rosenfeld, Jean
Iseli, Mike Padlipsky, and Jake Feinler.

9p

Specify syntax for online documentation; consider its content and
types of portrayals to it.

9q

Neted Monitoring Committee (NETED)

9r

Mike Padlipsky, Jim Calvin, Wayne Hathaway, and Dave Grothe
[ILL-ANTS].

9s

Debug Neted Common Editor document; verify implementation
conformities, advertise availability of various Neteds.

9t

Performance Measurement Laboratory / Net Consumers Union Committee
(CONUNION)

9u

Mike Padlipsky, Jim Calvin, Mike D. Kudlick, Clayton Greer, and
Dave Crocker.

9v

Define scope of a possible Performance Measurement laboratory; how
it should evaluate services available on Net; what tools it should
develop to make that evaluation.

9w

Information Management Committee (INFOMAN)

9x

Nancy Neigus, Mike Padlipsky, Barbara Noble, and Alan Hill.

9y

Determine what information services should be available, how and
by whom they are to be prepared, advertised, and distributed.

9z

Service Center Definition Committee (SERDEF)

9aa

Members: Dave Crocker, Mike D. Kudlick, John Day, and Alan Hill.

9aa

What are the parameters important in defining a Network "service"?
Attempt to set values for those parameters.

9ab

(ncc)   Standards for Computer Networks

10

    Date: 18-JAN-74 1440-EDT
    From: Ira Cotton at NBS-TIP
    Re: Session at National Computer Conference

10a

Following is the abstract for my session at the National Computer
Conference:

    Standards for Computer Networks

10b

With computer networks developing at a rapid pace and showing
signs of becoming an important segment of the computer /
communications industry, the question of standards is becoming
more important. Standards are needed to permit both the use of
multiple networks by users with a single set of terminal
facilities, and the eventual interconnection of such networks.
This session will identify and discuss some of the relevant issues
in establishing network standards.

10c

Chairman: Ira Cotton, National Bureau of Standards

Presented Position Paper: Alex McKenzie, BBN
        "Some computer network interconnection issues"

Panelists: Dr. Vinton Cerf, Stanford University
           Dr. Ralph Alter, Packet Communications, Inc.
           David Tutelman, Bell Telephone Labs
           Louis Pouzin, IRIA (France)

10d

(illiac-iv)   Extracts from ILLIAC NEWSLETTER

The following series of articles were extracted from the "NEWSLETTER"
which is prepared by the Institute for Advanced Computation for users
of the System that includes the ILLIAC IV processor. The articles are
divided into two groups: historical and current. The former group
addresses descriptive information relative to assorted system
components to better inform the ARPANET community about the ILLIAC
IV, and the second group includes items of current interest and
status information about ILLIAC IV usage. Back issues of the
"NEWSLETTER" may be requested through SNDMSG submissions to the
directory <ARPA-USERS> at I4-Tenex.

11

(system)   Introduction to the System

11a

The System that includes the ILLIAC IV Processor is an
integrated system of data processing, information storage, and
communications equipment located at NASA Ames Research Center,
Moffett Field, California. The System, through a high-speed
communications network (the ARPA Network), provides large-scale
computational and file management services to a growing
community of users located throughout the nation. Through the
ARPA Network, specialized analysis and research groups seeking
solutions to a range of contemporary problems have access to
required computational power not otherwise available to them,
and not economically feasible on an individual or regional
basis.

11a1

The System is being developed at Ames Research Center by the
NASA Institute for Advanced Computation (IAC). The Advanced
Research Projects Agency (ARPA) of the Department of Defense
underwrote the research and production that were required in
the early phases of development. Since 1971, the System at Ames
has been sponsored and managed by a multi-agency Board of
Owners and today IAC receives its technical direction from this
Board. The Board currently includes representatives of NASA,
ARPA, and IAC. The multi-agency character of the Board ensures
that the services of the System are not dedicated to a single
problem area or problems of a single group. Rather its unique
processing capabilities are available wherever they can be
applied in the solution of many different problems.

11a2

Projects that need and can efficiently utilize the System's
services receive entitlements to these services through
arrangements made with the Board of Owners. The users then
access the System and Receive service remotely--that is, at
each user's own site--through the ARPA Network.

11a3

The System being developed by IAC is the largest of several
systems of computing resources available to users through the
ARPA Network. Other resources vary from small interactive
systems to large conventional processors. This network approach
to the distribution of computer system services is one of the
principal economic justifications for the development and
operation of large systems--on the scale of the IAC System--for
users whose applications require such systems but who cannot
economically justify a dedicated system. The small systems on
the Network are used for communications and for program and
data preparation tasks, allowing larger resources to be applied
to tasks commensurate with their special capabilities.

11a4

The IAC System includes two one-of-a-kind devices, the ILLIAC
IV Processor and the UNICON Laser Memory. The ILLIAC IV, which
is the principal processing resource in the System, is capable
of executing at the rate of 150 million operations per second
with an average instruction execution time of between 5 and 10
nanoseconds (that is, an average instruction executes in 7
billionths of a second). Mass storage in the System is provided
by the UNICON Memory which has a total on-line capacity of over
700 billion bits or 85 billion characters of storage. This
combination of processing speed and data storage capacity
represents the single most powerful computational facility
available on the ARPA Network today.

11a5

(institute) The Institute for Advanced Computation

11b

The Institute for Advanced Computation, located at Ames
Research Center, was formed in 1971 by NASA to develop and
operate the System which includes the ILLIAC IV Processor. At
the present time, the Institute numbers approximately 125
people including system designers, applications specialists,
engineers, computer programmers, and operations and maintenance
personnel. The composition of the Institute includes both NASA
employees and five different technical firms.

11b1

The System today represents the integration of many components,
both hardware and software, whose development began in the
mid-1960's. Several of the individual components, such as the
ILLIAC IV Processor, were independently sponsored by ARPA
through research and production contracts with various
insitutions and companies. By 1970, with feasibility of these
early efforts established, ARPA entered into an agreement with
NASA to locate the equipment at Ames Research Center and
shortly thereafter, NASA formed the Institute for Advanced
Computation (IAC) to implement this agreement.

11b2

The Institute, under the direction of the Board of Owners, has
a charter to perform the following functions:

   o Integrate the equipment and develop the System;
   o Operate the System and distribute its services on
     behalf of the owners;
   o Make continuing technical improvements to the System
     at the direction of its owners;
   o Perform continuing research in computer systems
technology.

Reflecting the basic economic and technical principles
underlying the development of the System, IAC has made the
services of the System available to users nationwide via the
ARPA communications network.

11b3

(illiac)   The ILLIAC IV System

11c

The ILLIAC IV System includes the ILLIAC IV Processor, a 256K
(32-bit word) Processor Memory, and a 32-million-word main
memory device, the ILLIAC IV Disk Memory. (Note that ILLIAC IV
Memory is normally expressed in terms of 64-bit words. However,
in order to make it easier to compare ILLIAC IV Memory with the
memory of other computers, ILLIAC IV Memory is expressed in
terms of 32-bit words throughout this article.) This System,
which is the largest parallel processor in the world, is
totally dedicated to the execution of user code.

11c1

The ILLIAC IV Processor executes a common instruction sequence
simultaneously on a large number of otherwise independent sets
of data. This simple description contains the three key phrases
in understanding the parallelism implemented in the ILLIAC IV:
(1) a common instruction sequence, (2) simultaneously, and (3)
independent sets of data.

11c2

The instruction sequence is similar to that of any modern
large-scale processor. "Simultaneously" means that most
instructions in the program sequence operate on every one of
the independent sets of data at the same time. The number of
independent data sets can vary from one up to 512, depending on
the required word size of each data item and the skill of the
implementing programmer. With a single data stream, the ILLIAC
IV is functionally identical to the conventional, nonparallel
processor. The machine architecture, facilitates 64, 128, or
512 parallel data streams which are 64, 32, or 8 bits wide
respectively. Both 64-bit and 32-bit words are standard ILLIAC
IV word sizes and are implemented in parallel in the hardware
and in the programming languages. Eight-bit wide parallelism
may be thought of as a byte mode with more implementation in
the hardware and software.

11c3

To achieve this high degree of parallelism, the processor
structure consists of a single Control Unit (CU) that performs
instruction decoding and program control, and 64 arithmetic and
logic units referred to as Processing Elements (PE's). The CU
reads the instruction sequence stored in the Processor Memory,
decodes each instruction, and generates identical control
signals for each of the PE's. The entire set of PE's (or any
subset within it) executes the same instruction simultaneously,
under CU control, each on different sets of data. Any subset of
PE's, selected under program control, not executing the current
instruction is idle.

11c4

The instruction set and instruction execution times of each
individual PE in the ILLIAC IV Processor equal or exceed those
of conventional processors. For example, when the processor is
fully operational, a full 64-bit, floating point, normalized
ADD will take approximately 30 nanoseconds to execute. A
MULTIPLY under the same conditions will execute in about 600
nanoseconds. Each PE can be readily partitioned (under program
control) into either two 32-bit or eight 8-bit parallel
subprocessors. For example, two 32-bit ADD's in parallel in a
single PE takes only slightly more than the execution time of a
single 64-bit ADD. (All of these example execution times
include a 64-bit operand fetch from Processor Memory.)

11c5

There is a single instruction sequence, stored in Processor
Memory. Interleaved in this instruction sequence, normally, are
computational steps executed by the PE's and program control
instructions executed by the CU itself. The CU, in addition to
controlling the PE's, executes instructions such as branching,
loop counting, and the generation of external system calls. In
order to provide a sophisticated control capacity (for example,
complex loop indexing), the CU has a complete instruction set
including arithmetic and logic, byte and bit, and special
control instructions. The CU is, if viewed as a stand-alone
device, a full-scale processor.

11c6

The high execution rate of the ILLIAC IV is achieved not only
through the parallel structure of the PE's, but also through
execution overlap.

11c7

For example, the CU is a modular device with several
asynchronous stages. The execution of instructions within the
CU is overlapped in time with the execution of instructions by
the PE's. In addition, the accessing of instructions from
Processor Memory is overlapped with the execution of these
instructions, implemented by storage for 128 instructions
within the CU itself. Finally, PE operand fetches are
overlapped with PE instruction execution.

11c8

The memory system for the ILLIAC IV system includes two storage
devices: Processor Memory and the ILLIAC IV Disk Memory. The
Processor Memory is working storage for both instructions and
data for the ILLIAC IV Processor. The Processor Memory is a
semiconductor device consisting of 256K (32-bit) words with a
cycle time of approximately 300 nanoseconds. This memory may be
thought of as an array of 64 columns and 2048 rows. Each column
(which is either two 32-bit words or one 64-bit word in width)
is associated with an individual PE. The CU can access the
entire Processor Memory, while each PE accesses only its
associated column. These different methods of accessing are
implemented through different addressing schemes and sets of
control electronics. In effect, the CU "sees" the Processor
Memory in a different way than does each of the PE's.

11c9

The Processor Memory functions as working storage for the
program and data being executed by the ILLIAC IV Processor. The
main memory store for the ILLIAC IV is the disk memory. This
device is a fixed-head rotating disk system with a capacity of
about 32 million (32-bit) words. The system is composed
physically of 13 disks which rotate synchronously with a 40
millisecond rotation period and which provide a maximum data
transfer rate of about 10^*9 bits per second.

11c10

(unicon)   The UNICON Laser Memory

11d

The UNICON Laser Memory is the largest storage device of the data storage facilities available to the central file system. The UNICON Memory provides on-line storage capacity of approximately 700 billion bits and has a removable recording medium providing a virtually unlimited off-line storage capacity. The device physically has two independent data channels and two recording drums. Wrapped around each of the drums is a removable mylar strip coated with a thin film of metal. A laser beam records binary data by permanently burning microscopic holes in the thin film. Each of the data strips on each of the drums can store about 1.5 billion bits, which is the equivalent of approximately 50 reels of standard magnetic tape in considerably less volume. Fixed beneath the two drums is a rotating strip carrousel which carries some 450 data strips mechanically loadable onto either of the two recording drums. The 450 data strips provide a total of more than 700 billion bits of storage. The strip packs in the carrousel, each containing 25 strips, are removable and provide an unlimited amount of off-line storage. Data access from or to strips which are mounted on the drums are effected in tenths of milliseconds. Data access requiring strips that must be loaded from the carrousel require up to 10 seconds of access time. The mechanical mounting of strips on the drum from the carrousel is automatic and does not require operator intervention.

11d1

In addition to providing a permanent data storage medium, the UNICON method of data recording offers other significant advantages over conventional, temporary storage devices. On the UNICON Memory recording strips, data once written may not be altered or overwritten, providing data safety and, if necessary, data audit trails. With its large capacity, each file, whether new, or copy, or an alteration, is written to an unused area of a strip.

11d2

(schedule) New Schedule for Users

11e

Normal System service for ACL users is now scheduled 24 hours a day, except as follows:

```
0200 - 0530 (PDT) : System down
1800 - 1900 (PDT) : Reduced service while files
                    are backed up
```

Occasionally modifications are made to the System on weekends and holidays which require taking it down.

11e1

Batch jobs are run during the following hours:

        0530 - 1800 (PDT) : B6700 user jobs are run
        0700 - 1100 (PDT) : ILLIAC IV jobs are run,
                            depending on System availability.

In addition, ILLIAC IV and B6700 batch jobs are normally run on
Saturday from 0800 - 1200 PDT. If a schedule conflict
interferes with the running of batch jobs on Saturday, batch
jobs will be run on Sunday morning.

                                                          11e2

(users)   ILLIAC IV User Progress

                                                          11f

The present ARPA users of the ILLIAC IV are divided into five
groups: (1) Climate Dynamics, (2) Parallel Processing
Techniques, (3) Network Studies, (4) Signal Processing, and (5)
Nuclear Monitoring Research Office (NMRO). The first three
groups are under the sponsorship of the Information Processing
Techniques Office, and the last two are under the sponsorship
of the Nuclear Monitoring Research Office.

                                                          11f1

In the Climate Dynamics Group, one of the pioneer users, Bob
Mobley of RAND Corporation, was instrumental in discovering
several GLYPNIR compiler errors. After these problems were
corrected and general improvements were made to the System, Bob
was able to get correct results from his runs on the ILLIAC. In
some cases, accuracy comparisons with simulation results have
shown agreements of up to 11 decimal positions. In other cases,
however, some of the results were in error and Bob is currently
trying to narrow the problems down. One of his recent efforts
is directed toward breaking down his code into smaller subsets
in order to get a handle on the problem areas. Recent code
modifications of this type have resulted in improved results.

                                                          11f2

The Parallel Processing Techniques Group includes a group at
the University of Illinois and the group at Massachusetts
Computer Associates which is doing the Parallel Analyzer and
the IVTRAN (extended FORTRAN) compiler. The IVTRAN compiler
recently produced a program which executed properly on the
ILLIAC. Several programs are under development at the
University of Illinois. Illinois has successfully executed a
Fast Fourier Transform program and a Linear Programming
program, and has recently been able to achieve correct results
executing program to analyze ERTS data in ILLIAC IV 32-bit
mode.

11f3

A few users in the Network Studies group have recently gotten
user ID's on the System. Some of the users in this group are
Purdue University, University of Utah, and University of
Southern California.

11f4

The Signal Processing group includes System Control, Inc., and
the Naval Underseas Center. Both of these users are developing
programs to process sonar data collected at sea and brought
back on magnetic tapes.

11f5

The remainder of the users under the sponsorship of the Nuclear
Monitoring Research Office are working on a variety of
projects. Successes have been reported by Raytheon in the
execution of a program to trace the path of a radio beam
through the atmosphere, and by System, Science, and Software in
the execution of a three dimensional stress wave analysis
program.

11f6

  (problems) Contacting your User Representative

11g

If you want to:

    o Report a user problem
    o Suggest ways to improve the System
    o Request additional information on how to use the System
    o Suggest topics to be included in future issues of
       "NEWSLETTER"
    o Be included on "NEWSLETTER" distribution

you can do so as a network user by contacting:

    Mr. John Gaffney
    ILLIAC Project Office
    1095 East Duane Court
    Sunnyvale, CA 94086
    Telephone (408) 735-0635

                                                                              11g1

(abstracts)   Abstracts of Recent Documents of Interest

12

These documents are announced for the interest of the ARPANET
Community; however, the NIC is not able to supply copies.

12a

Lance J. Hoffman, Editor (University of California at Berkeley,
Department of Electrical Engineering and Computer Sciences).
Security and Privacy in Computer Systems, Melville Publishing
Company, Los Angeles, 1973. 422p. NIC 19230.

An annotated and amplified collection of readings and
reprints on privacy and security in computer systems.
Several papers in this book have never been published
before, including a description of IBM's Resource
Security System. A summary of the conclusions of the
report of the National Academy of Sciences Project
on Computer Databanks also appears. Emphasis is
on technical aspects of both hardware and software
implementation schemes, with both theoretical and
experimental approaches to the problem. Numerous
references; indexed.

12b

Michael D. Schroeder, Jerome H. Saltzer (Massachusetts Institute
of Technology, Project MAC, Multics). A Hardware Architecture for
Implementing Protection Rings. In: Security and Privacy in
Computer Systems, Edited by Lance J. Hoffman; Melville Publishing
Company, Los Angeles, 1973, p.318-350. Reprinted from Comm. ACM,
Vol. 15, No. 3, March 1972, p.157-170. NIC 11688.

A discussion of the access control to stored information
in a computer utility. Described is a set of processor
access control mechanisms, devised as part of the
second iteration of the hardware base for the Multics
System. These mechanisms provide a hardware implementation
of protection rings which limit the access privileges of
an executing program. Although specifically designed for
Multics, the mechanisms are applicable to any computer
system which uses segmentation as a memory addressing
scheme.

12c

Peter S. Browne. Taxonomy of Security and Integrity. In: Security
and Privacy in Computer Systems, edited by Lance J. Hoffman,
Melville Publishing Company, Los Angeles, 1973, p.369-378. NIC
19233.

> Presented is a checklist for computer security
> which covers a great many areas. Not all of the
> items will be appropriate for any particular
> installation, and while possibly not complete
> the list can serve as a reasonable starting point
> for most users. The list covers such areas as a
> general approach, administrative and managerial
> concerns, hardware, physical environment, software,
> communications, audit, testing and certification,
> and protection of the security system itself.
> Not previously published.

12d

Lance J. Hoffman (University of California at Berkeley, Department
of Electrical Engineering and Computer Science). IBM's Resource
Security System (RSS). In: Security and Privacy in Computer
Systems, edited by Lance J. Hoffman, Melville Publishing Company,
Los Angeles, 1973, p.379-401. NIC 19232.

> IBM Operating System/360 - MVT with Resource Security
> System (RSS) is an operating system which increases
> the software protection available under Version 21
> of OS/360 - MVT. It plugs many of the trap doors not
> previously secured in the OS/360. The security system
> employs an authorization scheme whereby a user
> can access system resources such as programs,
> data sets, and terminals on the basis of security
> levels or through access categories or by using a
> combination of these. Not previously published
> except for certain portions of IBM documentation
> reproduced here.

12e

Lance J. Hoffman (University of California at Berkeley), The
Formulary Model for Flexible Privacy and Access Controls. In:
Security and Privacy in Computer Systems, edited by Lance J.
Hoffman, Melville Publishing Company, Los Angeles, 1973,
p.186-215. Reprinted from AFIPS Proc., FJCC, 1971. NIC 19234.

The paper presents a model for engineering the user
interface for large data base systems in order to
maintain flexible access controls over sensitive
data. The model is independent of both machine and
data base structure, and is sufficiently modular to
allow cost-efectiveness studies on access mechanisms.
Access control is based on a set of procedures called
formularies. User access is controlled by programs
(not merely bits or tables of data) which can be
completely independent of the contents of location
of raw data in the data base.

12f

T. D. Friedman (IBM). The Authorization Problem in Shared Files.
In: Security and Privacy in Computer Systems, edited by Lance J.
Hoffman, Melville Publishing Company, Los Angeles, 1973,
p.159-185. Reprinted from IBM Sys. J., Vol. 9, No. 4, 1970. NIC
19235.

A central concern in protection is the authorization
problem which involves determining whether a user
who is recognized by the system should be allowed
access. This paper considers authorization
apart from specific access mechanisms of operating
systems, and suggests directions for study and
research. A model is described, addressing the
problems of system integrity, user identification,
audit trails, and methods to share data selectively
among users.

12g

(calendar)   Events of Network Interest

2/4-5 74   Operating Systems Fest., U. of Mass.
2/5-7 74   (data)Wkshp-Performance Spec., Data Transm'n Sys.
2/12-14 74   2nd Ann Computer Science Conference
2/14-15 74   4th Ann. ACM SIGCSE Symp., Comp.Sci.Educ.,Detroit
2/24-3/1 74   AAAS Ann. Mtg., San Francisco
2/25-26 74   Symp. Category Theory, Computation&Control,S.F.
2/26-28 74   (compc) COMPCON, 8th Int'l IEEE, San Francisco
3/13-15 74   7th Ann. Simulation Symposium, Tampa
3/28-29 74   Princeton Conf., Info. Sciences & Systems
3/28-29 74   (sigpl)Very High Level Lang. Symp., Santa Monica
4/15-17 74   Nonlinear Programming Symp., U. Wisconsin
4/22-23 74   Workshop on Machine-Independent Graphics
5/23 74   (trends) IEEE Comp. Soc. Trends and Applications
5/6-10 74   NCC 1974 National Computer Conference
6/17-19 74   IEEE Intl Conf on Communications ICC74
6/24-26 74   (undrgr)Conf., Computers in Undergrad. Curric.
7/15-17 74   (graph) Conf on Comp Graphics
7/29-8/1 74   (jerusalem)2nd Jerusalem Conf.,Info Tech.
8/5-10 74   (ifip) IFIP Congress '74, Stockholm
*Meeting sponsored by an ARPANET interest group.

                                                                    13

(data) Workshop on Performance Specification of Data Transmission
Systems, Gaithersberg, Md. 5-7 February 1974.

                                                                    13a

    Sponsored by IEEE, Communications Society Data Communications
    Committee, Data Transmission Systems Subcommittee, and by the
    National Bureau of Standards. Objective: Improve level of
    common understanding between various groups and organizations
    having an interest in the specification, design, and use of
    digital data transmission systems. Contact: Terry Simms, Bell
    Northern Research, P.O. Box 3511, Station C, Ottawa, Ontario
    K1Y 4H7, phone (613)828-2761.

                                                                    13a1

(compc) COMPCON 74, 8th International IEEE Computer Society
Conference, 26-28 February 1974, Jack Tar Hotel, San Francisco,
Ca.

                                                                    13b

Theme: "Computer Peripherals - Benefactor or Bottleneck?"
Conference aims to present a total picture of peripheral
industry, featuring such topics as: devices, architecture,
applications, technology and innovations, and issues of past,
present and future. There will also be short notes and evening
sessions. Contact: Mr. A.F. Hartung, System Development
Corporation, 2500 Colorado Ave., Santa Monica, Ca. 90406, phone
(213)393-9411, x328/329.

13b1

(sigpl) ACM SIGPLAN, Symposium on Very High Level Languages,
Miramar Hotel, Santa Monica, California, 28-29 March 1974.

13c

Four sessions of 15 papers, nonprocedural and specification
languages, data structures, optimization, and automatic program
synthesis. Also short presentations on relevant topics.
Contact: Burt Leavenworth, Conf. Chmn., IBM Thomas J. Watson
Research Center, P.O. Box 218, Yorktown Heights, N.Y. 10598.

13c1

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

13d

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.

13d1

(undrgr) Conference on Computers in the Undergraduate Curriculum,
Washington State University, Pullman, Washington, 24-26 June 1974.

13e

National conference on multi-disciplinary forum for
disseminating information about educational uses of computers.
Sessions: refereed submitted papers; panel discussions;
demonstrations, exhibits. Inquiries to: Ottis W. Rechard,
Computer Science Dept., Washington State University, Pullman,
Wn., 99163.

13e1

(graph) Conference on Computer Graphics and Interactive
Techniques, July 15-17, 1874, University of Colorado.

13f

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.

13f1

(jerusalem) The Second Jerusalem Conference on Information
Technology, 29 July-1 August 1974, Jerusalem, Israel.

13g

Papers are sought on: operational environment of computers,
including, not limited to: personnel systems, management
information systems, health care delivery systems, financial,
process control, manufacturing, and a number of other subjects.
Original research, successful computer applications, or state
of the art reports are requested. Mms. deadline 31 Dec. '73.
Contact Dr. Herbert Maisel, Director, Academic Computation
Center, Georgetown University, Washington, D.C. 20007.

13g1

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

13h

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.

13h1

(extra)   ARPANET News Supplement [New Feature]

14

The "EXTRA" feature is designed to provide a forum for articles
which may be inappropriate for the ARPANET News, either because of
length or because they are directed to a subset of the readership.
This feature is a supplement to the News which will not be
distributed to the hardcopy mailing, but which will be available
presently only at the NIC for viewing online or for printing
online. To view the supplement online, when in NIC Query language,
type: b[ring]<help>extra<CR>, or for viewing and/or printing in
NLS, L[oad] F[ile] <help>extra<CR>.

14a

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.

14b

The current contents of the online supplement are:

14c

(contents)   Contents of ARPANET News Supplement

(contents)   Contents of ARPANET News Supplement
(London-TIP)   ARPANET -- A British way of life?
(x3s37)   Ad Hoc Group on Packet Switching Networks
(norsar-tip)   Norwegian Site - An Introduction
(tenex)   New Tenex Release
(bbn-net)   Status Report on the Terminal Imp
(bbn)   Featured Site: BBN-TENEX
(forum)   Institute for the Future : Computer Conferencing
(aloha)   The ALOHA System
(kuo)   An Online Interview with Dr Frank Kuo
(uk-ics)   The University College, London
(usc-isi)   USC-ISI Information Sciences Institute
(nbs)   Online Interview with Ira Cotton of NBS
(cmu)   Carnegie-Mellon Computer Science Department
(ucla-ph)   Interview with Dr. Bob Hetherington UCLA
(illinois)   Description of University of Illinois Work   14d

Jean -- I have made some more changes to FEEDBACK, mostly compressing
some things. I note that you have moved some stuff around, too (as
per nancy's suggestions). Hope you can get to "Boundaries" (renamed)
and ELEMENTS sections revisions Tuesday.

Looks like we'll be working down to the wire on this one.

Would you please ask Erica or Jack to send me a manual of FASBOL?

I gather you are strong on wanting the command to be "Feedback". I
prefer "Comments" but not for any rational reasons, so really only
mean "prefer". Can't think of why one would be/is better than the
other.

Dave.   1

(J21649)   28-JAN-74 20:46;   Title: Author(s): David H. Crocker/DHC;
Distribution: /JI; Sub-Collections: NIC; Clerk: DHC;

re CCL and IMNLS

Alan: (sdac-tip,adowork,ccl) contains my comments on the draft CCL
document you showed me, more or less cohereantly expressed. Also,
for whatever reason, a this particular moment in time, DNLS/IMNLS is
working fantasticly well.   1

re CCL and IMNLS

(J21650)   29-JAN-74 01:19;   Title: Author(s): A. D. (Buz) Owen/ADO;
Distribution: /ARH; Sub-Collections: SDAC ; Clerk: ADO;

Comments on <USING>SERVICE.NLS;5

Please accept some tardy comments on <USING>SERVICE.NLS;5. I like it
very much, and have only the following few questions/suggestions: 1

re 5A: I feel that this paragraph on ratings would be clearer if we
gave an example of the types of service ratings we had in mind. John
Day's sentence on this (if he doesn't mind my quoting him) seems
appropriate to me: "Illiac might get a B+ for number crunching and E
for interactive service, and a Tenex might get a B+ for interactive
and a D for batch, etc. ... one overall grade for a system would be
unfair and misleading."   (P.S.: I haven't commented on this before,
but I think Alan's idea of a rating system is very appropriate to
this list of service criteria.)   2

re 7B4A: I fail to see why six two-hour downtime periods results in
more predictability than two six-hour downtime periods. It's the
same, no? What was the intended meaning ? (7B4A certainly affects
AVAILABILITY, but not PREDICTABILITY, in my opinion.)   3

re 7G1A: A minor typo on the word "it" makes this paragraph
difficult to read.   4

re 7I1: I agree with the need to have security mechanisms, but I
wonder if the wording "restrict access" is strong enough. How about
something like "prohibit access unless the user gives express
consent" ?   5

... Mike Kudlick   6

Comments on <USING>SERVICE.NLS;5

(J21651) 29-JAN-74 08:57;   Title: Author(s): Michael D. Kudlick/MDK;
Distribution: /SERDEF; Sub-Collections: SRI-ARC SERDEF; Clerk: MDK;
Origin: <KUDLICK>SERV-COMMENTS.NLS;3, 29-JAN-74 08:55 MDK ;

Keeping records of MSTP dialogue

Asking RWW to set up a special record system

Keeping records of MSTP dialogue

Dick: There has already been quite a bit of traffic regarding the
MST Program, and there undoubtedly will be an increased rate during
the coming months.   It is important stuff to an we should keep
complete, orderly and accessile records of it.   I hope that the
participants will come to handle this in the Journal, but in the
meantime I want to charge you with being sure that good records are
kept at ARC.   1

I think that it is easily important enough to justify at least the
following: Maintain a chronological sequence of files containing all
Journal citations and SNDMSGS in chronological order, to serve us as
a master reference source.   Also, keep publicly available a notebook
containing the message information and at least a clipped/truncated
view for quick scanning (if not some indexes).   2

This would not only be important for our own use here, where quite a
few of us will be interested from time to time in various facets of
the developing action, and will want to retrospectively scan for that
facet through the past history; but also it would seem important to
have a simple and visible thing like that serve as an example to the
rest of the MSTP participants of how our tools can help systemetize
our activities.   3

Please provide me soon with your proposal for dealing with this
matter.   4

Also, please continue to make sure that I get copies of any of the
communication materials that wouldn't otherwise come my way.   5

Keeping records of MSTP dialogue

(J21652) 29-JAN-74 09:26;   Title: Author(s): Douglas C. Engelbart/DCE
; Distribution: /rww chi pr jcn mdk ; Sub-Collections: SRI-ARC;
Clerk: DCE ;

MAP   29-JAN-74 12:27   21654

From: Padlipsky.CompNet at MIT-Multics
Date: 01/29/74 1521-edt   1

AHA
with a little help from a friend, I think I've vaguely
got a newspec NETED going. to try it, come into multics
on the anonymous account (feel free to wait until the
month ends, as we're over budget this month) and call
it "eds" (the "neted" is still the old one).
N.B. Wayne is the only other one I've heard from
claiming conversion completion. Let's all try out his
and mine, and get the others done a.s.a.p. Right?
Right.
cheers, map
p.s. I know of one bug in the new version, having to do with
printing an end of file message twice, but will try
to have it fixed by the time you see this (or within a day or so).   2

MAP   29-JAN-74 12:27   21654

(J21654) 29-JAN-74 12:27;   Title: Author(s): Michael A. Padlipsky/MAP
; Distribution: /NETED ; Sub-Collections: NIC NETED; Clerk: MAP;

first feedback committee report

J. Calvin (CASE-10)
D. Crocker (UCLA-NMC)
J. Iseli (MITRE-TIP)
A. Rosenfeld (CASE-10)
30 JAN 74

Suggestions for a
Network User Feedback System

1

PREFACE   2

For a network (or any other service) to be viable, its users must
have a reasonable degree of satisfaction with the service being
provided. A major factor, in having a broad base of satisfied users,
is having a responsive mechanism through which those users can
communicate their ideas and complaints to those providing service(s).
In this report we propose such a mechanism, called a Network User
Feedback System.   2a

This report is intended as an initial stimulus to the development of
a network user feedback mechanism. As such, it outlines a generic
structure, points out several of the critical human factors, then
proposes interim measures involving minimum implementation effort.   2b

   Preliminary effort would be directed towards gaining experience
   with a simple feedback mechanism, in order better to evaluate,
   test, and formulate design concepts and implementation strategies
   for the evolution of the general network mechanism.   2b1

This report is the product of the Users Interest Working Group
(USING) Feedback Mechanisms Committee. We would like to thank Nancy
Neigus (BBN-NET) and Jon Postel (MITRE-TIP) for their suggestions.   2c

INTRODUCTION   3

This report, in outline form, presents: 3a

   1. Recommendations   3a1

      This section presents the basic attributes for of our
      recommended solutions. These recomendations should suggest a
      model to be reviewed and revised, prior to development of a

more complete implementation specification. Discussion is
separated into near, intermediate and long terms.   3a1a

2. Human Factors Considerations   3a2

Some psychological constraints are considered in this section.
This includes such things as mechanism response time and
response language.   3a2a

3. List of Factors Defining Problem Domain   3a3

The listed index provides a statement on the characteristics of
the "feedback" addressed in this report. We expect the list to
be revised, in the future.   3a3a

4. Discussion of feedback system elements   3a4

This section will address the major components required to
implement a network user feedback system. The components will
be defined generically in order to outline the overall
structure.   3a4a

RECOMMENDATIONS   4

This section preceeds the others to provide a focus for the proposed
approach to developing a network wide feedback mechanism. Ensuing
sections serve to define the problem and outline a general structure
for a solution. This section provides an approach to the general
solution, involving a phased incremental program of trial
implementation and development, experimentation, analysis, and
design.   4a

Near Term   4b

This phase is intended to occur within the first two months and to
require minimum effort in the implementation of preliminary
functions through the use of existing network capabilities and the
creation of inter-subsystem interfaces.   4b1

The preliminary capability will be devoid of most elements
described in the design of a generic feedback mechanism.   4b2

In particular, the data directory [see (elements) for
description of system elements] will not be developed and a
fixed distribution control mechanism will be employed. Further,
the capability will accept feedback input from any host on the
network supporting the network mail protocol and provide
feedback to submitors of transactions, but will not [NOT]

automatically direct the input transactions to their
appropriate sources on a distributed basis.   4b2a

Rather, the SRI-ARC NLS capability will be employed to ingest
the submitted user transactions into designated NLS files that
will be manually perused by designated individuals who in turn
will manually develop the feedback to the users.   4b2b

To facilitate the implementation of this trial network user
feedback first increment, the following Idents will be created at
the NIC to allow host feedback systems to employ the network mail
facilities as the distribution mechanism: 4b3

    netgripes   : For the repository of user transactions
    reporting system bugs.   4b3a

    netcomments : For the repository of user transactions
    directed towards the improvement of network subsystems, network
    user interfaces, or user requirements satisfaction.   4b3b

Further, local sites and TIPS will employ a feedback command to
submit network comments related to system, subsystem, and
communications reliability, requirements, and recommendations. It
is hoped that the RSEXEC will be extended to include this command
as distinct from the existing RSEXEC Gripe command, which results
in comments being directed to a terminal at the NCC. The following
represents a description of the feedback command parts: 4b4

    Feedback<cr>   4b4a

        (Date:) [supplied by system]   4b4a1
        (From:) [supplied by system, if possible]   4b4a2
        (Subject:)   4b4a3
        (Type of comment:) [bug/suggestion/
                gripe [network/system/subsystem]/
                unknown/other]   4b4a4
        (Network online address:) [supplied by system, if possible] 4b4a5
        (Phone number:)   4b4a6
        (Degree of urgency:)   4b4a7
        (Type of response desired:) [none/acknowledgement/
                action to be taken]   4b4a8
        (message:)   4b4a9

Message types Bug, Suggestion, Gripe [subsystem] and Other will
be directed through network mail to NIC journal idents:
NETGRIPES, NETCOMMENTS, NETGRIPES, and NETOTHER, respectively.
All others will be directed to the BBN maintained RSEXEC gripe
file.   4b4b

A NIC L10 program will be developed to extract and summarize

these submissions into NLS files, for subsequent analysis, in
the NIC directory <USING>.   4b4c

Intermediate Term   4c

The intermediate phase, expected to require six months, is
intended to produce a detailed design of the network user feedback
mechanism and an implementation plan for that mechanism. It is
envisioned that the design, proposed in this report, will be
analyzed for appropriateness, as experience is gained during the
near-term phase.   4c1

The design effort will be guided by a desire to integrate the
system with related site-specific efforts. Further, special
attention will be directed towards a design that allows
incorporation of new capabilities.   4c2

   The feedback system will, itself, allow its designers to
   monitor the reactions of its users.   4c2a

At the terminus of this phase, a full design and implementation
plan will be reviewed by a committee designated by ARPA-IPT.   4c3

Long Term   4d

This phase will begin at the completion of the intermediate phase
effort. Its goal will be to use previous experience to implement
the system designed during the intermediate phase.   4d1

HUMAN FACTORS   5

In the preface of this report, we said that we were concerned with
"satisfied users". This automatically puts us into the fuzzy realm of
psychology. (We say "fuzzy" because there are currently no adequate
and concise theories around which we can organize our thoughts.) In
this section, we will simply list those system behavioral parameters
we know to be important to satisfying users.   5a

It must be easy for users to input their ideas and complaints.   5b

1. Assorted media must be available to the user; for example:
telephone, U.S. Mail, SNDMSG, Nic Journal)   5b1

2. The user should not have to work very hard to use the feedback
mechanism.   5b2

   That is, simply typing one command, to start a
   comments-gathhering program, is better than having to log off a

site, close your connection to it, open another connection, log
on to the new site, and then (finally) type a command that
starts the program.   5b2a

For interactive feedback systems, such as telephones and
querying programs, important information should automatically
be asked for. For an example, see the (Recommendations)
section.   5b2b

The user should receive a meaningful response in a reasonable amount
of time.   5c

1. A user must get some kind of response immediately
(instantaneously, if the transaction medium is telephone or
Tenex-type link; within one day, if the medium is Network mail).   5c1

Even a simple restatement of the problem (to show some level of
comprehension) with an explanation that no immediate solution
is apparant, but that the user will be contacted when one is,
is better than an overly slow response, as long as the user
feels that something is happening and that he is not being
deferred.   5c1a

If possible, the expected sequence of events, leading to the
resolution of the problem or implementation of the suggestion,
should be told to the user. That way, the user can reasonably
know what to expect, rather than have to guess at whether it is
necessary to bother someone, again.   5c1b

2. The user should be kept informed of developments.   5c2

This applies both to a user's being informed of actions
involving a specific suggestion/complaint he generated and to
general user awareness of what kinds of events are taking
place. This latter activity is most often accomplished thru a
newsletter.   5c2a

3. The general effect of user's input should be told him.   5c3

At the very least, this gives the user a sense of importance
(good psychology) and encourages him to provide more
suggestions (useful for knowing what improvements need to be
made).   5c3a

Interactions should be in a form appropriate to the user.   5d

1. Since users' states of knowledge are quite disparate, it is
extremely important to help them verbalize their complaints and
suggestions and, in general, to attend to the vocabulary used when
dealing with them.   5d1

Often, this means that the initial contact person (e.g.,
consultant) needs to mediate between the user and any
additional staff, such as systems programmers.   5d1a

2. Also, documentation and announcements must be carefully written
for their intended audience. It would be useful for documents to
begin with a statement of reader-knowledge that is presupposed.   5d2

LIST OF FACTORS DEFINING PROBLEM DOMAIN.Garb=20;   6

Participants (This will be expanded upon by the USING Definition of
Users Committee.)   6a

    Humans : People who will use "FEEDBACK"   6a1
        Managers   6a1a
        Technicians   6a1b
        Applications programmers   6a1c
        Consultants   6a1d
        Other Users   6a1e
    Host services : Feedback to Users from Host Resources   6a2
    Network : Network Dissemination to Users   6a3

2. Transaction-types   6b

    Requirements : New User Needs   6b1
    Bug reporting : User Identification of Problems   6b2
    Status : Query and Reporting   6b3
    Suggestion : User suggestion for Improvements   6b4
    Information-dissemination   6b5
    General : Other User Feedback   6b6

3. Transaction-medium   6c

    Network : Inter Net User-Net Interaction   6c1
    Local : Intra Host User-Host Interaction   6c2
    Subnet : Intra Net User-Net Interaction   6c3
    Other : Like [User-User Interaction]   6c4

4. Transaction-mechanisms   6d

    Interactive   6d1
    Deferred   6d2

5. Transaction-flow   6e

One-way -- No response required   6e1
Multi-way   6e2

6. Importance   6f

Deadline (Useless, if not processed before specified time)   6f1
Urgent   6f2
Average   6f3
Minimal   6f4
                                                                    6f5

FEEDBACK SYSTEM ELEMENTS   7

This section presents a generic view of a network user feedback
system by identifying its major elements. We wish to repeat that we
are not concerned, here, with implementation [or detailed design]
issues, such as whether the mechanisms are centralized or
distributed.
                                                                7a
System Pictorial Overview: 7b

```
-----------------------------------------------------          7b1
              Participants ( People )                           7b2
-----------------------------------------------------          7b3
              Interfaces ( Programs )                           7b4
-----------------------------------------------------          7b5
         Distribution Monitor ( Routing )                       7b6
-----------------------------------------------------          7b7
    Analysis        Information       Acountability             7b8
    Subsystem       Management        Subsystem                 7b9
                    Subsystem                                   7b10
-----------------------------------------------------          7b11
                   Directory                                    7b12
                   of   Data                                    7b13
         =========================                              7b14
                   Transactions                                 7b15
         ------------------------                               7b16
                   Feedback                                     7b17
         ------------------------                               7b18
                   Distribution                                 7b19
                   Attributes                                   7b20
         ------------------------                               7b21
                   Analysis                                     7b22
         ------------------------                               7b23
                   Resources                                    7b24
         ------------------------                               7b25
                   Status                                       7b26
         =========================                              7b27
```

Description of Feedback System Structure Entities   7c

1. Interfaces   7c1

   This component depicts the assorted collection of interfaces
   [TIPS, IMPS, terminals, programs, etc.] required to provide
   participants with access to and response from assorted elements
   of the network user feedback system.   7c1a

2. Distribution Monitor   7c2

   The distribution monitor is the mechanism that ensures proper
   distribution of all transaction data and feedback system
   responses, as well as ensuring proper intra-subsystem
   communication.   7c2a

3. Information Management   7c3

   The information management subsystem is intended to perform all
   the data management functions required by the total feedback
   system. It will manage: 7c3a

   Directory   7c3b

      The directory will contain entries pointing to elements of
      the other data bases in the system, their
      distribution/location attributes, and other characteristics. 7c3b1

   Data-bases   7c3c

      (1) Transactions   7c3c1

          The transaction data base contains information pertaining
          to the nature of all transactions. This information is
          used by the Analysis subsystem to monitor and supervise
          the transactional traffic.   7c3c1a

      (2) Feedback data   7c3c2

          The Feedback data base contains the actual message data
          passed through the system.   7c3c2a

      (3) Distribution Attributes   7c3c3

          This data base contains routing information pertinent to
          network resources and transaction-types and is employed
          to ensure proper distribution of transaction-data. The
          data base contains further elements for use by the
          accountability subsystem to ensure that each transaction
          achieves an adequate response sequence profile.   7c3c3a

(4) Analysis Data   7c3c4

This data base contains appropriate summarizations of
transaction data, as filtered by the analysis module   7c3c4a

(5) Resources   7c3c5

The resources data base consists of a directory of
network resources. This information is used by the
Distribution monitor and the Resources Map. The
attributes of each resource are included. For example,
responsible person, status and location of resource, etc. 7c3c5a

(6) Status Data: Dynamic Resources Map   7c3c6

This map is envisioned as a status map of Network
systems, subsystems, and human participants. The map
would provide indications of availability, projected
availability, current status, and projected status.   7c3c6a

   For example, if a service were temporarily down due to
   hardware malfunction, the map would so indicate and
   provide an estimate of when the system would next
   become available. Also, the map, where possible,
   should be able to project availability for instances
   where preventive maintenance and other routine
   down-time is scheduled.   7c3c6a1

This map resides within the system as a combination of
the resource and status data bases, and is accessed
through the data base directory by the information
management subsystem.   7c3c6b

4. Analysis Subsystem   7c4

The analysis subsystem is intended to be the mechanism employed
to perform assorted analyses of network user feedback. This
will enable development of measured feedback data to be used in
improving network reliability, utility, and responsiveness to
users.   7c4a

5. Accountability Subsystem   7c5

The accountability subsystem will perform the monitoring and
control functions necessary to ensure that each initiated
feedback transaction has a transaction sequence culminating in
feedback satisfactory to a user.   7c5a

first feedback committee report

(J21655) 29-JAN-74 17:54;   Title: Author(s): Jean Iseli/JI;
Distribution: /FEEDBACK USING CF(Craig, look at the prototype
<calvin>driv@CASE-10) NJN GR; Keywords: feedback committee first report;
Sub-Collections: FEEDBACK MITRE-TIP USING; Clerk: JI;
Origin: <USING>FEEDBACK.NLS;19, 29-JAN-74 07:10 JI ;

Netgripe and Netcomment Idents for FEEDBACK

Marcia:

I have created the idents netgripe and netcomment. These idents will
shortly being recieveing netmail through the Journal. Could you
please change their ident records to user:using so that their initial
files will be resident in the <using>directory.

These idents are part of a preliminary network feedback mechanism
being developed under USING sponsorship. Thank you for your prompt
consideration.

Best regards, ...Jean   1

Netgripe and Netcomment Idents for FEEDBACK

Online Host Information File
- - - -

Mike and Jake -- it has no doubt occurred to you both that this file
is a subset ofthe file to be specified by the USING
Help and Documentation Committee. Glad it is getting impetus
from several corners.   1

Another Status type: ANTS (not all terminal access is or
will be TIPS. Dave.
-------   2

                                                                          3

Online Host Information File
- - - -

(J21657)   29-JAN-74 13:27;   Title: Author(s): David H. Crocker/DHC ;
Distribution: /MDK JAKE ; Sub-Collections: NIC; Clerk: DHC;

Superwatch Average Graphs for Week of 1/20/74

TIME PLOT OF AVERAGE NUMBER OF GO JOBS FOR WEEK OF 1/20/74
x axis labeled in units of hr:min,   xunit = 30 minutes   1
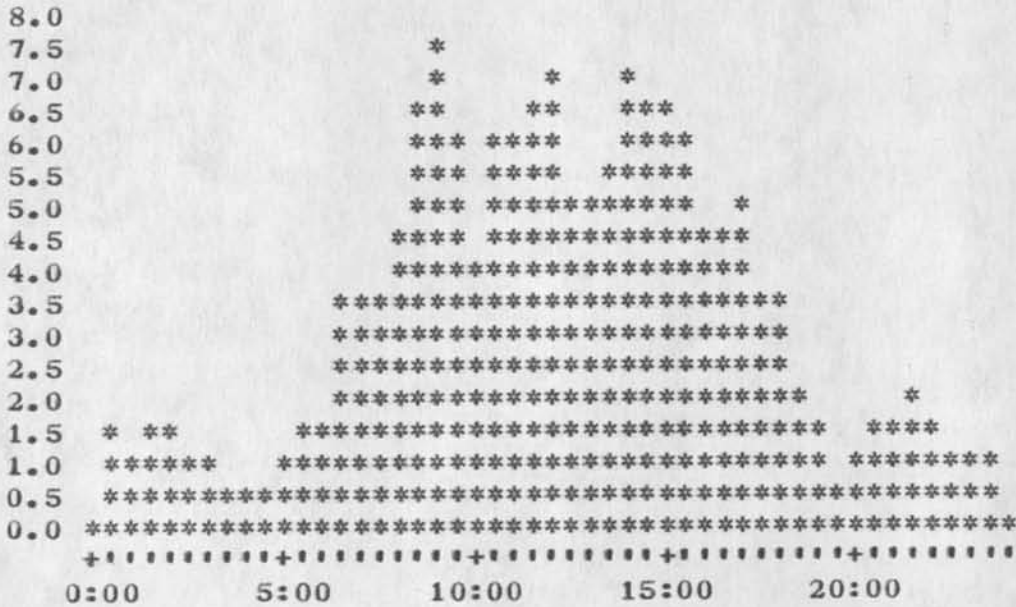
```
    8.0
    7.5                         *
    7.0                         *       *       *
    6.5                        **      **     ***
    6.0                       ***  ****     ****
    5.5                       ***  ****    *****
    5.0                       *** ***********   *
    4.5                      ****  **************
    4.0                      ********************
    3.5                   **************************
    3.0                   *************************
    2.5                   *************************
    2.0                   ************************    *
    1.5   *  **          ******************************  ****
    1.0   ******     ******************************** ********
    0.5   ********************************************************
    0.0   ***********************************************************
          +::::::::::+:::::::::::+::::::::::+:::::::::::+::::::::::
          0:00      5:00     10:00     15:00     20:00
```
                                                                                      1a

TIME PLOT OF AVERAGE PER CENT OF CPU TIME CHARGED TO USER ACCOUNTS
FOR WEEK OF 1/20/74
x axis labeled in units of hr:min,   xunit = 30 minutes   2

```
   61.6                    **   ********** * *
   53.9                   **************************
   46.2                 **************************
   38.5   *            ****************************    ***
   30.8   ***********************************************  *******
   23.1   ************************************************************
   15.4   ************************************************************
    7.7   ************************************************************
    0.0   *************************************************************
          +::::::::::+:::::::::::+::::::::::+:::::::::::+::::::::::
          0:00      5:00     10:00     15:00     20:00
```
                                                                                      2a

1

Superwatch Average Graphs for Week of 1/20/74

TIME PLOT OF AVERAGE NUMBER OF NETWORK USERS FOR WEEK OF 1/20/74
x axis labeled in units of hr:min,   xunit = 30 minutes   3

```
9
8                   ****
7                   *****
6                   *****
5                   *****   * *******
4                 ********************
3                 ********************
2                 ***************************     * *
1   ****     *********************************************
0 ***********************************************************
  +illiilillli+illllllilli+llliliillili+iillliilli+lliiiilli
    0:00        5:00       10:00       15:00       20:00
```
                                                                         3a

TIME PLOT OF AVERAGE IDLE TIME FOR WEEK OF 1/20/74
x axis labeled in units of hr:min,   xunit = 30 minutes   4

```
52.5                                      *
45.0   *** * * *                          **        **
37.5   *********                          ****    ****
30.0   ************                       ***********
22.5 **************                       ***********
15.0 ****************                     ***********
 7.5 ******************       *         * ***********
 0.0 ***********************************************************
     +illiilillli+illllllilli+llliliilili+iilliilli+lliiiilli
       0:00        5:00       10:00       15:00       20:00
```
                                                                         4a

2

Superwatch Average Graphs for Week of 1/20/74

TIME PLOT OF AVERAGE NUMBER OF USERS FOR WEEK OF 1/20/74
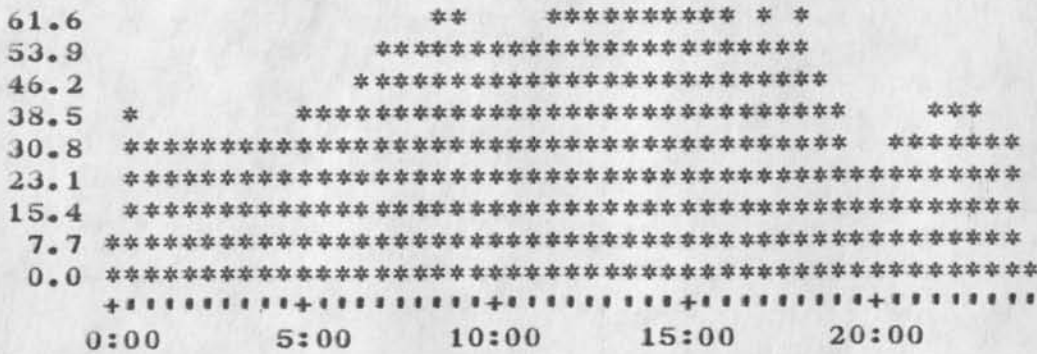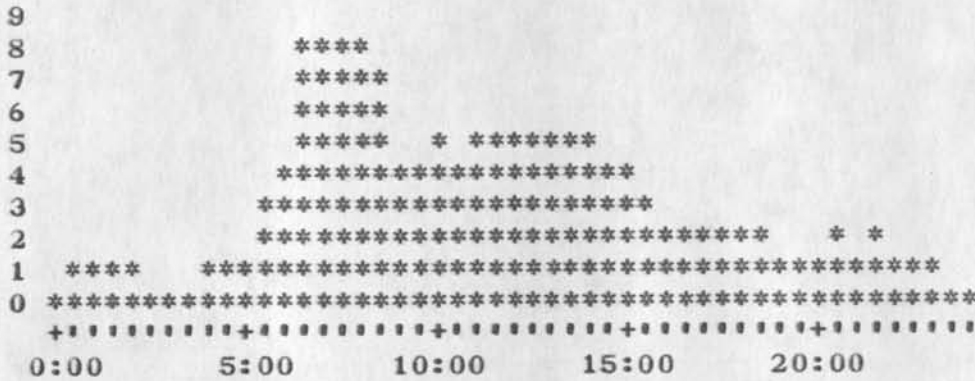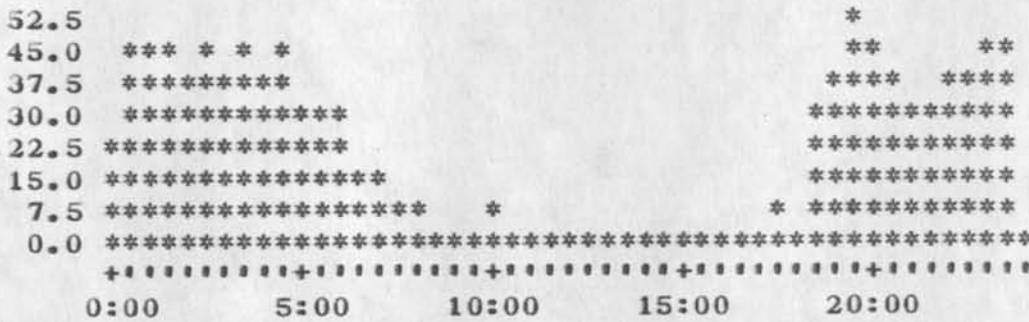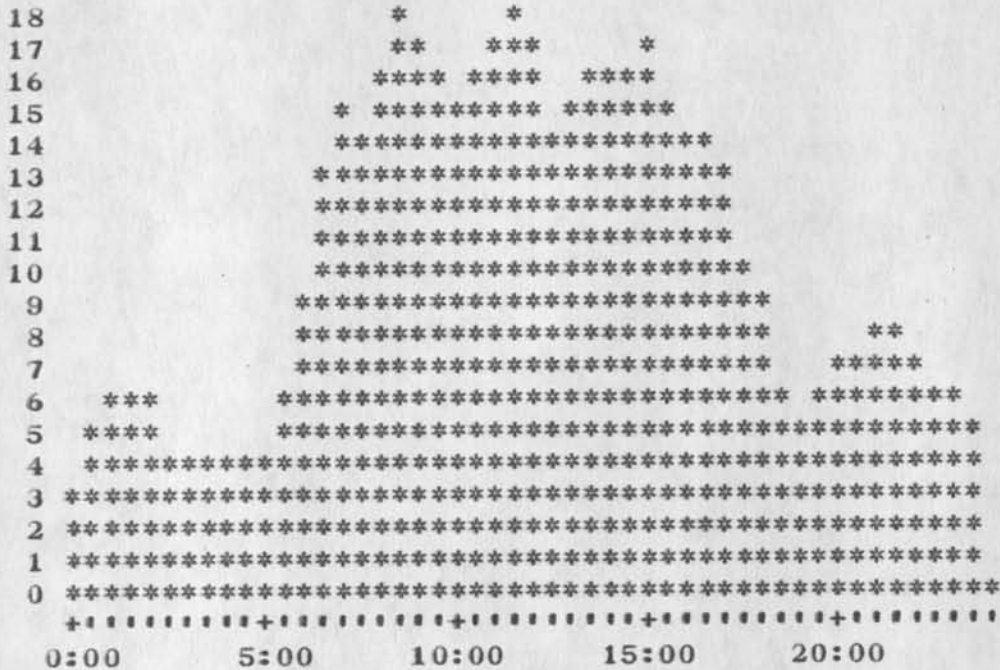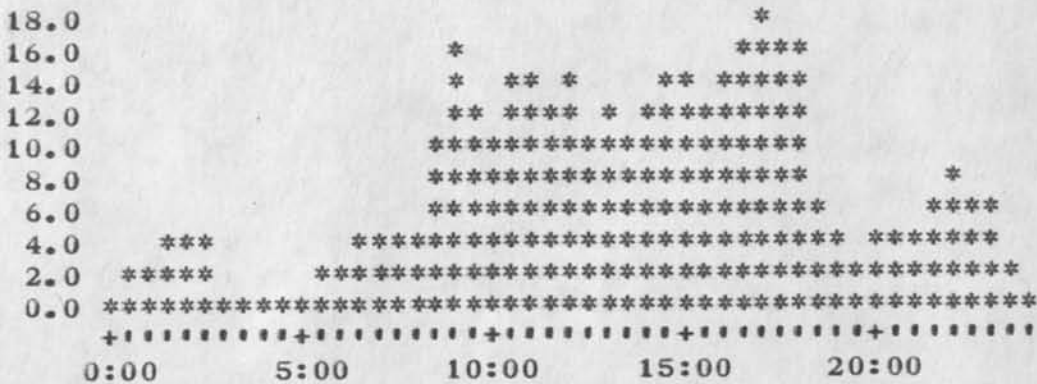x axis labeled in units of hr:min,   xunit = 30 minutes   5

```
    18                          *       *
    17                          **    ***      *
    16                          ****  ****   ****
    15                          * ********* ******
    14                          **********************
    13                        ************************
    12                        ************************
    11                        ************************
    10                        **********************
     9                       ***************************
     8                       *****************************    **
     7                       ****************************    *****
     6       ***             ******************************* ********
     5      ****             *********************************************
     4      *********************************************************************
     3      *********************************************************************
     2      *********************************************************************
     1      *********************************************************************
     0      ***********************************************************************
           +!!!!!!!!!+!!!!!!!!!+!!!!!!!!!+!!!!!!!!!+!!!!!!!!!
          0:00      5:00     10:00     15:00     20:00                        5a
```

TIME PLOT OF AVERAGE PER CENT OF SYSTEM USED IN DNLS FOR WEEK OF
1/20/74
x axis labeled in units of hr:min,   xunit = 30 minutes   6

```
   18.0                                      *
   16.0                         *           ****
   14.0                         *   ** *    ** *****
   12.0                         ** **** * *********
   10.0                        *********************
    8.0                        *********************         *
    6.0                        ***********************     ****
    4.0         ***            ************************** *******
    2.0       *****            ********************************************
    0.0       ******************************************************************
           +!!!!!!!!!+!!!!!!!!!+!!!!!!!!!+!!!!!!!!!+!!!!!!!!!
          0:00      5:00     10:00     15:00     20:00                        6a
```

3

Superwatch Average Graphs for Week of 1/20/74

(J21658) 29-JAN-74 13:30; Title: Author(s): Susan R. Lee/SRL;
Distribution: /JCN RWW DCE PR JCP DVN JAKE DLS BAH; Sub-Collections:
SRI-ARC; Clerk: SRL;
Origin: <LEE>WEEK1/20GRAPHS.NLS;2, 29-JAN-74 13:27 SRL ;

Jon, Jim, and Wayne--

Here is my next pass at complaining about FTP. I have
incorporated suggestions from all of you, and hopefully we can now
agree on (nearly) everything. I'm sure I can count on you to let me
know where we don't.

--Mark

NIC # (not   Mark Krilanovich
RFC # yet)   George Gregg
references: RFC #542   UCSB
                                                  Jan 7, 1974
                                            rev. Jan 28, 1974

Comments on the File Transfer Protocol

There are several aspects of the File Transfer Protocol of RFC
542 that constitute serious drawbacks. Some of these are quite basic
in nature, and imply substantial design changes; these will be
discussed in a later RFC. Others could be remedied with very litle
effort, and this should be done as soon as possible.

Following is a list of those problems that can be easily solved,
together with their proposed solutions:

1. Once a server has been set to the state where he is "passive"
with regard to establishment of data connections, there is no
convenient way for the user to make him "active" again. The
"REIN" command accomplishes this, but affects more than just the
desired active/passive state. SOLUTION: define a new command,
with a command verb of "ACTV", to mean that the server is to issue
a CONNECT rather than a LISTEN on the data socket. If the server
is already "active", the command is a no op. "ACTV" is to have
the same reply codes as "PASV".

2. Design of an FTP server or user would be simpler if all
command verbs were the same length. While it is certainly
possible to handle varying length verbs, fixed length string
manipulation is in general easier to write and faster to run than
varying length string manipulation, and it would seem that nothing
is to be gained in this application by allowing varying length
strings. SOLUTION: replace the only three-letter verb, "BYE",

with a four-letter one, such as "QUIT", and constrain future command verbs to be four letters long.

3. The order of the handshaking elements following a file transfer command is left unspecified. After sending a STOR command, for example, a user process has no way of knowing which to wait for first, the "250 FILE TRANSFER STARTED" reply, or establishment of the data connection. SOLUTION: specify that the server is to send a "250" reply before attempting to establish the data connection. If it is desired to check if the user is logged in, if the file exists, or if the user is to be allowed access to the file, these checks must be made before any reply is sent. The text of the "250" reply would perhaps be more appropriate as "250 OPENING DATA CONNECTION", since it comes before actual data transfer begins. If the server wishes to send an error reply in the event that the data connection cannot be opened, it is to be sent in lieu of the "252 TRANSFER COMPLETE" reply.

4. Some hosts currently send an error reply on receipt of a command that is unimplemented because it is not needed (e.g., "ACCT" or "ALLO"). Even though the text of the reply indicates that the command has been ignored, it is obviously impossible for a user process to know that there is no real "error". SOLUTION: require that any server that does not support a particular command because it is not needed in that system must return the success reply for that command.

5. There is no specified maximum length of a TELNET command line, TELNET reply line, user name, password, account, or pathname. It is true that every system implementing an FTP server likely has different maxima for its own parameters, but it is inconvenient, at least in some systems, for the writer of an FTP user (which must converse with many FTP servers) to construct an indefinite length buffer. Similar difficulties confront the writer of a server FTP. SOLUTION: specify a maximum length for TELNET command lines, TELNET replies, user names, passwords, account numbers, and pathnames. This is to be done after conducting a poll of serving sites concerning their individual maxima. If Network mail is to be included in FTP, the mail text, if sent over the TELNET connection, is to be subject to the same line length maximum.

6. The notion of allowing continuation lines to start with arbitrary text solves a minor problem for a few server FTP implementors at the expense of creating a major problem for all user FTP implementors. The logic needed to decode a multi-line reply is unneccessarily complex, and made an order of magnitude more so by the fact that multi-line replies are allowed to be nested. SOLUTION: assign a unique (numeric) reply code, such as

1

"009", to be used on all lines of a multi-line reply after the
first. The reply code used for this purpose must begin with "0"
(it cannot be three blanks, for example), so that it will appear
as extraneous to a user process by virtue of the already existing
rules concerning reply code groupings.

7. If it is the case that the above solution to (6) is not
accepted, the fact that the maximum allowed level of nesting is
left unspecified creates a hardship for implementors of user FTPs.
This hardship is somewhat easily solved on a machine that has
hardware stacks, but not so for other machines. SOLUTION: either
disallow nested replies (preferred), or specify a maximum level of
nesting of multi-line replies.

8. The prose descriptions of the meanings of the various reply
codes are in several cases unclear or ambiguous. For example, the
code "020" is explained only as "announcing FTP". It is given as
a reply that can be issued when a server cannot accept input
immediately after an ICP, but its exact meaning is not obvious.
Also, the code "331" is said to mean "ENTER ACCOUNT (if required
as part of login sequence)", but is listed as a possible success
reply for most of the commands. The explanation indicates that it
is only valid in the login sequence, but the command-reply
correspondence table implies that it also means, "I can't do that
without an account". SOLUTION: an expanded effort should be made
by those who originated the reply codes to define them more
completely.

A major complaint about the protocol concerns the fact that the
writer of an FTP user process must handle a considerable number of
special cases merely to determine whether or not the last command
sent was successful. It is admitted that the protocol is
well-defined in all the following areas, but it is important to
realize that the characteristic "well-defined" is necessary, but not
sufficient; for many reasons, it is very desirable to employ the
simplest mechanism that satisfies all the needs. Following is a list
of those drawbacks that unduly complicate the flow chart of an FTP
user process:

9. Different commands have different success reply codes. A
successful "USER" command, for example, returns a "230", whereas a
successful "BYTE" command returns a "200". The stated concept
that the first digit would carry this information does not apply,
as "100" means success for "STAT", and "200" means success for
"SOCK". SOLUTION: specify that any command must return a reply
code beginning with some unique digit, such as "2", if successful,
and anything other than that digit if not successful. For
example, this includes changing the success reply for STAT,
perhaps to "200".

2

10.   Some commands have multiple possible success reply codes,
e.g., "USER" and "REIN".   It is undesirable for an FTP user to be
required to keep a list of reply codes for each command, all of
which mean "command accepted, continue".   Again, the stated
concept concerning the first digit fails, as "230" and "330" are
in truth both acknowledgements to a successful "USER" command.
SOLUTION: same as for (9) above.   The desire to communicate more
specific information than simply "yes" or "no", such as the
difficulty that some servers do not need all the login parameters,
may be solved by having, for example, "230" mean "PASSWORD
ACCEPTED, YOU ARE NOW LOGGED IN", and "237" mean "PASSWORD
ACCEPTED, ACCOUNT NOW NEEDED".   Given the solution to (4) above, a
user process becomes much less interested in the difference
between "YOU ARE NOW LOGGED IN" and "ACCOUNT NOW NEEDED".   The
important point is that the idea of "command accepted" is conveyed
by the initial "2", and that finer gradations of meaning can be
deduced by the user process, if desired.

11.   The meanings of the various connection greeting reply codes
are somewhat inconsistant.   "300 connection greeting, awating
input", if intended as a positive acknowledgement to the ICP,
should be a 200-series reply, or if intended to be purely
informative, a 000-series reply.   If the former, then clearly "020
expected delay" is the corresponding negative acknowledgement, and
should be a 400-series reply.   It is however unlikely that
notification of an expected delay would be of importance to a user
process without knowledge of the length of the delay.   SOLUTION:
change "300 connection greeting" to a 000-series reply, perhaps
"011" (preferred), or change "300 connection greeting" to a
200-series reply, perhaps "211", and "020 expected delay" to a
400-series reply, perhaps "411".

     In addition to the above mentioned weaknesses in the protocol,
the following is believed to be a typographical error:

12.   Reply code "332 LOGIN PLEASE" is not listed anywhere in the
command-reply correspondence table.   It would seem that this would
be a more-information-needed (success) reply for all those
commands which require the user to be logged in.   It should also
be stressed that the "332" code is to be used for this purpose, as
many servers currently use other codes, such as "451" and "504",
to mean "LOGIN PLEASE".

(J21659) 29-JAN-74 13:36;   Title: Author(s): Mark C. Krilanovich/MCK;
Distribution: /JEW JBP AWH MCK; Sub-Collections: NIC; Clerk: MCK;
Origin: <UCSB>FTPCOMM2.NLS;6, 29-JAN-74 10:50 MCK ;

ARPANET Directory

John ... Just a short note of thanks for your recent message to us on
the Arpanet Directory. We very much appreciate your taking the
trouble to point out errors in the individual listings. We will
correct those immediately. And we're very happy that you find the
Directory a useful document. Looking forward to seeing you out here
Feb 11 and 12.
... Mike Kudlick   1

ARPANET Directory

(J21660)   29-JAN-74 14:53;   Title: Author(s): Michael D. Kudlick/MDK;
Distribution: /JSP NIC; Sub-Collections: SRI-ARC NIC; Clerk: MDK;

office-1 party

there will be a party at my house (jimb) this saturday (feb 2) at
7:30pm to celebrate the coming up of office-1. i live in a duplex in
cupertino at the following address: 22482A walnut circle south.
to get there, you take 280 to foothill exit and go south on foothill
the first main intersecton is stevens creek (4 way stop sign)   keep
going straight on foothill till you come to a blinking yellow signal
light.   i live on the southeast corner of that intersection (foothill
and walnut circle south). the entrance is on the foothill side.
please rsvp by sndmsg to jimb@office-1.   1

office-1 party

(J21661)   29-JAN-74 15:05;   Title: Author(s): A. Jim Blum/JIMB;
Distribution: /SRI-ARC; Sub-Collections: NIC SRI-ARC; Clerk: JIMB;

Noting IMLAC keyset for ARC from Nat Rochester

Doug received a letter dated 9 Oct 73 from Nathaniel Rochester of IBM
in Cambridge (XDOC -- 18875), in which Nat said he would be ordering
us a replacement keyset from Imlac for the one Doug gave him, and
would have it shipped directly to us. We received the keyset on 14
Jan 74 and I gave it to Martin. Nat Rochester has been making
measurements of the force needed to actuate one of the keys, and has
been keeping Doug informed with his results (XDOC -- 18875,).   1

Noting IMLAC keyset for ARC from Nat Rochester

(J21662) 29-JAN-74 16:23;   Title: Author(s): Jeanne M. Leavitt/JML;
Sub-Collections: SRI-ARC; Clerk: JML;
Origin: <LEAVITT>KEY.NLS;2, 15-JAN-74 16:46 JML ;

Some Higher Level Issues for the MST Meeting

Document sent to attendees of Boston MST Meeting

Some Higher Level Issues for the MST Meeting

There are a number of areas that need careful thought in the planning
of an MST research, development and technology transfer program.
This document represents a quick attempt to get some higher level
issues down on paper before the meeting.   1

The goal of this project,as I understand it, is to enable a number of
contractors to collaborate to create a coherent system, many
components of which may be distributed on different hosts and
different locations around a computer network.   2

One job needing doing is to define the roles that are required to
provide the coordination and integration needed to bring the system
together smoothly. Two such roles were explicitly defined in John's
and Craig's document, a program advisory committee, and a
contractors' committee. A third role is clearly the ARPA program
manager. Other roles probably need to be defined. One that occurs
to me at this point is a system integration role. Some group needs
to be responsible for at least initiating for dialog and approval by
other participating contractors system interface and communication
protocols and architectural relationships of various application
functions, system levels and their interrelationships.   3

A second job needing doing is to define system levels within which
work is to go on and to answer the question as to whether or not it
is appropriate to make horizontal divisions and interfaces between
contractors on such a basis or on some other basis. Levels that one
might conceptualize are: 4

    MST APPLICATION AREAS: 4a

        We need to identify groups the system is to serve and their
        needs. Throughout all of the levels below is the need for
        assessment as described by John and Craig with feedback to the
        developers.   4a1

    MST USER INTERFACE: 4b

        This level would provide the unified user level interface to
        the tools and data bases, adaptation to the users personality,
        Help facilities, common command language framework, terminal
        control etc. I envision this part of the system running in a
        mini based frontend.   4b1

    MST USER FUNCTIONS: 4c

        Here we need to establish cuts at functions needed by the user,
        information management, text editing and publication, task
        management tools, communications -- collaboration support,
        secretarial or whatever. I would envision these built to work

1

on the MST Basic File System conventions and to
intercommunicate with each other and a "frontend" user
interface in computer oriented protocols. If they were built
to run stand alone in some environment other than MST, they
could have their own user interface, but within the MST
environment they would communicate with each other and the
frontend in a machine oriented protocol, ala the RFC 592
discussion.   4c1

MST BASIC FILE SYSTEM: 4d

The MST file system would build on the primitives available at
the operating system level, handling auditing, privacy,
integrate the large scale data management systems etc. One of
the main goals here would be to establish file primitive
operations and structures, and file communication protocols
between subsystems.   4d1

MST SYSTEM BUILDING TOOLS AND PROTOCOLS: 4e

Programming support systems, resource sharing system protocols,
documentation aids, integration and checkout tools etc.   4e1

OPERATING SYSTEM: 4f

Improved operating system file systems, mini-computer frontend
operating systems, security, scheduling, distributed resource
primitives etc.   4f1

HARDWARE: 4g

Terminal and workstations, COM, character recognition or other
facilities to be added to the NET, special voice IO equipment
development, handheld terminals etc.   4g1

A technology transfer strategy needs to be decided on with its
committment to marketing, user support, and delivery of service.   5

We need to decide whether or not to build on existing systems in an
evolutionary way by phasing in new work as it matures or to start
from scratch. My own feeling is that we must first define the user
population and its needs, levels, functions, and faciltiies needed
and then see what presently exists and couple appropriate pieces. By
initially coupling existing systems together we can provide a base
for actual user experience, an experimental test bed for assessment
and a chance to more quickly gain first hand experience with system
interconneciion issues.   6

I feel we should aim at a system oriented to run on different hosts

Some Higher Level Issues for the MST Meeting

of a resource sharing network rather than a system to run on a single
host or type of host.   7

We should probably take functional requirements such as listed by
John and Craig and see how they can be naturally grouped for
appropriate semi-independent contractor development.   8

ARPA-IPT probably does not have enough funds available to work on all
areas simultaneously or to develop all areas to the same level of
completeness or depth. What are the priorities? One is clearly an
initial set of studies of the expected user groups to assess their
needs.   9

There was a strong AIish component in many of John and Craig's
desires. We need to set up a general system design strategy that
will allow the AI like and non-AI like aspects to proceed
independently but allow mutual coupling for testing and experiment.
My feeling is that part of the technology transfer strategy is to get
real users using what is developing early and that the AI like
components may not be ready or economically viable for real use for
several years.   10

Some Higher Level Issues for the MST Meeting

(J21663)   29-JAN-74 16:52;   Title: Author(s): Richard W. Watson/RWW;
Distribution: /SRI-ARC; Sub-Collections: SRI-ARC SRI-ARC; Clerk: RWW;
Origin: <WATSON>MSTPROG.NLS;7, 27-JAN-74 15:25 RWW ;

Serdef note

Committee: 1

The report looks good. We might consider taking that sentence about
servers without machines out. I don't want to bring up half answered
issues. I only brought it up initially to see if anyone had any
thoughts on it that might be useful. If I am the only one who thinks
it slightly superficial then lets leave it in, since I do think that
it will become an issue in the future.   2

I agree with Dave I think examples of a rating system is just asking
for trouble.   3

I guess that's it. As far as I'm concerned it can go into Craig.   4

John   5

Serdef note

(J21664)   29-JAN-74 19:30;   Title: Author(s): John D. Day/DAY;
Distribution: /SERDEF; Sub-Collections: NIC SERDEF; Clerk: DAY;
Origin: <ILLINOIS>NOTES.NLS;1, 29-JAN-74 19:24 DAY ;

INFORMAN committee--
Please note that Dave Crocker (DHC) has been added to the committee.
His network mailbox, if you want to update your mailing lists is
DCROCKER@ISI.   1

New committee member

(J21671)   30-JAN-74 07:20;   Title: Author(s): Nancy J. Neigus/NJN;
Distribution: /INFORMAN; Sub-Collections: NIC INFORMAN; Clerk: NJN;

New committee member

New member of Energy team.

Shalll I add <RODRIGUES> to the message system? Which team, east or
west?   1

New member of Energy team

(J21672)   30-JAN-74 07:28;   Title: Author(s): N. Dean Meyer/NDM;
Distribution: /JCN DVN; Sub-Collections: SRI-ARC; Clerk: NDM;