DHC 27-SEP-73 17:39 19353

Mailboxes of USING and USERS members; at least some of them

(Mailboxes) Network Mailboxes for USING/USERS members 1

RMS 22-AUG-73 10:18 18531
MAILBOX ADDRESS
Message: DAVE---
MY NETWORK MAILBOX ADDRESS IS 'STOUGHTN@UCSB'. YOU CAN ALSO
CONSULT THE NIC IDENT SYSTEM TO DETERMINE THE MAILBOX ADDRESS OF
ANY OTHER UCSB PERSONNEL IF YOU HAPPEN TO KNOW THEIR NIC IDENT.
HOW ARE THINGS THESE DAYS? WHEN DO YOU GET YOUR ANTS SYSTEM?
---RON

1a

KIRK 21-AUG-73 22:51 18533

Message: My online address is KELLEY at SRI-ARC

1b

Mailboxes of USING and USERS members; at least some of them

(J19353) 27-SEP-73 17:39; Title: Author(s): David H. Crocker/DHC;
Distribution: /MLK; Sub-Collections: NIC; Clerk: DHC;

19353 Distribution
Marcia Lynn Keeney,

Response to LINK change proposed by KEV

Response to KEV on LINK command changes 1

Ken: 1a

I am in agreement with your proposal and in fact would find it a major improvement. I got into a four-way recently and it was chaos until we got everybody linked up properly. The problem which remains with LINK is that you cannot easily orchestrate a three or greater way conversation. Part of the problem is just identifiying the source of some of the data. Maybe text from each terminal could be prefixed by the NIC ident of the individual typing? Of course, this prefixing would have to occur only on output to the other terminals and not on input to whatever subsystem you happen to be talking to. Another helpful feature would be a command to tell who is linked to whom. Since I don't know what a 'passed terminal' is, I am not sure whether your comments on SYSTAT mean that such linkage information will be available. 1b

By all means, do implement this experiment. The present system is inadequate. Vint Cerf [CERF@ISI, VGC on NLS) 1c

19354 Distribution

Robert L. Fink, Jeanne B. North, Steve D. Crocker, Thomas F. Lawrence, John W. McConnell, James E. (Jim) White, A. Wayne Hathaway, Patrick W. Foulk, Richard A. Winter, Harold R. Van Zoeren, Alex A. McKenzie, Abhay K. Bhushan, B. Michael Wilber, Edward A. Feigenbaum, Robert T. Braden, James M. Pepin, John T. Melvin, Milton H. Reese, Kenneth M. Brandon, Lou C. Nelson, Jeffrey P. Golden, Richard B. Neely, Dan Odom, Ralph E. Gorin, Robert G. Merryman, P. Tveitane, Adrian V. Stokes, David L. Retz, Reg E. Martin, Gene Leichner, Jean Iseli, James E. (JED) Donnelley, William Kantrowitz, Michael S. Wolfberg, Yeshiah S. Feinroth, Anthony C. Hearn, Eric F. Harslem, Robert M. (Bob) Metcalfe, Bradley A. Reussow, Daniel L. Kadunce, George N. Petregal, Michael B. Young, Michael A. Padlipsky, Schuyler Stevenson, L. Peter Deutsch, John Davidson, Thomas O'Sullivan, Sol F. Saroussi, Scott Bradner, Robert H. Thomas, Michael J. Romanelli, Ronald M. Stoughton, A. D. (Buz) Owen
Ed J. Collins, Gary Blunck, John F. Heafner, Kathy Beaman, David J. King, Sue Pitkin, Jerry Fitzsimmons, Gloria Jean Maxey, Roberta J. Peeler, Craig Fields, Margaret Iwamoto, Dee Larson, Robert E. Doane, Brenda Monroe, Jeanne B. North, Pam J. Klotz Cutler, Barbara Barnett, Stan Golding, Steve G. Chipman, John P. Barden, Martha A. Ginsberg, Shirley W. Watkins, Janet W. Troxel, Connie D. Rosewall, Anita L. Coley, Carol J. Mostrom, John F. Wakerly, Tom C. Rindfleisch, Leonard B. Fall, David L. Hyde, Gary Blunck, Tom P. Milke, Alan H. Wells, Chuck R. Pierson, Carl M. Ellison, Robert P. Blanc, Jay R. Walton, Terence E. Devine, David J. King, William L. Andrews
Tjaart Schipper, Richard M. Van Slyke, E. M. Aupperle, Hubert Lipinski, Robert F. Hargraves, C. D. (Terry) Shephard, Maurice P. Brown, Robert L. Ashenhurst, Ruth Ann McDermott, Angie R. Yingling, Michael M. Dervage, Carolyn E. Taynai, Easter D. Russell, Leonard B. Fall, Peggy D. Irving, Roy Levin, M. P. McCluskey, Pitts Jarvis, Barbara A. Nicholas, Jacquie A. Priest, Terence E. Devine, Paul M. Rubin, Paula L. Cotter, O. A. Hansen, Dan Dechatelets, Nancy C. Thies, Robert Silberski, Marcia Lynn Keeney, Margaret A. (Maggie) Bassett, J. A. Smith, Leina M. Boone, Diana L. Jones, Nancy J. Neigus, Terry Sack, Frances A. (Toni) McHale, Lucille C. (Lucy) Gilliard
Richard W. Watson, Don I. Andrews, A. Danthine, Harold F. Arthur, Peter R. Radford, Wayne R. Robey, Joshua Lederberg, Connie Hoog, James A. Blumke, David Hsiao, Michael L. Marrah, Vinton G. Cerf, Gerald L. Kinnison, Paul Baran, Henry Chauncey, J. T. Sartain, Robert N. Lieberman, Ralph Alter, Nils Maras, Philip H. Enslow, Robert M. Dunn, Joseph B. Reid, William T. Misencik, Toshiyuki Sakai, Louis Pouzin, Yngvar Lundh, Robert H. Hinckley, Marvin Zelkowitz, Don D. Cowan, Louis F. Dixon, Michael O'Malley, Peter Kirstein, David J. Farber, Dave Twyver, Art J. Bernstein, Dave E. Liddle, A. Kenneth Showalter, D. D. Aufenkamp, Derek Leslie Arthur Barber
Meredith(Reddy) E. Dively, Jeanne M. Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Mark Alexander Beach, Judy D. Cooke, Marcia Lynn Keeney, Carol B. Guilbault, Susan R. Lee, Elizabeth K. Michael, Charles F. Dornbush, Elizabeth J. (Jake) Feinler, Kirk E. Kelley, N. Dean Meyer, James E. (Jim) White, Diane S. Kaye, Paul Rech, Michael D. Kudlick, Ferg R. Ferguson, Douglas C. Engelbart, Beauregard A.

Hardeman, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Mil E. Jernigan, Harvey G. Lehtman, Jeanne B. North, James C. Norton, Jeffrey C. Peters, Jake Ratliff, Edwin K. Van De Riet, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor, Donald C. (Smokey) Wallace

HGL 27-SEP-73 21:40 19355

DEX Operational Again! Give Your Drafts to PSO

I am pleased to announce that the Cassette input subsystem is working again and that therefore DEX is operational. For the past week, Input Only DEX has been used for production work by PSO. We plan to further reduce the load on the system by having the cassettes and DEX processing run at night by Mark Beach, the night operator. Please feel free to request input to be typed in by DEX by using the form available in the PSO office. 1

The more complete DEX-II wll be used on an experimental basis beginning within the next two weeks. DEX-II will not be available for full production work until a trial period is over. (Full debugging was impossible until the Cassette program worked and the program was used by PSO staff.) 2

Any questions should be referred to Kirk or me. The Input only DEX is an easy and efficient way to input material into NLS files. 3

HGL 27-SEP-73 21:40 19355

DEX Operational Again! Give Your Drafts to PSO

(J19355) 27-SEP-73 21:40; Title: Author(s): Harvey G. Lehtman/HGL;
Distribution: /SRI-ARC; Sub-Collections: SRI-ARC; Clerk: HGL;

19355 Distribution

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

AHI LINE PRINTER - A MESSAGE TO USERS

Items for the present: 1

The AHI line printer should normally be attached to port 4. Everyone using the printer should make sure they put in the give back command to the TIP (@ 4 g b lf) at the conclusion of their Sendprint senario. Failure to do so will cause subsequent users to receive a NO indicating that they are locked out of port 4, that is, the previous user port has captured port 4. If you get a NO try again about 3 or 4 times and of you consistently get a NO make a collect call to the Network Control Center (NCC) at (617)-661-0100. Tell the NCC that you are a Net user from Rome and that port 4 is captured. 1a

If you receive a CAN'T T this means that there is a valid data connection to port 4 and the port is in use. If you are in Sendprint, printing out a file, and the system hangs up your process so that you can't communicate with it or make it go away, chances are, it will hang up port 4 and the rest of the users will receive a CAN'T T when trying a Sendprint. 1b

If you get a CAN'T T for a long period of time and are not aware of any one using the printer call Tom Lawrence X7746 or X4728. 1c

Items for the Future: 2

We're attempting to remove the necessity of the user haveing to put in a give back command. 2a

At present the data transmitted from SRI is placed on tape and at the end of the transmession the data goes from the tape to the printer. During the time the data is being transmitted to the printer from the tape the user is not prohibited from sending another file. However, if he should do so all data ,up to the time the tape to printer transmission is completed, will be lost. In the future the user will be prohibited from sending a file during a tape to printer transmission. 2b

It will, in the future, be possible for the user to specify the number of additional copies desired by typing the appropriate info on the TTY adjacent to the printer. 2c

Several months from now we may have another AHI printer connected directly to the TIP. 2d

19357 Distribution

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

UCB Science, Technology, and Public Policy Seminar Visitors - 9/26

The following visitors to ARC (brought by Bart Cox) were given 20 minute demonstrations (in 3 groups) of our system by JCN on 9/27. They are participating a special seminar at UC Berkeley, "Science, Technology, and Public Policy", and were touring SRI. They also saw the Uni-mate Arm. 1

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<02> Previously attended ESC, Berkeley, CA 42

19358 Distribution
Richard W. Watson, Douglas C. Engelbart, Jeanne M. Leavitt,

NJN 28-SEP-73 07:26 19359

USING/USERS

Dave--
I agree with you that we should distribute things to USERS. I have sent all my USING Notes to USERS as well as our group. It just requires telling Marcia or somebody when it is distributed. The next version of NETEDS should go to both groups.
I disagree with you about Batbara Noble (though I'm not sure about Robert Blanc). I think she should be in USING. We don't have anyone from CCN in the group and I think we need someone. In addition she deals withalot of users and I think her opinions might be valuable. However, I don't know her, and I presume you do since you are out there. Blanc also represents alot of users at NBS and maybe we should have him too. I vote for putting them in USING.
Salut. Nancy

1

19359 Distribution
David H. Crocker,

AAM 28-SEP-73 07:58 19360

DEAR JEANNE AND MIKE,
I FOUND THE POINTERS IN LOCATOR POINTING TO THE CORRECT VERSION OF THE "BRIEF DIRECTORY OF NETWORK PARTICIPANTS" AND TRIED TO PRINT IT OUT ON OUR LINEPRINTER. UNFORTUNATELY, THE "ODP" DIRECTIVES IN BRANCH 1 ASSUME THAT THE DIRECTORY WILL BE PHOTOREDUCED (OR SOMETHING) SO IT DOESNT FIT ON 8 1/2 X 11 PAPER. I TRIED TO FIX THIS BY PLAYING WITH THE OUTPUT PROCESSOR DIRECTIVES, BUT THE FILE IS BIGGER THAN MY TOTAL ALLOCATION. THUS, AFTER I GET MY OWN (UNPROTECTED) COPY I CAN'T DO ANY WORK ON IT BECAUSE THERE'S NO ROOM FOR A PARTIAL COPY OR AN OUTPUT FILE THEREFORE, CAN I HAVE MY ALLOCATION RAISED, OR ELSE WILL YOU PUT THE FILE INTO A BETTER FORMAT FOR ME, OR SOMETHING, PLEASE?
REGARDS,
ALEX MCKENZIE
P.S. AN ANSWER TO THIS NOTE WOULD BE MUCH APPRECIATED 1

19360 Distribution
Jeanne B. North, Michael D. Kudlick,

NJN 28-SEP-73 08:09 19361

New NIC User

Jeanne--
I have entered a temporary ident for Joel Malman (Ident = JHM2) who is our new TIP specialist and will be using the NIC for correspondence with network users and for tip documentation work. Could you verify him please. Thanks you. Nancy 1

19361 Distribution
Jeanne B. North,

Daugher-in-law of Speculation about UCLA TNLS

If your plan did not include people from San Diego or La Jolla I think we can deal with them ourselves separately.
Be sure you don't take our delays as discouragement; in general people here would like to accomodate the UCLA effort. 1

19362 Distribution

David H. Crocker, David H. Crocker, James C. Norton, Michael D. Kudlick, James H. Bair,

RWW MDK 28-SEP-73 12:08 19363

Basic NIC Services

Ed ... This NIC Journal item discusses the question of funding basic NIC services. For your convenience, we have also sent it through US Mail to your Patrick AFB address. Looking forward to hearing from you ... Dick Watson and Mike Kudlick.

RWW MDK 28-SEP-73 12:08 19363

Basic NIC Services

Col. Edward P. Schelonka
ARPA Principal Investigator
Range Measurements Laboratory Attn: ENLD
Patrick Air Force Base
Florida, 32925 1

Dear Ed: 2

We appreciated the opportunity to get together with you on September 17th. We feel that such discussions are very useful, and we would like to have them more frequently. The resolutions made concerning your notification to the NIC of new user site information will help significantly to keep the NIC's information timely and accurate. 2a

As you know, Ed, we have been attempting to develop a plan for "pay-as-you-go" funding of NIC basic services. 2b

As stated in our Proposal to ARPA (SRI No. ISU 73-128, 28-Aug-73), we believe that each organization using the NIC's services should provide some fraction of the funds that the NIC requires to provide its basic services. 2c

However, we have concluded that it is impracticable for the NIC to develop a funding plan independently of the work that you and Paul Baran are doing for the general ARPA Network overhead services, for three main reasons. 2d

First, we consider the NIC an important part of central Network services for reasons indicated in the Attachment. 2e

Second, such a plan must be consistent with the overall ARPA plan for funding overhead services. 2f

Third, the NIC does not have the information needed to determine who should be taxed, who should be subsidized, or by what amounts consistent with other funding. 2g

Therefore, from our viewpoint, and, we believe, that of the Network, it is undesireable and impracticable that the NIC hasn't been included in your funding plans either as a participant or as an overhead entity to be funded. 2h

The overall funding requirements for the NIC are in two major parts: R&D funding, and funding for "Basic Services". Funding for NIC R&D work comes directly from ARPA. It is the funding for "basic services" that we feel must be provided by the using organizations. 2i

"Basic NIC Services" have three major components: 2j

1) Dialogue Support 2j1

- Maintenance and availability of the NIC Journal;
- Recording of Journal dialogue and storage for later reference and use;
- Maintenance and distribution of the catalogs that support the Journal dialogue;
- Maintenance and distribution of the Directory of Participants. 2j1a

2) Reference Support 2j2

- Maintenance and distribution of the "Resource Notebook";
- On-Line availability of the NIC Query System;
- Access to the NIC's reference desk, as described in our Proposal to ARPA (SRI No. ISU 73-128, 28-Aug-73). 2j2a

3) Stimulation of Network Usage 2j3

- Maintenance and distribution of the ARPANET News;
- Distribution of NIC reference documents to potential users, Network "associates", and others who request such documents;
- Entertaining visitors to the NIC, explaining the ARPANET to them. 2j3a

These basic NIC services are used by different classes of people: 2k

A) The organization and personnel at a Host site. 2k1

B) The organization and personnel at a TIP site. 2k2

C) Peripheral users of Hosts or TIPS, who do not belong to any Host or TIP organization. 2k3

D) People who are not users of the Network but maintain contact with the ARPANET community. 2k4

The problem of determining how much funding support should come from each of these classes of users is in our opinion intimately related to the problem of determining the funding support for other Network overhead functions. (We would also be happy to discuss the categories of basic services above and expand or contract them if appropriate.) 2l

We therefore believe that these problems must be addressed at the

same time, and by the same group, that plans are being made for funding support of the other Network overhead functions. 2m

We look forward to your response. If you feel that a visit by R.W. Watson and M.D. Kudlick to RML would be an appropriate way to discuss these issues further, we would be happy to do that. 2n

We have included an Attachment that states the reasons we see for the continued existence of the Network Information Center as an ARPA-related activity. 2o

We should emphasize that we believe the current NIC funding levels more than strain the resources of SRI-ARC to meet the needs which we feel should be met by the NIC. 2p

Sincerely,

R.W.Watson and M.D.Kudlick 3

ATTACHMENT

WHY HAVE A NETWORK INFORMATION CENTER? 4

The Network Information Center (NIC) was originally created to develop and provide reference and dialogue support services for a small number of research sites involved in network development and use. 4a

The NIC has performed these functions and has struggled to provide its services to a rapidly expanding network community. The NIC community has consisted of ARPANET sites, and of people interested in ARPANET Technology but not actually connected to the network. From the NIC's viewpoint, the main characteristics of this community have been rapid growth and changing needs. 4b

We recognize that the size of the network and its projected growth have exceeded the research resources which ARPA has to invest for NIC support of the general network community. There is, however, a strong and growing need for the types of services provided by the present NIC. 4c

There is a need for a reference service that provides "consumer information" to potential and actual users. Without such a service, marketing and sharing of network resources is hindered, and manpower and money is wasted through the questions and redundant efforts to find answers by those who need them. 4d

There is a need for well-structured information exchange

mechanisms to facilitate coordination and collaboration among the network community. 4e

In short there is a need for information to facilitate network resource sharing, collaboration, and dialogue. 4f

These problems exist both in the general network community, and in special interest groups involved in ARPA IPT sponsored research. 4g

To meet these needs, the Network Information Center has been performing four main roles, as conceived at the beginning of the current contract period: 4h

1) Stimulating the use of and interest in the ARPA Network; 4h1

2) Supporting dialogue among the geographically distributed individuals and research teams that have been contributing either to the development of Network Technology, or to the support of other network-oriented research; 4h2

3) Providing reference information about Network resources and facilities; 4h3

4) Developing prototypical services for use in future, similar network-oriented information centers. 4h4

The roles of the NIC, as stated briefly above, have encompassed the following types of services: 4i

1. Stimulating interest in and use of the Network. 4j

This role has had two aspects: assisting in marketing the ARPA Network, and assisting in the development of network protocols. 4j1

The NIC's staff has taken an active role in introducing visitors and network users (both potential and actual) to the network's resources. This has been done through distribution of various reference materials to network associates and sites, and through discussions and demonstrations for those who visit the Network Information Center. The NIC and ARC staff also devoted many man months in helping ARPA prepare for the 1972 ICCC, in order to help stimulate interest in the network. Finally, others such as NBS and MITRE have been using NLS and the NIC on-line Query system to demonstrate the capabilities and potentials of the Network. 4j2

This role of the NIC in marketing ARPANET technology has not been generally recognized, but has been implicitly accepted and

used as part of our services. We have continued this role because we believe it has been of strategic value to ARPA. 4j3

The other aspect of the NIC's role in this area (with support from the Augmentation Research Center staff), has been active participation in the development of network resource sharing protocols, ensuring that the needs for information exchange were adequately addressed. For example, the NIC was one of the prime contributors in the development of the Telnet and Mail protocols, and has participated in the design of the File Transfer and Graphics protocols. 4j4

2. Supporting dialogue among geographically distributed researchers, to help stimulate network-oriented R&D. 4k

ARC and the NIC have developed and operated the "Journal" system for the support of on-line and off-line dialogue among geographically distributed researchers. This has facilitated the development of network protocols, by providing a means to exchange technical memoranda and to record and retrieve all documentation and memoranda relating to protocol development. A key aspect of this support is that distribution is automatic once an individual or research group is named in the addressee list. 4k1

Recent innovations have extended the dialogue support to other groups of researchers working in common problem areas, such as Computer Based Instruction, Speech Understanding Research, and Packet Radio. We have also recently implemented a mechanism that allows network users to utilize the NIC's Journal system via any site's File Transfer Protocol software, without the users having to learn or use NLS. 4k2

3. Providing reference information, to help create a feeling of community among network developers. 4l

The NIC's reference service is simultaneously on-line and off-line. It is available to all users of and researchers on the network. It includes indexes to all dialogue that has been transacted through the Journal, a directory (mailing list) of individuals and research groups using or associated with the network, and a directory ("notebook") of resources and facilities on the network. It also includes indexes and hardcopy distribution of professional papers that are of interest to special interest groups of network participants. 4l1

Use of the on-line reference service has been facilitated through development of a prototypical user-oriented Query language. In addition, introduction of Enterprise phone

service at many locations around the network has allowed users to have conversational access to the NIC when that mode of communication was desirable. 4l2

Use of the off-line services was accomplished by distributing and maintaining a collection of NIC documents at each network site, and at other locations where interest in network developments existed. 4l3

4. Developing prototypical services. 4m

As with virtually all other aspects of the network technological development, the combination of the context, type, and scope of NIC's services have had few precedents. We intentionally set out to develop prototypical, evolutionary services and evaluate them and evolve them, to be of use in future information centers, as well as in the present one. 4m1

Our recent analysis of NIC services and expenditures is in keeping with this prototypical nature of the NIC. Based on this analysis, we have found that it will be beneficial to restructure our services, and to restructure the framework in which we provide those services. 4m2

For example, the concept of providing a uniform level of both on-line and off-line services to the entire network community is, we now believe, not sufficiently responsive to rapidly changing user needs. We also believe that because of the growth of the network community, it is no longer efficient to serve all users with a uniform set of products. We therefore intend to tailor the products to meet specific user groups' needs. 4m3

As another example, the practice of fairly widespread distribution of a uniform set of hardcopy documentation was necessary at the beginning when much of the technology for on-line dialogue was somewhat unstable and the network community was smaller than it is now. However, because of network growth and a stable technology, this practice is now felt to be inappropriate, and is being re-evaluated. 4m4

The SRI-ARC Propsal to ARPA addresses these problems directly. It includes approaches that will enable ARC to more effectively continue this development / operation / analysis cycle, until network usage patterns and information needs stabilize. 4m5

Basic NIC Services

(J19363) 28-SEP-73 12:08; Title: Author(s): Richard W. Watson, Michael D. Kudlick/RWW MDK; Distribution: /EPS RWW MDK; Sub-Collections: SRI-ARC; Clerk: MDK;
Origin: <KUDLICK>NIC.NLS;8, 28-SEP-73 12:02 MDK ;

DLS 28-SEP-73 12:39 19364

Tooomm this is some information of the "line processor" which SRI is developing to interface a cheap display with DNLS.

MEH 26-SEP-73 10:02 16952
Line Processor and related issues, includes terminal specifications
Location: (JJOURNAL,16952,1:w)
*****Note: (Secondary Distribution Copy)*****

1

19364 Distribution
Thomas F. Lawrence, Mike A. Wingfield,

Utility Pager Question

John: 1

This is in response to your question about the possibilty of the Workshop Utility (via Tymshare) using a pager that is available from NASA Ames. 1a

The BBN pager Tymshare ordered "on faith" (without a contract) from BBN several months ago in order to be ready for service November 1st, is now finished and being "burned in", I am told by Mike Marrah of Tymshare. It is expected to be delivered in the next couple of weeks to Tymshare, Cupertino. 1b

We feel that it is not appropriate to stop the order at this point. 1c

If the Ames pager had been available last June or so (we did ask about that possibility then) we probably would have gone that route. 1c1

In general, though, I do wonder what other possibilities for use of the Ames pager you have? I'd hate to see it become a white elephant because of our feelings of commitment to the BBN order. Any comments? 1c2

19366 Distribution
John S. Perry, Michael L. Marrah, Ferg R. Ferguson,

MDK 28-SEP-73 16:19 19367

NIC Idents

Vint ... 1

1) We've changed your Network mail address ...
from VGC AT ISI to CERF AT ISI, as you requested. 2

2) Regarding your observation about alphabetical ordering versus ordering by Site-Ident in the Group Directories: 3

We will change it to alphabatical, as soon as possible. No doubt the present way is difficult to use. I wasn't aware of it, but when I checked with Jeanne North I found a plausible explanation for how it got that way. 3a

Namely, in the beginning, when there were only three groups (Station Agents, Principal Investigators, and Liaisons) it made sense to order them by Site-Ident since that was what was presumed to be the main information contained in the list. 3b

But admittedly that concept doesn't apply to all the other Groups that now exist. 3c

Thanks for your comments. ... Mike Kudlick 4

19367 Distribution
Vinton G. Cerf, Jeanne B. North, James E. (Jim) White,

Display Terminal Requirements for Running NLS

Briefly, our requirements for an NLS display terminal are: 1

Full ASCII character set including upper and lower case. 1a

A display area of at least 24 lines by 72 characters, preferrably 27 by 80. 1b

A mouse and display capabilities to follow its movement with a tracking spot on the screen. 1c

Hopefully, a five finger keyset. 1d

Enough smarts to implement 1e

1) a host input protocol that includes the passing of coordinates with certain characters. 1e1

2) a display manipulation protocol 1e2

We are just finishing work on a device we have designed here at ARC, called a line processor. It works with a class of alphanumeric display terminals. I will include a description of it and a list of requirements the displays must meet in order to run with our line processor. 2

The line processor (which has a microcomputer in it) meets the requirement of "enough smarts" to implement the protocols. 2a

There are two display control protocols at this time. One which is designed for minicomputers with a few K of read-write memory (e.g. IMLAC PDS-1), and one designed for the line processor. 2b

The line processor protocol is quite simple, uses little read-write memory (about 100 bytes) and is of course designed to be used on alphanumeric displays. 2c

I am frankly not familiar with the PLATO terminal system. I will attend the conference on Oct. 15-16 and I will familiarize myself with it before then. 2d

Description of the Alpha-numeric Terminal Line Processor 3

Goals 3a

The chief goal is to provide remote and local users with an inexpensive display terminal on which they can effectively use a display version of NLS. 3a1

We hope to come as close as possible to providing the same

service to these users that we provide to our local display users and to IMLAC users. 3a1a

For example: 3a1b

The user should have a mouse and keyset and be able to use them just as on a local display. 3a1b1

All DNLS commands should be available to the user, including split screens and shared screens. 3a1b2

The terminal should have both TTY-simulation and display modes, as well as a small TTY-simulation area while is display mode. 3a1b3

The resulting terminal should be human engeneered to the extent that day-long use is comfortable. 3a1b4

We hope to provide effective service to remote users working over, for example, a 1200 baud rate connection. Hopefully, even slower connections would be workable. On the other hand, we hope to be able to run local displays (or remote displays with very high speed connections) of this type at 9600 baud. 3a2

The display terminals should be reliable, comercially obtainable and maintainable. 3a3

The Line Processor should be maintainable, and to some degree, flexible - that is, the program can be changed. However, changing the program is a major operation and may be expensive. 3a4

We also hope to provide some "extra" services for the user, due to the fact that the Line Processor has a microcomputer in it. 3a5

The user will be able to plug a hardcopy device (e.g. a TI terminal) into the Line Processor, and get a printout in parallel to his use of the display. The microcomputer would do the software multiplexing and buffering. 3a5a

We hope to be able to do local literal echoing, which would provide instantaineous echoing while typing literals, and remove some load from the IEN. 3a5b

The above items will not be standard. They will require extra program memory and the exact software implementation details are not yet worked out. 3a5c

Display Terminal Requirements 3b

Requirements placed upon displays by the Line Processor: 3b1

The terminal must have an addressable cursor that is programatically and visually satisfactory for mouse tracking. This means that the cursor can be positioned via control codes from the computer connection to the display. We expect this to be done with an escape code followed by a control code and one byte for each character and line position. The display must perform the cursor position function without displaying it in and extraneous positions, and it must do it in such a time that no padding characters are necessary at 9600 baud. 3b1a

The terminal must be able to run in full duplex mode at a high baud rate. We want to run the terminal-Line Processor connection at 9600 baud. Slower rates may be acceptable under some conditions. The Line Processor will be located near the display. 3b1b

The editing functions normally called delete line and insert line must be implemented, and we must be able to perform them from the computer connection. Delete line removes a line from the screen and moves all following lines up one line. Insert line moves the addressed line and all following lines down one, leaving a new blank line. 3b1c

We must also be able to perform these functions from the computer connection: 3b1d

Clear the screen. 3b1d1

Move the cursor to the left margin (usually done with a CR) 3b1d2

Move the cursor to the next line (usually done with a LF). 3b1d3

A Line Feed should cause scrolling of the entire screen when the cursor is on the last line. This scrolling must be unlimited - the text that is removed from the top of the screen is lost. 3b1d4

The time required for the display to perform these functions must be minimal. In particular, none of them should take longer than 100 ms. We expect the slowest functions to be done in 3 to 7 ms. 3b1e

It must be possible to alter the appearance of a character at a known position on the screen without changing it,

without knowing what the character is, and without altering any text around the character. This can be blinking, reverse video, high intensity, etc. Also, it must be possible to restore the character to its original appearance. This is used to show bug selections. 3b1f

On some displays it is possible to show bug selections by "flashing" the cursor under the selected character. This is only satisfactory at 9600 baud, and only then if the cursor positioning function in the display is fast and moves the cursor directly to the new location. 3b1f1

We would like the display to have a "standout" mode - which would alter the appearance of new text. Again, this could be underline, reverse video, high intensity, etc. 3b1g

Requirements places upon displays because of user considerations: 3b2

The terminal should have a large character set - both in character generation and the keyboard. 3b2a

It should have a full ASCII character set, including control characters and upper and lower case letters. 3b2a1

The keyboard layout should be standard (with the possible exception of a few special characters), and include a numeric key group. 3b2a2

The keyboard should have a key rollover feature and have a confortable feel. 3b2a3

The display should be easy to read and easy to look at. 3b2b

It should have a twelve inch screen at least. 3b2b1

It should be very quite - it should not have a fan in it. 3b2b2

The display area should be at least 24 lines by 72 characters. We expect to see 27 lines by 80 characters. 3b2c

Things we would like to see in the terminal: 3b3

We would like to see a control function (called clear line) which replaces all the characters on a line to the right of a selected character with blanks. 3b3a

We would like to see a jack on the back for a video slave. 3b3b

We would like to have a removable keyboard. 3b3c

We would like to see the terminal execute all functions in 1 ms. or less, at least as fast as possible. 3b3d

Line Processor Functions 3c

Breifly, the Line Processor sits in between the display and the main computer and implements a display independent protocol which allows the main computer to control the display without knowing the particulars about the display terminal. It also allows the use of the mouse and keyset. 3c1

Mouse tracking 3c2

The line processor reads the X and Y coordinates from the mouse hardware and "tracks" it by positioning the cursor when necessary. Tracking may be inhibited by the main computer to allow it to position the cursor and perform various functions. 3c2a

Keyset, mouse button and keyboard translation 3c3

The keyboard input from the display, the keyset and the mouse buttons are all read by the line processor. The various keystrokes and button changes are translated into a host input protocol, almost identical to the IMLAC input protocol. 3c3a

The line processor "debounces" the keyset and mouse switches, and decodes the keyset strokes. 3c3b

Display control 3c4

Display control is achieved by the main computer by sending control sequences to the line processor. The line processor implements the function in the best way for the type of display it is connected to. 3c4a

"Unescorted" characters, that is characters that are not part of this control protocol, are asumed to be TTY-type output, and the line processor puts them in a TTY-simulation display area. 3c4b

Auxiliary output device 3c5

Part of the control protocol allows the main computer to direct text output to the auxiliary output port for a hard copy device. 3c5a

Modes 3c6

The line processor operates either in a full screen TTY simulation mode, or a display mode where a small part of the screen can be used for TTY simulation. 3c6a

It also operates in a normal mode in which the mouse is not activated, or a mode in which control characters and mouse buttons are sent to the host in the host input protocol. 3c6b

I can send you the actual protocol if you wish. Also, feel free to call or use SNDMSG or the journal for questions or comments. 4

Don Andrews 4a

SRI-ARC 4b

ident: DIA 4c

phone: (415)326-6200 ext. 3268 or 3630 4d

19368 Distribution
Thomas O'Sullivan,

Proposed Changes in Prompts, Name of Viewchange, Insert Sequential,Command Feedback,

On Friday morning Chuck Dornbush and I sat down to go through <userguides,command,> to discuss problems that had come to light as he actually went to parse tha command syntax Charles orignally drafted and that Dean has updated and maintianed. Most of the problems were small matters which I have brought to Dean's attention separatly, but some of them were of general interest. We are going ahead with all the changes described here as thye come up in parsing, but we don't feel that any of them is beyond discussion. 1

Prompts: 2

By propts we mean T:, I: V: etc. 2a

We have added three prompts, C: to prompted for CONFIR, B: to prompt for bugs (in display), and K: to prompt for keywords. F: has disppeared. File names are treated like other content. 2b

We have designed three levels of prompting, off, partial, and full and will change the set prompt command <userguides,commands,0125> accoridingly. 2c

Partial prompting is like what we have now. 2c1

No prompting is like what we had before. 2c2

Full prompting includes options as alternatives including the option character (represented for the moment by *, other suggestions are welcome). 2c3

Example: 2c4

Partial Prompting: 2c4a

* K: replace K: text at A: 'a <CR> through A:'b <CR> by T:... 2c4a1

No Prompting: 2c4b

* replace text at 'a <CR> through 'b <CR> by... 2c4b1

Full Prompting: 2c4c

* K: replace K: text at A: 'a <CR> through A:'b <CR> by T;/*A:... 2c4c1

Full Prompting for display: 2c4d

Proposed Changes in Prompts, Name of Viewchange, Insert Sequential,Command Feedback,

K: replace K: text at B:/*A: 'a <CA> through A:'b <CA> by B:/T:/*A:... 2c4d1

I imagine full prompting useful for moderately experienced learners. 2c5

Note the full words of the prompts are never spelled out. 2c6

Command Feedback: 3

The old viewchange system allows a user to specify the number of characters in the name of a command that the system echos. I have never heard of anyone using seriously any option except 1 and the default, 50. We plan to drop this option and let the user's choice of recognintion mode alone control his feedback. 3a

The name of Viewchange 4

This subsystem is called "user-option" in <userguides,Commands,> The name is not specific enough. We are calling it "format control". 4a

Insert Sequential/Copy Sequential. 5

To make the grammer of the command easier and reflect more what actually happens, we have made all the insert comands that in reality copy things into NLS from TENEX sources (sequential,directory, archive, etc.) into copy comands. 5a

CONTENT option in File and Directory commands 6

In a number of cases a command called for accepting the current file or directory as a default by confirming, or typing the name of some other file or directory, or buging text on the display screen. Such a choice is impossible because there is no way to tell the CONFIRM that acepts the default from a bug. 6a

In cases where the command destroys part of a file or directory, E.G.. Trim, we deleted the CONTENT option. If you want to trim some one else's directory, you will have to connect first. 6b

E.g.: 6b1

Trim (directory) CONTENT (Password) CONTENT
(no. versions to keep) CONTENT (ok?) CONFIRM 6b1a

becomes: 6b2

Proposed Changes in Prompts, Name of Viewchange, Insert Sequential,Command Feedback,

```
        Trim (no. versions to keep) CONTENT CONFIRM (realy?)
      CONFIRM
```
6b2a

In other cases we introduce the option key before naming some other file or direcotry as an option: 6c

```
   Output Quickprint  (FILENAME) CA       (Copies=1?) CONFIRM
          Printer                FILENAME              NUMBER
   CONFIRM
          Journal (quickprint)
          Com
```
6c1

becomes: 6d

```
   Output Quickprint  [FILENAME] CONFIRM(Copies=1?)
   [NUMBER]CONFIRM
          Printer
          Journal (quickprint)
          Com
```
6d1

19369 Distribution

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

KIRK 28-SEP-73 20:39 19370

Character size 0 Bug

I can read the small character size in DNLS. Now if only the lines extended to the end of the screen (should be about the same as the width of the printer paper with Output Quickprint. Would be very helpful to those of us who must work with text that wraps around. Currently, the last part of the line with character size 0 is chopped off making it practically useless. 1

19370 Distribution

Diane S. Kaye, Harvey G. Lehtaan, Charles H. Irby, Diane S. Kaye,

HELP

I have A small problem, which I don't seem to be able to handle. My directory is limited to 50 pages for reasons that I understand. However, this forces me to continually reduce the number of pages in use. My initials file has been developed by me over a period of months to serve as a possible prototype of one for the Branch. As a result of this I had it organized similar to a filing cabinet to test out some ideas that I have. It was still mostly empty, but where there were entries they were mostly links to various items that were journaled. While working at home in the wee hours ('till almost 0600 on 28 sep.) I did SOMETHING, which really cut down on the number of pages in my directory. I saved about 14 pages by the simple expedient of losing the contents of my initials file. I now have a pc of #12, that is locked by, which I can't seem to unlock. In addition, I have a version #12 and a #13. Are my 14 pages recoverable???? HELP PLEASE

1

19371 Distribution
Dirk H. Van Nouhuys, James C. Norton,

typamatic etc.

Ken: based on the contents of <IMLAC>imnls.nls;151, here's my guesses as to why typamatic doesn't work yet. 1

(1) In procedure "intent": "rptcht←rptcn1" looks like it should preceede "GOTO int0" 1a

(2) In procedure "repeat": 1b

".A 177B = rptcar" should be ".A 200B #0 %wait for bit 8 to go off%" 1b1

(this makes variable "rpttmp" unnecessary, and "kstore(rpttmp)" can be changed to "kstore(rptcar)".) 1b1a

"IF SKIP KSN" seems unnecessary. 1b2

Is the typamatic feature driven off the 40 cycle interrupt? 1c

Based on a lot of diddling with our machine, it looks like like the "keyboard flag" and bit 8 of the "keyboard register" are both changed from 0 to 1 when a key goes down; the flag is then reset by the processor (via KRC or KCF); bit 8 is reset only after both the key has gone up again and the flag has been reset. Contents of bits 9 through 15 of the "keyboard register" get changed to reflect a new key value at the same time bit 8 goes from 0 to 1. 2

Alan has version 150 on a cassette here. I have had it blow up several times in mysterious ways which I don't understand well enough to describe yet. The most recent such time, I had the tip using binary input and output, so I presume that loss of communication with TENEX is not the problem. 3

About LVH: my IMLAC guy tells me that all newer machines are "graphic" and not "alpha" machines, and so have addressing identical to LVH machines (1024 by 1024 continuous d to a), but that any one of them may or may not have the hardware to interpret the 3 word lvh instruction. Ours doesn't have the hardware. 4

19372 Distribution
Kenneth E. (Ken) Victor, Alan R. Hill,

ADO 29-SEP-73 01:36 19373

Charles: could you add ADO (me) and ARH to IIG? thanks .. Buz 1

19373 Distribution
Charles H. Irby, Alan R. Hill,

VGC 29-SEP-73 21:22 19374

Thanks for services rendered

Mike: 1

Many thanks for your rapid responses to my inquiries and gripes. I am grateful for the change in ordering for group directories, it will make this much easier for me, anyway. Also, thanks for switching my ISI mailbox ident. You folks at the NIC have gone to a lot of trouble for me lately, and I am much in your debt. You will undoubtedly be troubled a little more, soon, when my PDP-11 is connected to your IMP, but I hope the interference is minimal. 2

3

Let me know if I can be of any service to you. Cheers. Vint 4

5

19374 Distribution

Michael D. Kudlick, Jeanne B. North, Marcia Lynn Keeney, James E. (Jim) White,

VGC 29-SEP-73 21:30 19375

NIC numbers as addresses

Mike and Jim: the idea about using NIC numbers as valid addresses for mail is super -- the need has occurred several times in the last few days, but I didn't realize the solution until I read Mike's mote (JJOURNAL, 19339,1:w). That feature will be very useful. Hope you find an easy way to do it, Jim. Vint 1

19375 Distribution
Michael D. Kudlick, James E. (Jim) White,

JBN 30-SEP-73 21:45 19376

Steps Toward a Directory Format for TTY Printout

You may look in (north, dirindon,) for the beginning to the answer to your need for a version of the Directory which is suitable for tty (8 1/2 x 11). Unfortunately, this is presently only a mockup, and no programs have been written. Now is the time for your comments. 1

The wonder to me is that no one else has ever made the complaint you made regarding the online Directory. It is a longstanding frustration of mine, documented at ARC ad nauseum, that once having hammered out with Walt Bass a program for the offline Directory, which was a first essential, I have never been able to get dedication of a programmer to produce a program to format the data units for either the Directory or the Catalog for tty output. The file referred to is part of the result of receiving the go-ahead from Mike to submit a complete overhaul of the Directory, 2

Dave Crocker took an online file once, the one for Codes for NIC cataloging, and trimmed it down to size; this is not possible with output formatted by programs rather than directives. 3

Another file proposed for the Directory is in (nic-work,dirorgpages,) 4

Another file, one for the offline print, which I know you will not approve, is in (nic-work,dirindoff,) I am sending you a Xerox of the page as set up. The reason I know you will not approve is that it is too small print to suit you, but perhaps you won't care if you have a tty version to print for your uses. We really must save space, and smallifying the print is the only way. 5

19376 Distribution
Alex A. McKenzie, Michael D. Kudlick, Richard W. Watson,

Programming Questions

(ques) Questions on L10 1

When a string is declared (ref .3b5c) it is set with a max value for the number of characters. What is the buffer size in your program area? Is this a variavle size field in the sense that if you have DECLARE STRING maxsiz[50] and its current length is 0 when its empty and you move in a string of 10 characters, do use 10 characters in your bufffer space or does it expand to 50? 1a

The RETURN statement returns control to the calling procedure, right? Wouldn't it be possible to have only one return clause in a procedure? You would test a pattern and the result (either a 0 or a 1) would be automatically put in a pre-se By the way, the k viewspec worked out okay for us the other day. If you pass a statement at the highest level (like a one or a two or a seven), then the rest of that plex is passed without being tested. Which is almost like printing out your whole file if only one statement passes..if it is a the top level. At least that's the way I read it.t status word, call it STAT. Then you could RETURN(STAT) and the statement would be printed depending upon whether STAT is 1 or 0. 1b

19377 Distribution
N. Dean Meyer,

THIS IS A TRIAL, RIC:TRYING TO SEND A FILE BRANCH

INTERACTIVE HOME COMMUNICATIONS 1

purchasing and shopping 1a

Service Description 1a1

The distinction betwen shoppping and purchasing is not an important one in today's world, but with the advent of new information retrieval and information processing techniques, the difference will become increasingly important in the home of the future. 1a1a

The process of shopping refers to the review of articles that might be purcahsed and the decsions that lead up to the actual purchasing act itself.These decisions take the form of what colour, how many, what quality, where to purchase the merchandise, comparative costs for different volumes or sizes,etc. 1a1a1

The act of purchasing refers to the final selection of the article to be purchased and the transfer of the ownership title to the buyer. This commonly involves the exchange of money for the article(s) or the exchange of an equally negotiable instrument such as a cheque. More and more these days, the transfer of title involves the use of credit instruments such as charge accounts for various stores or bank charge cards such as Chargex or Mastercharge. 1a1a2

In this section we will be looking at some of the proposed alternatives to the current methods of shopping and purchasing and trying to evalate their impact on the householder's related activities. 1a1b

Questions Regarding This Service 1a2

banking 1b

Service Description 1b1

Current banking practices rely very heavily on printed paper fors, both in making deposits and in writing checks or making withdrawals. The use of paper is compounded when one includes the paper currency that has become the mainstay of the retal shopper's world. The service that is proposed below would eliminate the use of paper in a great many of the financial transactions made by the average consumer or businessman. 1b1a

It is quite apparent that we will always have to have some sort of currency in our pockets for the purchase of such incidental items as a daily newspaper or a package of cigarettes. The service described here is not intended to replace those types of transactions. This service might provide an attractive alternative to carrying large amounts of cash when considering a major purchase or of writing checks and keeping track of the account's balance form day to day. 1b1a1

This service would permit the householder to make deposits and withdrawals to the family checkng account withut leaving the home. Deposits would take the form of an order to the bank's computer to deposit $XX.XX in the family account and to take the money from another specified acount (probably a savings account at aathat or another bank or from the salary account set up by the householder's employer) Payments could be made in a similar fashion. The bank's computer would be notified to transfer $XX.XX from the household accounta and deposit in the account of the local grocaery store, a nearby department store,or perhaps the phone company. 1b1b

The documentation of the transactions that take place over a system such as that described here would have to be of sufficiently hig quality that the householder was not worried about what transactions had been made. Similarly, the security of the information caontained in the system would be of great interest to the householder. One of the objects of this study is to determine what these documentation and security dimensions are and how strict they would have to be if householders are to start using the service to any grat extent. 1b1c

Questions Regarding This Service 1b2

work-from-home 1c

Service Description 1c1

It is becoming increasingly evident that many of the practices centered around the concept of the business-oriented core of urban areas will result in severe problems for the householder of the future. 1c1a

A partial list of some of these probelms would include the following: pollution caused by too many private sutomobiles making the journey from the suburbs to the business district; erosion of the middle-class population

base as the migratin to the suburbs continues, leaving the center city core with te immobile lower income classes and the wealthy highrise residents; erosion of the tax base in the center city areas to the point where only commerce, industry, and slum housing residents can aford to survive; noise,crime and general anxiety about the hassles of city living combining to diminish the"quality of life" of those living or working in the downtown areas. 1c1a1

One solution that has baen suggested for these problems is to reduce the dependence of the center city on commerce and industry by encouraging more and more workers to change their work styles so that they are able to work from the home. Obviously not every worker will be able to effect this change; it seems most likely that office workers and possibly service oriented workers would find it most convenient to do so. 1c1b

What these groups of workers have in common is th fact that they rely more heavily on he communication of ideas and information generally than on the manipulation of physical objects. The continuing emphasis in this questionnaire on the substitutin oftelecommunications for alternate modes of transfering information would lead one to believe that it might also be possible to permit te sorker to conduct much of the daily routines of the office from his own home, with te help of a home comunications terminal. If this practice of working from he home became relatively widespread qamong office workers, the consequences might be extremely important to tha evolution of our cities and of our lifestyles. 1c1c

Questions Regarding This Service 1c2

remote medical diagnosis 1d

Service Description 1d1

The problem of ising health carecosts and of the inequality of health care distribution might be partially alleviated iF it were 1d1a

Questions Regarding This Service 1d2

political participation 1e

Service Description 1e1

THIS IS A TRIAL, RIC:TRYING TO SEND A FILE BRANCH

Questions Regarding This Service 1e2

19378 Distribution
Ric L. Treleaven,

RWW 1-OCT-73 09:00 19379

Reply on terminal LInks

Ken, with regard to your proposed link jsys change. It seems 15 seconds to get C into the convesation is inadequate. I would likke to see a longer time. The real problem in a multi-linked situation is controlling and knowing who has the floor. If there was some way to simply deal with that situation it would be a useful service. 1

19379 Distribution

Kenneth E. (Ken) Victor, James C. Norton, Ferg R. Ferguson,

RWW 1-OCT-73 09:26 19380

Answering Questions with <Space>

I notice an inconsistency in the use of space when answering question in present commands. In the Journal space means NO and in other places it means YES. Are there other cases like this? Will the problem go away with the new command language? 1

19380 Distribution

Dirk H. Van Nouhuys, Charles F. Dornbush, James E. (Jim) White, Charles H. Irby,

For your information, the commands in the L-10 User Guide are not yet in operation. Continue to use the old commands until the new ones are operational (about a month). 1

19381 Distribution
Joe P. Cavano,

RWW 1-OCT-73 10:35 19382

SRI-ARC Representative at Plato Terminal Meeting

Tom, I received your letter on the Plato terminal modification meeting at UCSB on Oct 16-17. The person attending from SRI-ARC will be Don Andrews not Don Wallace or myself. Don should have sent you our requirements by now. If you haven't received them let Don know (DIA or andrews@sri-arc). Thanks Dick 1

19382 Distribution

Thomas O'Sullivan, Don I. Andrews, Donald C. (Smokey) Wallace, James C. Norton,

Network Software Maintenance

This is a reminder that Network Software Maintenance is scheduled between the hours of 0700 and 0900 (Eastern Time) on Tuesday, 2 October 1973. Although software releases are checked out as much as possible in the BBN test cell, thre are sometimes problems of scale which are not detected until after a release; hence there is a small but finite possibility that the software will be troublesome for a few hours after the scheduled release.

Sincerely,

Alex McKenzie (for the Network Control Center)

1

19383 Distribution

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

draft report

Evaluation 1

Philosophy 2

There is a current feeling, probably a hangover of the past, that the most critical thing in AKW is the evaluation. It is reasonable to assume thatw,ith any new technology, one of the things of interest is - is it any good?? 2a

Thus in anything new, the question always asked is,is it better, cheaper, longer lasting or whatever happens to turn people on at the time of decision. There is however, often a tendency to delay the application of new technology, while an exhaustive analysis and evaluation is being completed. In many cases this is completely unnecessary, or so difficult or time consuming that the evaluation is contraproductive. 2b

This latter may very well be the case in AKW. It is difficult , at this time, to find anyone, who has been a user who is against the AKW. The real question is, what are we trying to accomplish in evaluating the AKW? 2c

Generally speaking, an evaluation is designed to answer questions,The questions vary depending on circumstances. The questions may be the obvious ones. ie is it better, cheaper, more palatable? Or the questions may be more subtle ie does it enhance communications patterns, does it make for better morale, does it insure that we meet due dates. 2d

Another form of question is the type that really says, what information do we need that is difficult to ge, time consuming, and really only serves to delay any decision. This type of question and the activity that can result from it should be avoided like the plague - to coin a cliche. 2e

2f

Status 3

With the comletion (almost) of Bair's work, Conrath's study, and Borden's work, what information do we have, what questions have been answered? 3a

First, there is a lot of anecdotal information on what people have done in using the system, what they say they have done, and what someone else (presumably an objective evaluator) thinks they have done. 3a1

second, there is very limited information on communications

patterns. The value of these of course depends on the validity of the information provided to the recorder and the accuracy with which the data have been manipulated and transformed into information. 3a2

Third is a measure of the Occupational Climate. The value of this may be quite high but again it is a function of what was reported by the people who filled out the questionnaires and the accuracy with which the data were manipulated and transformed into information. 3a3

Fourth, there is data available on system use. This is collected automatically by the system and made available on the basis of weekly repports. Completely accurate data is available on such things as connect time, cpu time, % system and ratios that are derived from these such as con/cpu. The value of these measures is moot. We cannot make the statement that because a man is logged into the system that he is using it effectively. However we can state with little fear of contradiction from reasonable men that unless a man is logged into the system he cannot be using it. 3a4

Fifth, there is a body of information that is derivable from the user statistics that are automatically collected by the system itself. A beginning user has a correlation between his connect time and his cpu time that is perfect. In other words you know that if his connect time is high - his cpu time is high, if his connect time drops so does his cpu. Both of these measures are independent of %syst that he uses As the individual becomes more skillfall the correlation between con and cpu virtually disappears and one or the other becomes highly correlated with % syst. Much more needs to be done on this. 3a5

Sixth, there is performance data measured by the individual tests that were given. These provide objective information about each person's performance at a given time, and also provides some insights on which are the more efficient methods of performing certain operations. 3a6

Seventh, there is information available on any report that has been prepared using the system, which shows at a minimum, the exact time that each statement was entered or changed. This data plus the individual's estimate of the time he required to do a job, can be compared with estimates of how long it would have taken to prepare a handwritten draft, have it typed, proofread, retyped, reproofread, etc. ad nauseum. 3a7

Eighth, We have a direct comparison of the tpo prepared in two ways. (mjournal,18808,1:w) This comparison evolved only because our leader chickened out at the last minute. (as it turned out, because of system problems it's a good thing he did) 3a8

Ninth, we have the subjective evaluation of the Branch Chief, that fewer suspense dates are being missed. He is enchanted with the tickler, imperfect as it is. 3a9

Needs 4

ISIM 4a

The needs of the section are not in terms of making a decision that NLS and its offshoots are good. I believe that anyone who has been on the system for a time long enough to develop reasonable profiiciency in doing his job, needs no convincing that NLS has things to offer him that are worth having. The section needs information on a continuing basis that will enable it to do a better job of planning, implementing, using and ultimately contributing to the development of a system tailored to meeting the af need for communications, data management, and finally a dynamic, evolving management information system. These needs include information on use, training, equipment, related systems, personnel requirements, and heaven forfend - human engineering. 4a1

ISI 4b

The needs of the Branch include those of the section, but at a less detailed level generally. In addition, the Branch is required to defend the program, plan the program, and allocate funds for the program. It is therefore necessary to provide the Branch with information to enable these functions. In other words, to tell the Branch what its plans are, what's good about the progam, objectively, and to tell the Branch how it should allocate its money. Hopefully also the Branch should be provided with information to enable it to get more money if needed. 4b1

The Branch must be provided with valid data on use of the system, usefullness of the system, cost of the system, and some measures, albeit rough, of the cost effectiveness of the system - for the Branch. Additionally data is needed for larger entities of which the Branch is but one of many subgroups. 4b2

IS 4c

The Division needs the same sort of information that is needed

by the Branch, at a lesser level of detail. The Division is forced to compare the value of this program with respect to other programs both within the Division and outside of it. Perforce they need strong arguments, sometimes in the form of facts, sometimes in the form of opinion and often in the form of political considerations, that they can use to present this program in the most favorable but reasonable position anent other programs. 4c1

Division therefore, needs facts on major items affecting their own decisionmaking, they need a favorable climate formed by the opinions of their peers (the peerless ones) and by the outside community and its most influential members. These can range from other Division chiefs, members of parallel or higher headquarters groups, SAB members and the local barber's wife. Political considerations are difficult to handle but, if a paper written by one of us were to cause Nixon to install nls in the White House - and it worked we would have few problems of a political nature. 4c2

The Decisionmakers of the World 4d

This is the cruncher part. Decisionmakers are strange people, by the very nature of their job. Generally they have an acute awareness of political considerations, reasonable awareness of opinion and only a sketchy awareness of fact. 4d1

The key decision that we face is under the aforementioned states of awareness what impact can we have, or indeed what kind of impact do we want to have. This goes back to the needs of ISIM, if we feel that the system is so good that we must sell it, then the strongest arguments that we can bring to bear are political. On the other hand, none of us are politically oriented and none of us have any direc t political influence. (Every time I call Hyannis they refuse to accept the charges) Probably the next best place to function is to change opinion, talking people into it is probly the most accepted and worst way to do this. Third, and of course the most reasonable for us is to provide factual data on a good system. 4d2

Plans 5

Considering these prevailing conditionsas well as our limited manpower that appears to be a semi permanent condition, a very searching look of the real world is dictated, so that we collect only essential data and even that must be done very selectively. Manpower considerations dictate that we use the system itself to collect the data that we need insofar as possible. 5a

Relating to Para 1b above, we can examine each of our data sets, and relate them to our activity. 5b

The collection of anecdotal information should continue, but it should be systematized to the point where it flows from the people themselves, into an open file in my directory called "chron". I think that if we reestblish chron as a place for people to brag about their accompishments, or to tell others the wonderful things that they have found aout about the system, we can accomplish two things 1) we collect a lot of anecdotal data and ") we can exchange information on how better to use the resources that we have. Specifically I can reference Stone's journal mail to some or all of us yesterday on away to get to some of the userguides in a simple way. 5b1

The analysis of communications patterns can be continued, however I do not feel that the sort of data collection that we have already gone through is very good since it is so highly dependent on the people making their own reports. It is possible , albeit costly , to instrument our environment to record all telecalls and in fact all conversations. cf the white house tapes. On the other hand, data are being collected constantly on some aspects of nls system performance. It is a comparatively simple thing to obtain a record of the Journal mail sent and received, similar information is presently available on messages. Systematic recording of this data and perhaps other information can be done using the system, in a completely accurate and simple way. Perhaps a reasonably well trained UC student is all that is needed. 5b2

Since the OCI has already measured some things about what people claim they feel about their environmnet, this effort should be wrapped up with another retest in about 12 to 18 months. 5b3

I feel that the data on system use is potentially the most valuable that we can get. First if they don't use it they gain naught, except perhaps for the negative value of not increasing their frustrtion tolerance. However, this aspect of data collection must be looked at mcuh more carefully. For example we know that after a session of editing on the IMLAC, the sysstem can and will present a matrix of the commands that were used during the session. A Matrix of this type on each user over an extended period of time, perhaps even weekly, could be invaluable information for system users and designers. If sri has a system analyst working on these and simiar problems they are probly already gathering much data of this sort. In addition they probably would be willing to gather other data if we decide what we might need or woant. 5b4

he mind boggles at whta data we might be able to crunch together and the body of information that might be derived therefrom. 5b5

Specifically testing perfonance is always a useful thing to do. It has the undoubted virtue of being structured, and therefore comparable directly from person to person and time to time. Consideration should be given to constructing a test that is sufficiently versatile and difficult that it can be used to test people at various stages in the learning process. 5b6

A more systematic look should be taken on reports memos etc. that have been and are being prepared. Using some of the techniques of the dialogue support system it should be relatively simple to keep track not only of what has been done,but also when and by whom it was done. Again I can see that this could very easily be an appropriate activity for a reasonably well trained UC student. Such a collection of data can be made in a reasonably simple non-time consuming way, and some very valuable objective data can be made available without the necessity of interjecting the measurers into the situation being measured. 5b7

I believe that direct comparisons of the same job done in two different ways, is probably the best and most objective method of achieving inssightful comparisons of the usefulness of the AKW. However, measurements of this sort require doing the same job twice. I do not believe that we have the resources to do this except for very limited activities, which are not too likely to reveal the real power of the sytem. We should be alert to these opportunities, but I, for one, will not deliberately set them up. Do not confuse this with the interbranch comparisons of similarly 'labeled' jobs ie. TPO's, etc. 5b8

The most important thing that we need to sell the system, if it needs selling, is the subjective feelings of the powers that be, that in fact the job is being done better, faster, more economically because of AKW. 5b9

19384 Distribution
Edmund J. Kennedy,

AKB 1-OCT-73 12:47 19385

Thanks for the data on FTP measurement at CMU, Ric.
I generally don't use the MIT-AI machine. Mail
delivery will be faster if sent to AKB at MIT-DMS (host 70)
It appears your NCP has larger allocation than ours.
We are thinking of improving our NCP with better buffer
management. Keep in touch. Abhay

1

19385 Distribution
Ric Werme,

JEW 1-OCT-73 13:44 19386

NLS Procedures for Network FTP

Dave-- The procedures described here can be found in <WHITE>FTPMGR.NLS. They're quite short; you can tuck them away in the NLS sources wherever you see fit. Hollar if you run into trouble and/or need help. --Jim

NLS Procedures for Network FTP

INTRODUCTION 1

This document describes a set of NLS procedures which have been written to permit the NLS programmer to perform certain file operations at other hosts in the Network via the Network-standard File Transfer Protocol (FTP). The procedures are quite general in application, and, in particular, are largely host dependent. 1a

The present document, however, has a particular application in view -- linking the SRI-ARC and Utility Journal systems. The descriptions given here are brief, and in some cases misleading if applied to a host other than one of the two above (especially, a non-TENEX host). More complete documentation and an NLS user interface are forthcoming. 1b

RELEVANT SOFTWARE 2

(1) A set of NLS procedures 2a

These are the only routines about which the NLS programmer need know. They're his interface to all the other software involved. 2a1

(2) The assembly-language program <NET>FTPFRK.SAV 2b

This program runs as an inferior fork beneath NLS. It interacts through the Network with an FTP server process at another host to accomplish the file operations. 2b1

(3) The FTP server process at the remote host 2c

For both SRI-ARC and the Utility, this program is FTPSRV. 2c1

(4) The assembly-language program <NET>PACK.SAV 2d

This program is called by SRI-ARC's or the Utility's FTP server process to compress files before output, and to un-compress them on input. 2d1

CHARACTERISTICS OF THE NLS PROCEDURES 3

(1) Each procedure name begins with the prefix 'ftp'. 3a

(2) Each procedure takes 0-3 arguments, each of which is a pointer to an NLS string (the arguments are REFed in the procedure). 3b

(3) None of the procedures return arguments. If a procedure returns normally to its caller, then the requested operation was

successful. If an error is encountered, the procedure SIGNALs. The value of 'sysgnl' is 'ftpsig', and 'sysmsg' always contains the pointer to a diagnostic string. 3c

Of course, any one of the procedures may call other NLS procedures which may themselves have occasion to report errors via SIGNAL. Therefore, the NLS programmer, as for any NLS procedure he calls, must be prepared for a variety of SIGNALs. 3c1

CALLING SEQUENCES FOR THE NLS PROCEDURES 4

(1) Initialize for FTP Operations -- FTPBGN 4a

Calling Sequence: ftpbgn ( ); 4a1

Description: 4a2

FTPBGN must be called before any other FTP procedure (in particular, before FTPOPN). It initializes the inferior fork which executes file transfer operations. 4a2a

(2) Clean up after FTP Operations -- FTPEND 4b

Calling Sequence: ftpend ( ); 4b1

Description: 4b2

FTPEND should be called following a series of (i.e., any number of) calls to the other FTP procedures. It kills the inferior fork which executes file transfer operations. 4b2a

(3) Open the File System at a Distant Host for FTP Operations at that Particular Host -- FTPOPN 4c

Calling Sequence: ftpopn (hostname); 4c1

Description: 4c2

FTPOPN is called with the name of a host at which FTP operations are to be performed. The argument may be a decimal host address, or a standard host name or nickname (i.e., any name known to the TENEX monitor). FTPOPN establishes Network connections to the FTP server process at the distant host. The host specified in the most recent call to FTPOPN is called the 'open host'. 4c2a

FTPOPN must be called before any of the procedures FTPLOG, FTPSTO, FTPRTR, FTPDIR, FTPDEL, or FTPREN (and, of course,

before FTPCLS), each of which implicitly acts upon the file system at the open host. 4c2b

(4) Close the File System at a Distant Host after FTP Operations at that Particular Host -- FTPCLS 4d

Calling Sequence: ftpcls ( ); 4d1

Description: 4d2

FTPCLS must be called after a series of file transfer procedures at the open host, and before another host is opened. FTPCLS breaks connections with the FTP server process at the distant host. 4d2a

(5) Login at a Distant Host -- FTPLOG 4e

Calling Sequence: ftplog [username, password, account); 4e1

Description: 4e2

FTPLOG logs the user in at the open host. Logging the user in establishes the user's identity for accounting purposes and for purposes of verifying his access to files at the distant host. It also establishes the default directory for filenames in which no directory appears explicitly. Most FTP servers require a login before they'll honor other file operations. 4e2a

(6) Send a File to a Distant Host -- FTPSTO 4f

Calling Sequence: ftpsto [localfile, distantfile); 4f1

Description: 4f2

FTPSTO transmits a copy of the specified local file to the open host, assigning the specified name to the distant copy. 4f2a

(7) Retrieve a File from a Distant Host -- FTPRTR 4g

Calling Sequence: ftprtr [localfile, distantfile); 4g1

Description: 4g2

FTPRTR retrieves a copy of the specified file from the open host, assigning the specified name to the local copy. 4g2a

(8) Retrieve a Directory Listing from a Distant Host -- FTPDIR 4h

Calling Sequence: ftpdir (localfile, distantdesignator); 4h1

Description: 4h2

FTPDIR retrieves a list of the files in existence at the open host which are signified by the specified file designator (e.g., '<TEJOURNAL>*.NLP;*'). The directory listing is stored locally as a sequential file whose name is as specified by the caller. 4h2a

The sequential file is a list of filenames, separated by CR LF. Each filename contains directory, name, extension, version, protection, account, and ';t' if appropriate. 4h2b

(9) Delete a file at a Distant Host -- FTPDEL 4i

Calling Sequence: ftpdel (distantfile); 4i1

Description: 4i2

FTPDEL deletes the specified file at the open host. 4i2a

(10) Rename a file at a Distant Host -- FTPREN 4j

Calling Sequence: ftpren (currentfile, newfile); 4j1

Description: 4j2

FTPREN renames the specified file at the open host. 4j2a

19386 Distribution
J. D. Hopper,

Some More Questions on Number of Packets Required for Network Jobs

I would appreciate hearing from you as soon as posssible on this.
Thanks.

Some More Questions on Number of Packets Required for Network Jobs

After reading Peter Deutsch's RFC on Cross-Country Network Bandwidth and several of the protocol documents, I still have some questions. 1

First, I get the impression from RFC 567 that any time a letter is typed 8 packets are needed to complete the transmission cycle. After talking to you I got the impression that 8 packets were not necessarily required (even when in full duplex). 2

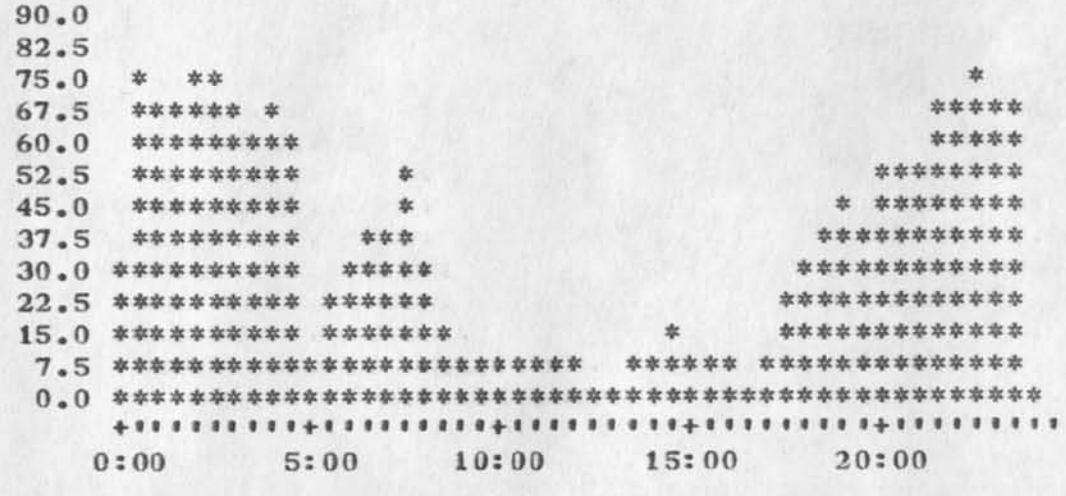
Could you let me know if 8 packets per character is reasonable when in full duplex? What I am trying to get at is a rough estimate of packets required per character and if the breakdown in RFC 567 is accurate I will use that. 3

Also, what would be the effect of the implementation of remote echoing on the number of packets required, and do you think implementation is likely in the near future? 4

19387 Distribution
Lou C. Nelson,

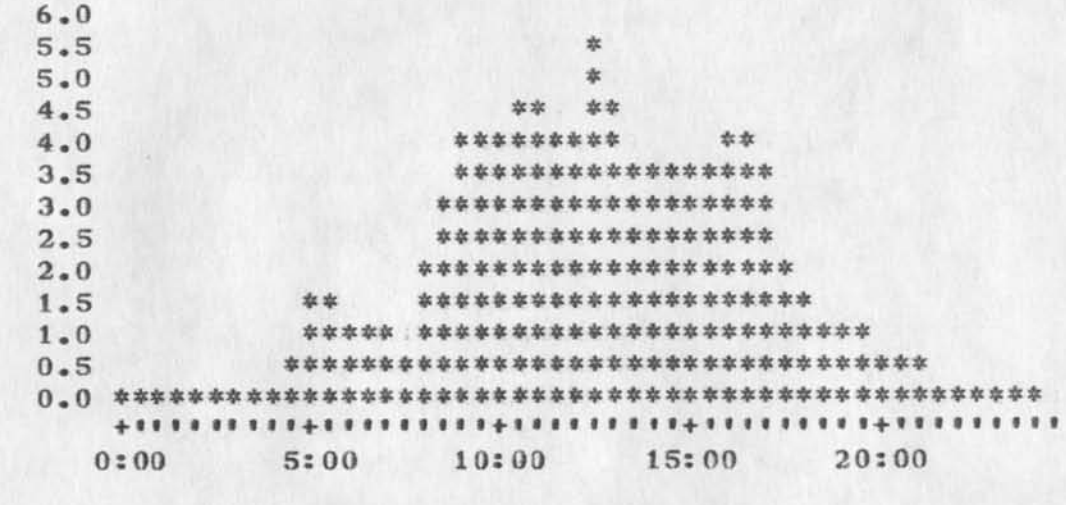
Superwatch Average Graphs for Week of 9/10/73

TIME PLOT OF AVERAGE IDLE TIME FOR WEEK OF 9/10/73
x axis labeled in units of hr:min, xunit = 30 minutes 1



1a

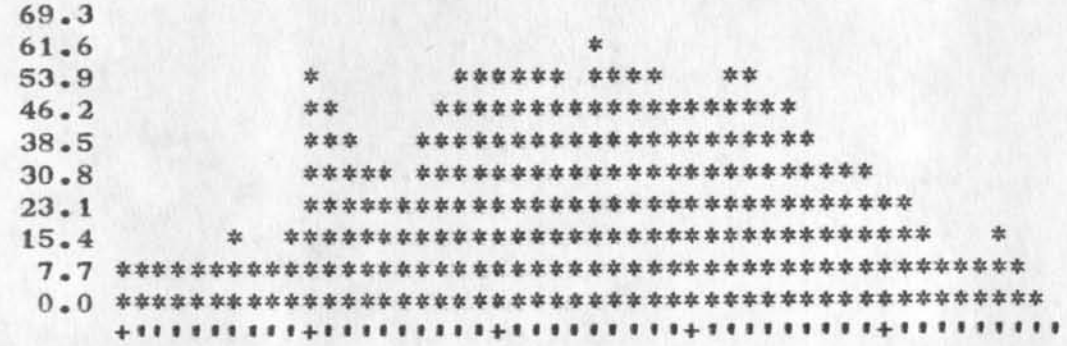
TIME PLOT OF AVERAGE NUMBER OF GO JOBS FOR WEEK OF 9/10/73
x axis labeled in units of hr:min, xunit = 30 minutes 2



2a

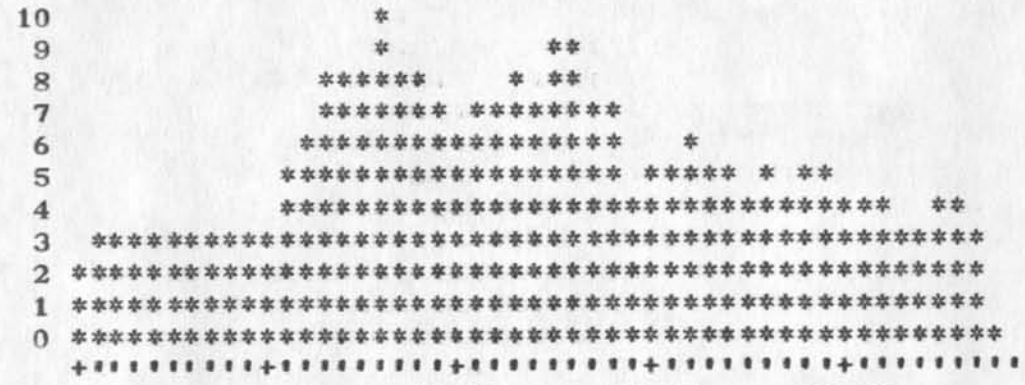
Superwatch Average Graphs for Week of 9/10/73

TIME PLOT OF AVERAGE PER CENT OF CPU TIME CHARGED TO USER ACCOUNTS
FOR WEEK OF 9/10/73
x axis labeled in units of hr:min, xunit = 30 minutes 3



3a

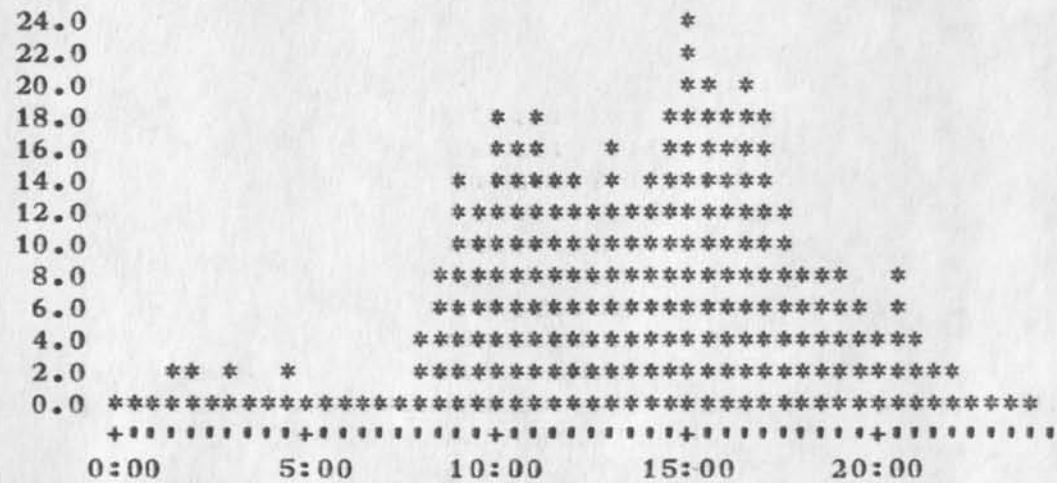
TIME PLOT OF AVERAGE NUMBER OF NETWORK USERS FOR WEEK OF 9/10/73
x axis labeled in units of hr:min, xunit = 30 minutes 4



4a

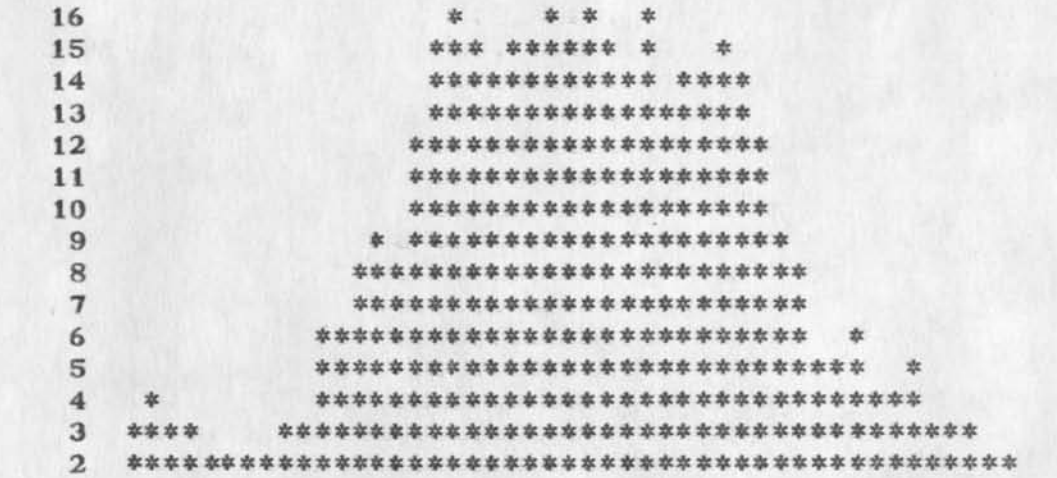
Superwatch Average Graphs for Week of 9/10/73

TIME PLOT OF AVERAGE PER CENT OF SYSTEM USED IN DNLS FOR WEEK OF 9/10/73
x axis labeled in units of hr:min, xunit = 30 minutes 5



5a

TIME PLOT OF AVERAGE NUMBER OF USERS FOR WEEK OF 9/10/73
x axis labeled in units of hr:min, xunit = 30 minutes 6



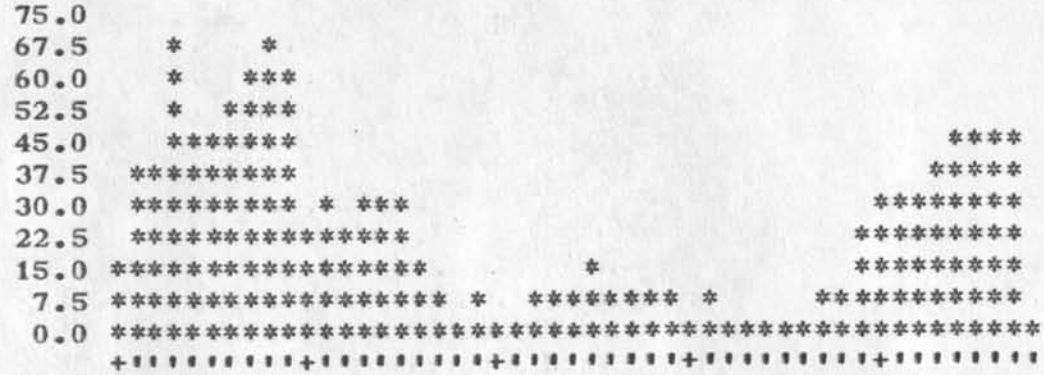
6a

19388 Distribution

James C. Norton, Richard W. Watson, Douglas C. Engelbart, Paul Rech, Donald C. (Smokey) Wallace, Jeffrey C. Peters, Dirk H. Van Nouhuys, Elizabeth J. (Jake) Feinler, Charles F. Dornbush, Kirk E. Kelley, Duane L. Stone, Beauregard A. Hardeman,

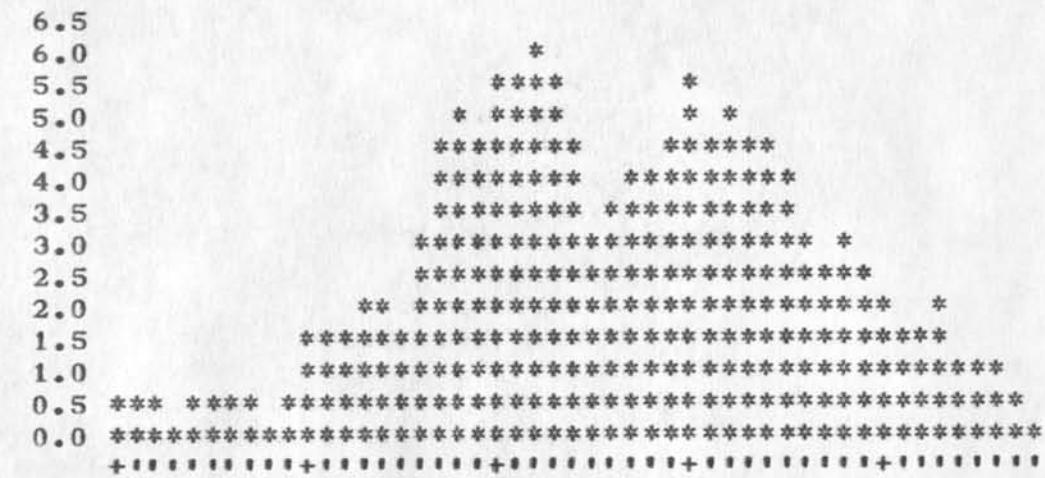
Superwatch Average Graphs for Week of 9/17/73

TIME PLOT OF AVERAGE IDLE TIME FOR WEEK OF 9/17/73
x axis labeled in units of hr:min, xunit = 30 minutes 1



1a

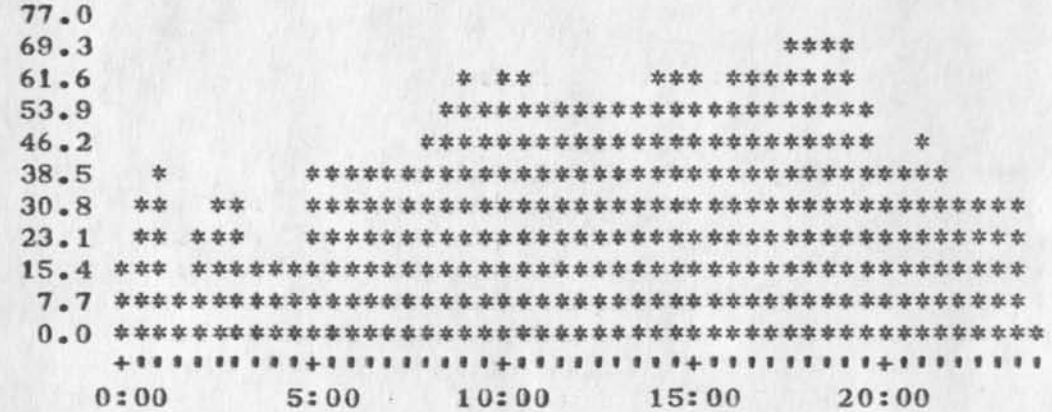
TIME PLOT OF AVERAGE NUMBER OF GO JOBS FOR WEEK OF 9/17/73
x axis labeled in units of hr:min, xunit = 30 minutes 2



2a

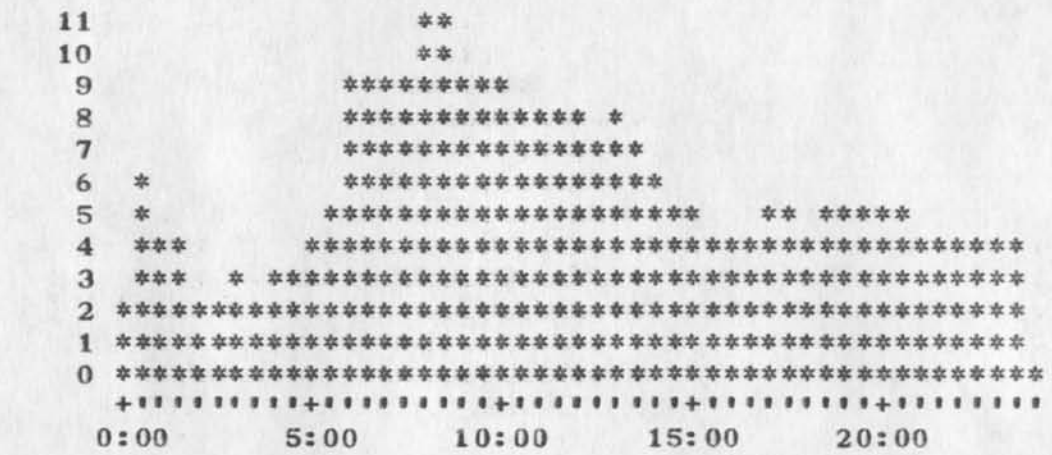
Superwatch Average Graphs for Week of 9/17/73

TIME PLOT OF AVERAGE PER CENT OF CPU TIME CHARGED TO USER ACCOUNTS
FOR WEEK OF 9/17/73
x axis labeled in units of hr:min, xunit = 30 minutes 3



3a

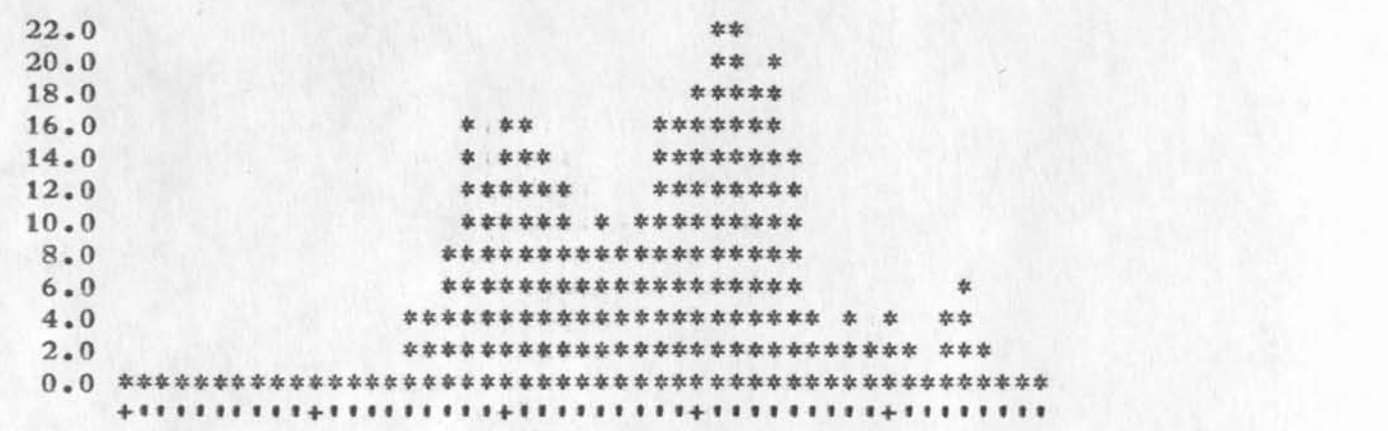
TIME PLOT OF AVERAGE NUMBER OF NETWORK USERS FOR WEEK OF 9/17/73
x axis labeled in units of hr:min, xunit = 30 minutes 4



4a

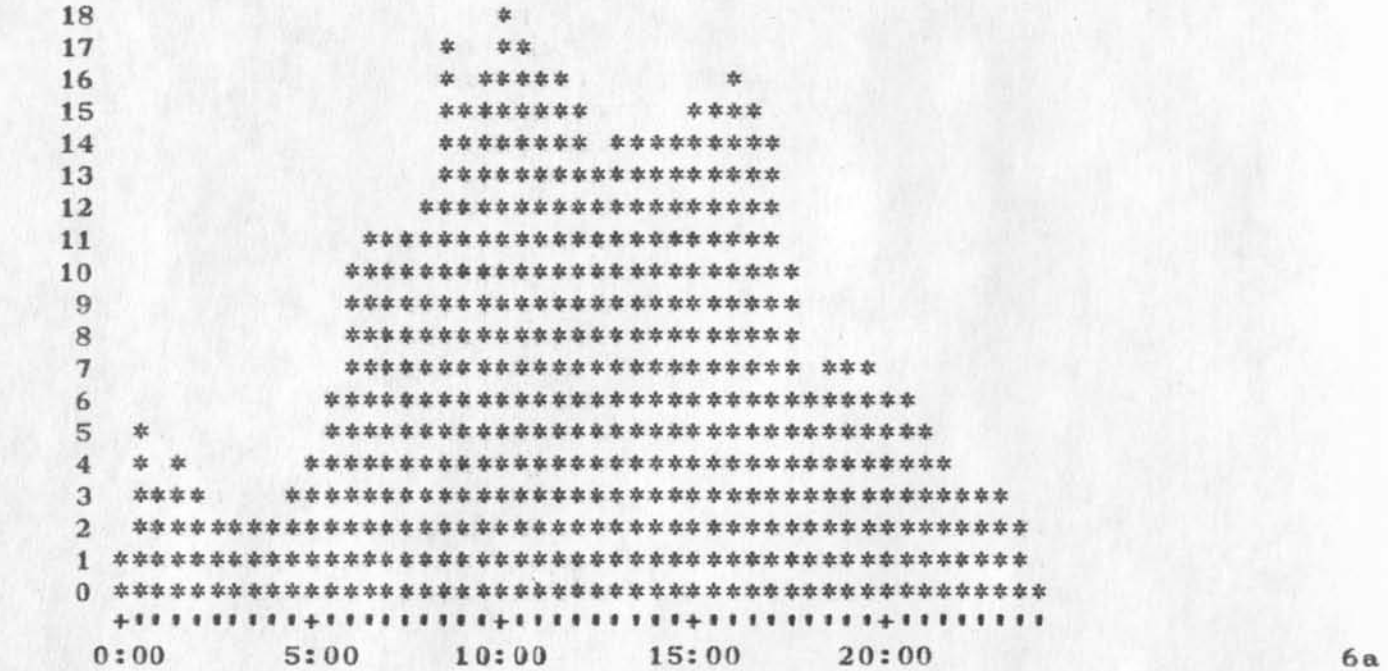
Superwatch Average Graphs for Week of 9/17/73

TIME PLOT OF AVERAGE PER CENT OF SYSTEM USED IN DNLS FOR WEEK OF 9/17/73
x axis labeled in units of hr:min, xunit = 30 minutes 5



5a

TIME PLOT OF AVERAGE NUMBER OF USERS FOR WEEK OF 9/17/73
x axis labeled in units of hr:min, xunit = 30 minutes 6



6a

19389 Distribution

James C. Norton, Richard W. Watson, Douglas C. Engelbart, Paul Rech, Donald C. (Smokey) Wallace, Jeffrey C. Peters, Dirk H. Van Nouhuys, Elizabeth J. (Jake) Feinler, Charles F. Dornbush, Kirk E. Kelley, Duane L. Stone, Beauregard A. Hardeman,

Answer to L10 Questions <jjournal,19377,1>

(jjournal,19377,1a) Global strings are part of the program file, i.e. part of the program buffer when loaded. They are not dynamically allocated, but are permanently reserved for the variable. Your program buffer space must be large enough to hold all the procedures and all the variables. 1

Your default program buffer size is 4 pages (512 words). This is large enough for most programs. If you wish to load a larger program or wish to load more than one program at a time, you may increase your buffer size with the command: 1a

Goto Programs Buffer NUMBER CA CA 1a1

The buffer space allocation is not changed by the Goto Programs Reset command. It should not be made larger than is necessary (slows down your job). Array and string variables should not be made larger than is necessary. The maximum size of an NLS statement is 2000 characters, so I imagine you will never need to declare a string variable larger than that. 1b

(jjournal,19377,1b) Yes, it is possible to have only one RETURN statement in a program. I would say that that is the usual case. You might even have a statement 2

RETURN (IF exp THEN 1 ELSE 0) ; 2a

or 2a1

RETURN (FIND $NP 4$5D etc.) ; 2b

How are you coming? Is the L10 Guide explanatory? Have you tried writing simple programs? 3

I have completed the JPRINT program to give you local access copy of journal items with the sub-collection field of RADC. It exists as <STONE>JPRINT. Please make yourself a copy and we will discuss it until you fully understand it. Perhaps you'll have some suggestions for it which you can program in. As it looks now, I will be on Tues and Thurs mornings and MWF after about 2:30 our time. Keep in touch, and keep at it. 4

19390 Distribution
Joe P. Cavano,

Long Overdue Party

There is going to be a party at my house on saturday 6-oct-73 starting at 8:00 - until? There will be beer and munchies.Any other required stimulants should be brought by the consumers. 1

My house is at 477 Everett St. Palo Alto 1a

It's on the corner of Cowper and Everett. 1b

Everett. is two blocks north of University 1c

Cowper is three(?) blocks west of Middlefield 1d

Phone is 327-8753 (for those who get lost) 1e

Hope to see you saturday Smokey 1e1

19391 Distribution

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

ADO and ARH added to IIG. -- Charles. 1

19392 Distribution
A. D. (Buz) Owen, Alan R. Hill,