CXP 30-MAR-72 22:28 8455

Transmittal to D. D. Aufenkamp

ARPA Network Information Center
Stanford Research Institute
Menlo Park, California 94025

NIC 8455
25-JAN-72

1

Dr. D. D. Aufenkamp
Office of Computing Activities
National Science Foundation
1800 G. Street, N.W.
Washington, D.C. 20550

2

Dear Mr. Aufenkamp:

3

We have received notice that your office is now an Affiliate of the ARPA Network. As such, you will be receiving documents on distribution from the Network Information Center (NIC).

4

We are sending you a core collection of existing documents, including the following Functional Documents for which we will provide updates:

5

NIC 6740 ARPA Network Resource Notebook

5a

7104 ARPA Network Current Network Protocols

5b

5145 Current Catalog of the NIC Collection

5c

We are also sending you a number of documents which you may need as background.

6

7542 A Forward Look; by Lawrence G. Roberts, ARPA (JUNE 1971)

6a

4564 AFIPS Reprint: Computer Network Development to Achieve Resource Sharing; by Lawrence G. Roberts and Barry D. Wessler

6b

4565 AFIPS Reprint: The Interface Message Processor for the ARPA Computer Network; by F. E. Heart et al

6c

4566 AFIPS Reprint: Analytic and Simulation Methods in Computer Network Design; by Leonard Kleinrock

6d

4567 AFIPS Reprint: Topological Considerations in the Design of the ARPA Computer Network; by H. Frank et al

6e

4568 AFIPS Reprint: Host-Host Communication Protocol in the ARPA Network; C. Stephen Carr et al

6f

We can usually supply copies of particular documents indicated by a back arrow in the Catalog Listings, and will loan or direct you to sources of other documents in the Listings.

7

Cindy Page, our Station Agent, accomplishes NIC distribution, and has now put you on distribution for all documents sent to Site Liaisons.

8

Jeanne North,
Information and Station Agent Coordinator 9

c: S. Crocker (ARPA)
P. Karp 10

CXP 30-MAR-72 22:28 8455

Transmittal to D. D. Aufenkamp

(J8455) 30-MAR-72 22:28; Title: Author(s): Cindy Page/CXP;
Distribution: Cindy Page/CXP; Sub-Collections: SRI-ARC; Clerk: LLL;
Origin: <LANE>BLANK.NLS;211, 30-MAR-72 22:26 LLL ; ;

CXP 8-MAR-72 11:05 8456

Transmittal to A. McKenzie

Transmittal to Alex McKenzie (BBN) NIC 8456

24-JAN-72

Cindy Page (SRI-ARC)
Station Agent
Network Information Center

Enclosed is Utah's contribution to the Network Resources Notebook.

We could have put this online but were doubtful about inclusion of TENEX user information. We've left it for you to decide what to include or what to ask Wessler about.

c: S. Crocker

enclosure

Cindy Page
Augmentation Research Center
Stanford Research Institute
Menlo Park, California 94025

To:
Access Copy

CXP 8-MAR-72 11:05 8456

Transmittal to A. Mckenzie

(J8456) 8-MAR-72 11:05; Title: Author(s): Cindy Page/CXP;
Distribution: Cindy Page/CXP; Sub-Collections: SRI-ARC; Clerk: LLL;
Origin: <LANE>BLANK.NLS;154, 8-MAR-72 11:03 LLL ; ;

CXP 9-FEB-72 8:53 8474

Transmittal to Station Agent - Connie Rosewall NIC 8474

---------- 8-FEB-72

Cindy Page (SRI-ARC)
Station Agent
Network Information Center 1

Enclosed are the documents you requested for the class: 2

NIC 7207 SEX BEGINNER'S GUIDE, K. Sie, 1-JUNE-71 2a

NIC 7980 Public Program Collection, J. Postel, 1-DEC-71 2b

c: S. Crocker 3

Network Information Center
Augmentation Research Center
Stanford Research Institute
Menlo Park, California 94025

To:
NIC Copy

(J8474) 9-FEB-72 8:53; Author(s): Cindy Page/CXP; Sub-Collections:
SRI-ARC; Clerk: LLL;
Origin: <LANE>TRANS-LETTER.NLS;1, 9-FEB-72 8:50 LLL ; ;

RWW 14-JAN-72 9:40 8483
Another Person from SRI for the NWG Meeting on Data Management

Doug, I talked with the people down in our Computer Science Group run by Jack Goldberg. They are working on some data management research for the navy and want to come to the meeting at Mitre. The fellow who will come is Marsnall Pease. Could you please send him one of the letters. Thanks
P.S. This is the first attempt to send you something through our Journal system, I hope you get this. 1

RWW 14-JAN-72 9:40 8483
Another Person from SRI for the NWG Meeting on Data Management

(J8483) 14-JAN-72 9:40; Title: Author(s): Richard W. Watson/RWW; Distribution: Douglas B. McKay/DBM; Sub-Collections: SRI-ARC; Clerk: RWW;

GEL 14-JAN-72 11:11 8489

TEST-GEORGE

HELLO, TOM. THIS IS SIMPLY A TEST TO SEE IF I CAN SEND YOU A MESSAGE VIA THE NIC. IF YOU COULD GET ACCESS TO TE NET FROM XARIS, WE COULD STAY IN TOUCH THIS WAY WHILE YOU ARRE GONE.
GEORGE

1

GEL 14-JAN-72 11:11 8489

TEST-GEORGE

(J8489) 14-JAN-72 11:11; Title: Author(s): George E. Lindamood/GEL; Distribution: Thomas N. Pyke/TNP(GREETINGS); Sub-Collections: NIC; Clerk: GEL;

WSD 14-JAN-72 11:17 8490

Comments on Re-design of status File

I Think the new STATUS format is fine except: 1

(a) I think that the division of changes into user modifications and technical modifications should be done on the following basis: 1a

If a change does not affect user interface in any way, then it may go under tech. 1a1

If it does affect any aspect of the user interface, then the entire documentation of the change goes under user. 1a2

This means that the programmer is not forced to write two blurbs about one change. 1a2a

(b) I think that th division of <rel-nls> changes and <nic-nls> changes is unecessary. 1b

All that needs to be done is designate which system has been changed in the comment about the change. 1b1

And we can be relatively flexible about this, i.e. Running NLS, NIC NLS, Experimental system, XNLS, etc. are acceptable. 1b2

(c) We need to have a way of tagging changes made to the XNLS which means: "Do Not Bring This System Up Without contacting me about this change, as it may require some special handeling". 1c

In other words,one of the reasons status is feasible is that the programmer can write a quick blurb about something he has changed. 2

The way it is described in the new format, means that a programmer would have to write up to 4 blurbs about a particular change. 3

WSD 14-JAN-72 11:17 8490

Comments on Re-design of status File

(J8490) 14-JAN-72 11:17; Title: Author(s): William S. Duvall/WSD; Distribution: Marilyn F. Auerbach, Bruce L. Parsley, Charles H. Irby/MFA BLP CHI; Sub-Collections: SRI-ARC; Clerk: WSD;

PMK 14-JAN-72 13:52 8492

recalling a journal message

Due to a bug in the ident file, you were mistakenly sent a message intended for the Network Facilitators group. Please ignore it.
Thanks,
Peggy Karp

1

PMK 14-JAN-72 13:52 8492

recalling a journal message

(J8492) 14-JAN-72 13:52; Title: Author(s): Peggy M. Karp/PMK; Distribution: Robert H. Thomas, Patrick W. Foulk, Richard A. Winter, Harold R. Van Zoeren, James M. Madden, Robert L. Sundberg, Joel M. Winett/RHT PWF RAW HRVZ JMM RLS JMW; Sub-Collections: NIC; Clerk: PMK;

JBP 14-JAN-72 13:54 8493

rsvp

I will be able to attend the meeting 28jan72. as for agenda suggestions, status of protocols, reliability of hosts, remote job entry, etc .

1

JBP 14-JAN-72 13:54 8493

rsvp

(J8493) 14-JAN-72 13:54; Title: Author(s): Jon B. Postel/JBP; Distribution: Peggy M. Karp, Jon B. Postel/PMK JBP; Sub-Collections: NIC; Clerk: JBP;

OSK 14-JAN-72 13:58 8494

test

hello this is a test message composed @ 1355 on 14jan72 1

CSK 14-JAN-72 13:58 8494

test

(J8494) 14-JAN-72 13:58; Title: Author(s): Chuck S. Kline/CSK; Distribution: Jon B. Postel, Chuck S. Kline, Anita L. Coley, Leonard Kleinrock/JBP CSK ALC LK; Sub-Collections: NIC; Clerk: CSK;

JBP 14-JAN-72 14:07 8495

hi

hi people

JBP 14-JAN-72 14:07 8495

hi

(J8495) 14-JAN-72 14:07; Title: Author(s): Jon B. Postel/JBP;
Distribution: Jon B. Postel/JBP; Sub-Collections: NIC; Clerk: JBP;

complaint

the id "nfg" dosent work.

1

JBP 14-JAN-72 14:12 8496

complaint

(J8496) 14-JAN-72 14:12; Title: Author(s): Jon B. Postel/JBP; Distribution: Richard W. Watson, Peggy M. Karp, Chuck S. Kline, Jon B. Postel, John T. Melvin/RWW PMK CSK JBP JTM; Sub-Collections: NIC; Clerk: JBP;

BAD 14-JAN-72 14:37 8497

Request for Documents

Please send one copy of each of the following to the address below:

NIC 7590 NIC User Guide
NIC 5145 NIC Catalog

Addressee is

Mr. Steve Walker
Code D-93
National Security Agency
Ft. George G. Meade
Maryland 20755

1

BAD 14-JAN-72 14:37 8497

Request for Documents

(J8497) 14-JAN-72 14:37; Title: Author(s): Bruce A. Dolan/BAD;
Distribution: Jeanne B. North/JBN; Sub-Collections: NIC; Clerk: BAD;

MSC 14-JAN-72 15:16 8498

ID system changes

Dick, all of the changes to the ident system requested in 8286 have been implemented except:
1. Improving help in Modify,
2. implementing access protection.
These are on the stack of things to do. The changes will appear magically when we bring up the new system, probably at the beginning of next week. 1

MSC 14-JAN-72 15:16 8498

ID system changes

(J8498) 14-JAN-72 15:16; Title: Author(s): Mary S. Church/MSC; Distribution: William S. Duvall, Richard W. Watson, J. D. Hopper/WSD RWW JDH; Sub-Collections: NIC; Clerk: MSC;

PMK 14-JAN-72 15:24 8499

explanation of buggy message

Due to a bad membership list in the NF Group, the message that i submitted yesterday had much wider distribution than intended. the bug has been fixed and the wayward messages 'recalled'. There also was a bug in the message. The IDENT for Network Facilitators is NF, not NFG as indicated.
Cheers
Peggy

1

PMK 14-JAN-72 15:24 8499

explanation of buggy message

(J8499) 14-JAN-72 15:24; Title: Author(s): Peggy M. Karp/PMK;
Distribution: Jeanne B. North, Bruce A. Dolan, Alex A. McKenzie, John T. Melvin, Robert M. Metcalfe, Robert E. Kahn, Richard B. Kalin, Jon B. Postel, Peggy M. Karp, James E. White, Steve D. Crocker/NF;
Sub-Collections: NIC NF; Clerk: PMK;

PMK 14-JAN-72 15:51 8500

Dick:
Thanks for trying to recover the wayward messages. Also, thanks for your cooperation with the demo. Unfortunately we were unable to take advantage of it as the seminar ran overtime and so we had time only to look at tenex at BBN (NETSTAT, TELNET, SCHOLAR). I gave them (NSF) a sales pitch for the NIC so it's too bad that time ran out.
Thanks again
Peggy

1

PMK 14-JAN-72 15:51 8500

(J8500) 14-JAN-72 15:51; Title: Author(s): Peggy M. Karp/PMK;
Distribution: Richard W. Watson/RWW; Sub-Collections: NIC; Clerk: PMK;

RWW 14-JAN-72 17:02 8501

Answer to JBP's Complaint

John, The ID for the facilitators group is nf. Anytime you need to search the id system for an ident you can do so with a string search by enclosing the string in square brackets (see id system guide). Thanks anyway for the complaint, I really want people to complain as its often the only way I have of uncovering problems. Thanks again
Dick

1

RWW 14-JAN-72 17:02 8501

Answer to JBP's Complaint

(J8501) 14-JAN-72 17:02; Title: Author(s): Richard W. Watson/RWW; Distribution: Jon B. Postel/JBP; Sub-Collections: SRI-ARC; Clerk: RWW;

DCE 14-JAN-72 18:55 8502

Discussion log: 12 Nov 71, George Eilers on Miniconsole Study

He talked with Larry last Friday. 1

Larry had suggested some testing o the 5-finger keyset 1a

LR pictures a 1x2-inch display, the unit about the size of a transistor radio. 1b

George's intuition is that the battery power would be too much for getting into that size of a unit. 1b1

GE felt LR was concerned most with question as to learning time, for different individuals. 1c

Note: Need decide what kind of tests and data LR would need. Leads to question as to the expected usage, and user situations. 1c1

Perhaps we can propose uses, applicability, etc., and then he decides which, now valuable, etc. 1c1a

I urge an experiment. Geo will talk to some of the people in the bio-information group. 1c1b

They have some techniques already aVailable on the Link-8 for on-line experiments with people, and with later data-reducton 1c1b1

Technically, Geo feels the display componcent is the most critical, and he'll concentrate his technical study first on that. 2

Geo has a call in to somebody in Ohio re. diplays for the mini-console. A principle investigator, a Owens Illinois, developer of the plasma panel on an Arpa contract. 2a

LR feels that the Aloha Project at U. of Hawaii offers the communication technique. 2b

Summary: 3

He'll work up a plan for an experiment on key-set learning. 3a

Agreed to plan on using the Link-8. I like the idea of having the experiments done by an outside group, and on another machine -- it will help the true objectivity, and make the results more credible in the outside world. Also, help avoid a bias that we might introduce without meaning to. 3a1

DCE 14-JAN-72 18:55 8502
Discussion log: 12 Nov 71, George Eilers on Miniconsole Study

(J8502) 14-JAN-72 18:55; Title: Author(s): Douglas C. Engelbart/DCE;
Distribution: George J Eilers/GJE; Sub-Collections: SRI-ARC; Clerk: DCE;

DCE 14-JAN-72 20:42 8503

Visitor log: 12 NOV 71, Dick McQuillin, Composition Technology, Inc.

Telling me of the services his company has developed: 1

Take in text data in any form (scratch, cards, mag tape, or typescript that they run through an OCR service) 1a

They will operate upon the raw text -- will edit, do typography setup according to customers desires (embedded ientifiers for different kinds of inforation -- then tables later set up the typographical information for how to treat each type of text. Only embedded directive-type of info is in case of an italicized word, to identify it. 1b

Then make a run on a Harris Intertype Fototronic CRT typesetter, and ship the customer proofs, or final camera-ready reproduction masters. 1c

Dick wonders if they might not be able to offer useful service to Net people; e.g.: 2

For reports, proposals, etc., that people want produced in good typographical form -- 2a

If transmitted as hard copy drafts, could be handled by mail just as for any other of Dick's customrs. 2a1

But, if information wws generated in computer form, then the transmission to Composition Technology could be via Network, at least to a mag tape at some Cambridge host. 2a2

Dick suggests that a few standard conventions could be established, easy to learn, and quite effective in producing nice looking reports: 2b

Paragraph heads, paragraphs, author, title, sub-heads, lists, equations, etc. could be identified with standard conventions, and printed in standard way. 2b1

Probably want three or four levels of heads. 2b1a

Matters of cost: 2c

Typesetting, standard rate is around $.80/thousand characters -- computer generation of mag tape, ready to drive the Fototronic . 2c1

Transcription: 2c2

Visitor log: 12 NOV 71, Dick McQuillin, Composition Technology, Inc.

$1.50 to $2.00 per thousand keystrokes (computer count from the input material). 2c2a

DCE 14-JAN-72 20:42 8503

Visitor log: 12 NOV 71, Dick McQuillin, Composition Technology, Inc.

(J8503) 14-JAN-72 20:42; Title: Author(s): Douglas C. Engelbart/DCE; Sub-Collections: SRI-ARC; Clerk: DCE;

DCE 14-JAN-72 21:47 8504

Phone log: 6 Oct 71 with Bill Jones, NASA I4 group re their documentation activities

Looks as though their organizational plans are shaping up: 1

The Project Office will probably be renamed the "Institute for Advanced Computation (or Computer Systems)", sometime in the next year. 1a

Like 20 Civil Service people in the Center -- with about a third of them involved fully with contract management; the rest will be heavily involved with documentation (heaviest single emphasis), language maintenance, and hardware maintenance. (Expect to keep several technical writers going full blast in this group.) 1b

With like 75 contractors working directly on their tasks, located in an "off-site facility" geographically within a few miles -- who will need documentation to do thir work. Some of these contractors will be generating documentation. 1b1

Probably all of the designers will be off site. 1b2

In particular, tne documentation activity(ies) will be centrally coordinated by the Civil Service people in the Center (Institute) -- probabl Bill and a couple of others. 1c

Will have support from Technical Services Division (Ames) -- headed by Bill Johnson, 1c1

A Manuscript Branch -- type on MTST, mathematical characters etc. as in technical reports. 1c1a

Graphics Branch -- prepares all but continuous-tone type of graphics 1c1b

Reproduction Branch -- An offset press, special photo-development equip for Vu-Graph etc. (Lost a lot of people lately -- will probably route the finished material to either a contractor or the Gov. Printing Office in S.F. for actual printing work.) 1c1c

Now actually print only highest-pority management material. 1c1c1

Johnson will always be their liaison with NASA Headquarters, including their Information Services. 1c1d

NASA Informatin System -- AIAA and STAR (Abstract

Phone log: 6 Oct 71 with Bill Jones, NASA I4 group re their documentation activities

Journals published monthly, liting all documents by author, accession No., abstracts. 1c1d1

Abstract and index material all put into computer form, and inserted into RECON data base, for general access by aerospace inustry. 1c1d1a

Very small amount of info in here on computer science, sofar. 1c1d1b

Bill says that many of their I4 documents will not qualify for inclusion in this Information System. 1c1d2

Mostly, the Division will give support in: creation (some, esp. in graphics area), production, and distribution. 1c1e

A lot of things that this Division can't do -- things that Bill has found availble in their "ATS System", will have to be provided from elsewhere. Question -- can ARC's NLS techniques provide some or all of this "other" type of service? 1c2

"Commercial" source of service may even include some tht the Tech. Service Division could/does offer. 1c2a

General form he expects the development of a document to follow: 2

Generated by an auther (even in another organization), coming in in rough- draft form. 2a

They will need to edit it, and then convert to a standardized format. 2b

(Editorial function done by 2b1

Questions and answers about NLS/DEX capabilities: 3

Can we work with other fonts? Multiple sizes? 3a

Not now -- but definitely plan to. For both. (We have multiple sizes in our display system now.) 3a1

Would we be able to write some software to write a mag tape to drive the "CRT recorder" (COM/photocomposer)? 3b

Yes -- have already done this on two different COMs -- Our

Phone log: 6 Oct 71 with Bill Jones, NASA I4 group re their documentation activities

last NASA report was generated that way, on a III FR-80. via a service outfit in S.F. 3b1

This as done from our SDS 940. We don't have it working now for our PDP-10. It isn't considered a very difficult task. 3b2

This is for a ngle-font output. 3b2a

Multipl font wouldn t be too much harder for us, assuming relatively straightforward conventions as to which portions of the text where tobe set in what font. 3b2b

We haven't yet struggled with generalized mathematical-equation formats. 3b2c

Could ARC interface with the Stromberg 4020? AMES has one, with lots of software to drive it for graphic output from computations, etc. 3b3

Sure. 3b3a

Can we support 2741 terminals? 3c

No, but we expect to, and it probably isn't too much of a chore. 3c1

ATS lets them use tabular formatting, entering parameters to specify the coluumn width and "row" depths. 3d

We expect to provide such. In general, our software is in very good state for extending our features -- mainly we are hung up on knowledgeable people power. 3d1

When will we be ready to support IMLACs, text-only? 3e

Technical readiness? 3e1

As high-response "Typewriter NLS" (TNLS), right now; 3e1a

As high response, full "Display NLS" (DNLS) capability, within a month or so. 3e1b

Graphics are slated to be added later this winter (again, purely a manpower scheduling problem -- we used to have some on the 940). 3e1c

Phone log: 6 Oct 71 with Bill Jones, NASA I4 group re their documentation activities

But, the load-carrying capacity we have is another question. 3e2

What about our capacity to support documentation control work for tne I4 material? 3f

This could be added rather easily -- it probably wouldn't be very much drain on our computer resources; be mostly clerical, and it amounts to a problem of finding and training them. 3f1

What capability for controlling output formats? E.g., right justification. 3g

We have evolved quite extensive "output processor" capabilities, with a large repertoire of directive that are embedded in the text. Space-ill right justification is included. Also, running headers, manyy options for page numbering, indenting, list "numbering", etc. 3g1

General reark by DCE, regarding ARC plans: 4

We are formally organizing to have a "department" here called "Documentation Production and Control Systems." It will push directly on the development of functional capabilties, and upon our capability for operationally supporting, the services that "augment" the activity of producing and controlling technica documentation (especially for complex computer systems). 4a

I should generate something in writing, representing a proposal for how ARC might help out in the I4 documentation process. 5

How soon? DCE going on trip for a week. 5a

ASAP. This Friday would be fine. 5b

They have to nail things down soon. Our participation; CAC's possible particiption; etc. 5c

Our approach would likelyy be (if starting to help from now), would involve some husky "startup" support. 5d

Discussion of possible CAC participation: 6

Three possible ways to participate: 6a

DCE 14-JAN-72 21:47 8504

Phone log: 6 Oct 71 with Bill Jones, NASA I4 group re their documentation activities

As producers of technical docments. 6a1

As helpful dialogue stimmulators/coordinators with the I4 user community. 6a2

As (future?) helpers in developing specialized techniques for the support services of a DPCS. 6a3

DCE 14-JAN-72 21:47 8504

Phone log: 6 Oct 71 with Bill Jones, NASA I4 group re their documentation activities

(J8504) 14-JAN-72 21:47; Title: Author(s): Douglas C. Engelbart/DCE; Sub-collections: SRI-ARC; Clerk: DCE;

DCE 14-JAN-72 21:51 8505

Amendment to 8504, visit instead of phone

It was a visit to ARC by Bill Jones, instead of a telephone conversation,in which the data in (8504,) was developed (at my DNLS console, as we talked over the points). 1

DCE 14-JAN-72 21:51 8505

Amendment to 8504, visit instead of phone

(J8505) 14-JAN-72 21:51; Title: Author(s): Douglas C. Engelbart/DCE; Sub-Collections: SRI-ARC; Clerk: DCE;

JBL 15-JAN-72 17:21 8506

Another test.

I am now trying a message to myself, Alex, and others. 1

JBL 15-JAN-72 17:21 8506

Another test.

(J8506) 15-JAN-72 17:21; Title: Author(s): Joel B. Levin/JBL; Distribution: Alex A. McKenzie, Ellen Westheimer, Julie B. Moore, Joel B. Levin/AAM EW JBM JBL; Sub-Collections: NIC; Clerk: JBL;

JBL 15-JAN-72 18:23 8507

First Message

Hello, bernie.
You are now on the NIC
This is your 1st message.
Bye
Jbl

1

JBL 15-JAN-72 18:23 8507

First Message

(J8507) 15-JAN-72 18:23; Title: Author(s): Joel B. Levin/JBL; Distribution: Bernie P. Cosell, Joel B. Levin/BPC JBL; Sub-Collections: NIC; Clerk: JBL;

RWW 15-JAN-72 18:54 8508

Acknowledgement of ID System Changes

Mimi,
Thanks for the changes to the ID System.
What happens now when when you get to the "OK?" ?
Does MUD know about the changes?
Dick

1

RWW 15-JAN-72 18:54 8508

Acknowledgement of ID System Changes

(J8508) 15-JAN-72 18:54; Title: Author(s): Richard W. Watson/RWW; Distribution: Mary S. Church/MSC; Sub-Collections: SRI-ARC; Clerk: RWW;

test

EHF 17-JÄN-72 6:06 8509

test message,17jan 1972

EHF 17-JAN-72 6:06 8509

test

(J8509) 17-JAN-72 6:06; Title: Author(s): Ernest H Forman/EHF; Distribution: Ernest H Forman, David C. Wood/EHF DCW2; Sub-Collections: NIC; Clerk: EHF;

Costs of TNLS Flip Charts as Estimated by SRI Illustration Dept: 1

Drawing 80 flip charts similar to those we have now: $843 1a

Plates for printing the flip charts in 8.5 x 11" format $380. 1b

Plates are a one-time-only charge; they will serve for several printings. 1b1

A printing run of 50 copies of each costs $130,; for 100, $160; for 200,$256 1c

For 100 copies $160 1d

Total:$1383 1e

I suspect that if I showed the originals to them and negociated I could get the drawing cost down by about %10. 2

(J8511) 17-JAN-72 8:35; Title: Author(s): Dirk H. van Nouhuys/DVN;
Distribution: Richard W. Watson, James C. Norton/RWW JCN(for your
information); Sub-Collections: SRI-ARC; Clerk: DVN;
Origin: <VANNOUHUYS>CHARTCOST.NLS;5, 17-JAN-72 8:23 DVN ;";

EHF 17-JAN-72 8:39 8512

Jim,

I sent the two decks off to you. Please let me know when theyarrive.

Thank You,
Ernie Forman 1

(J8512) 17-JAN-72 8:39; Title: Author(s): Ernest H Forman/EHF;
Distribution: James E. White/JEW; Sub-Collections: NIC; Clerk: EHF;

EMC meeting notes covering 6-jan, 11-jan, 13-jan. 1

RAND issue -- NLS on RAND's TEN and support for Bob Balzer's Automatic Programming Project: 1a

Doug assumes Rand's ten system will be lightly loaded for 6-8 months, thus there is advantage in transfering NLS soon to allow people exposure to NLS before the load builds up. 1a1

This gives us a better position to ask for more NLS support on the ARPA NET. 1a1a

The EMC feels that reasonable training and people support must be provided or NLS will get a bad name 1a2

The Journal system provides valuable support; it would be nice to have it available on RAND system ,if possible. 1a3

What about two journals? How can they interact? 1a3a

I have some ideas on this subject. It does not seem too difficult to have several Journal front ends and one Journal archive. 1a3a1

We should recommend that they have reasonable hardcopy output facility available for their local users. 1a4

The EMC feels that the idea of putting NLS on TE RAND Ten is a good idea. However, the situation with the Ill-IV people is unclear as yet. They would seem to have a higher priority. We should try not to attempt two such transfers at once. 1a5

The transfers should be done quietly, with no fanfair, in an experimental nature. Only release it for serious use when everything is well in hand. 1a5a

Would the ILL-4 people be able to use RAND's ten for NLS support??? That would be nice, wouldn't it? 1a5b

We should not confuse the transfer of NLS to RAND's ten with the support of Bob Balzer and his Automatic Programming Project study. 1a6

The things we do for Balzer could be done on either our machine or theirs. 1a6a

Would there really be enough access to use our system

over the network? Are we really reliable enough? Is the network bandwidth hign enough? 1a6a1

Maybe, we should not encourage him to use NLS on our system because the system is too unreliable. He would get half his work in and wouldn't be able to get to it because the sytem would be down. 1a6a2

Can we afford another user? Can he afford to try to use us through the network? Can we afford the catalog and clerical support he will need? Can we afford someone to teach him tricks so he can make reasonable use of NLS? 1a6a3

Doug feels there is as much reason to give the Automatic Programming Project support as there is to give the Speech Understading Project support. We should try to help both efforts in whatever way we can. 1a6b

CHI will talk to Fredrickson at RAND to get picture from his standpoint and find out who else would use NLS. 1a7

Phone conversation with Rod Fredrickson of RAND about putting NLS on their ten 1b

Their configuration and the operator-less system issue 1b1

Secondary storage: 1b1a

three rpo2's online with a fourth as a spare 1b1a1

we will have four rpo2's with a fifth as a spare. 1b1a1a

File transfer to/from UCSB was working on another machine (with rasonable transfer times -- 30KB transfer rate) ad they intend to recode the protocal into TENEX. This will increase their stoage capacity. 1b1a2

They will have several systems people on hand to restart the system when it crashes. They do not like to call these people "operators" however. 1b1b

The videographics display system will be hooked to the ten (as well as other machines, I think), as will the NLP-900 micro processor. 1b1c

Local RAND users for their TENEX system 1b2

Four to five programmers in the climate study group 1b2a

mostly use the ten for access to the net and editing. 1b2a1

six people in Fredrickson's computer security group 1b2b

access to the network and editing. 1b2b1

There seems to be no local heavy computing scheduled for the ten. 1b2c

Fredrickson will come up for a feasability talk around the first of Feb. 1b3

He has limited resources to support extensive support work. 1b3a

RADC prposal 1c

Due in about a week. They want to buy people support and computer support for 12 people (not all using the system at once, of course). The legal people will be checking the reasonableness of our pricing arrangements. JCN is nervous. He wants a couple of months to work out accounting scheme and check it. DCE suggest a partitioning of the machine so that they essentially buy x percent of the facility and are guaranteed x percent of the service if they can use it (Anything they get over x percent is on the house). 1c1

The proposed auto-logout addition to TENEX would be nice (if not necessary) if we charge for connect time. 1c1a

What about a simple bid scheduling scheme -- DIA and WHP worked one out a few months ago -- incorporated into an accounting scheme? 1c1b

They will pay about $75K for an eight month period. Some of this money (maybe $25K) can be used for hardware. 1c2

There is a verbal agreement to this. 1c2a

NSF proposal 1d

DCE has decided that we do not have time and energy to do anything like this now. We should develop a complete picture and then approach NSF. 1d1

Service problems: 1e

As everyone may have noticed, service has not been too good for the last couple of months. We nave nad a great deal of hardware trouble and a few software glitches. When the system is up and reliable there is not enough service to go around; the system is too heavily loaded. What can we do about this? 1e1

We must have the attitude that the system must be up from 0500 to 1800 come hell or high water! We need the so-called "service center" much more than the network does!!! 1e1a

Buy more memory -- The EMC suggests putting an order in for two or three banks (32K or 48K) of MA10 memory as soon as DEC people say they think the cable length problem is not severe. ARPA has been told that we might do this. They said that would be fine. (The money will actually come indirectly from the RADC contract.) 1e1b

When one bank is taken down we suffer a tremendous reduction in service capacity. This indicates that we are on a steep part of the memory sensativity curve. The people at UTAH, experieced a large increase in service when they added memory to their 128K TENEX system. DIA feels that from what he has found out about the system performance we should get some more memory. 1e1b1

Smokey is going to call BBN to find out what they recomend concerning more memory and concerning the Lockheed memory they got. 1e1b2

MA10 leases for about $2250/month for 16K words. 1e1b2a

Get rid of the Briant disk if the briant overhaul does not make it near perfect. 1e1c

Set the requirements before the overhaul is started. RWW is currently probing them for a proposal for what they actually intent to do in the overhaul and what their expectations are. 1e1c1

Perhaps we should get rid of the UNIVAC drum system just so we can get rid of the CYBERNEX channel (not to mention the cost of the UNIVAC drum system). 1e1d

Get a BBN IMP interface. Get rid of the home made one we now have. 1ele

Action is alread bebug on this issue. 1ele1

schedule use of the system 1elf

Schedule the dump at a better time, say 3:00 to 5:00 AM or 6:00 to 8:00 PM., so people can work more effectively in the evening. 1elf1

3:00 to 5:00 seems to be very apealling since 1elf1a

The TSS people will probably be working only one or two nights a week. This means people can work until 0300 if they want to. That is, an uninterupted day from 0500 to 0300, with all work being backed up by the dump. 1elf1a1

We can hire a person (maybe the current dumper) to work from 3:00 to 8:00 to do the dump and other processes (discussed below) while the load is light. 1elf1a2

If the TSS people want to work at night they can either run drum only or have the dump done at 2200. 1elf1a3

schedule heavy processes as follows: 1elf2

Output Device Printer, over five pages: 1800 to 0900 1elf2a

compilations (this includes loader and assemblers): 1200 to 1300, 1800 to 0900 1elf2b

Baseline record hardcopy generation (once a week): 0500 to 0800 1elf2c

Journal hardcopy formatting: 0500 to 0700 1elf2d

we would like all ARC people who normally work online to NOT have hardcopy distribution specified as there delivery default -- most do now, I understand. 1elf2d1

Journal hardcopy printing: 0700 to 0900 1elf2e

DEX (non-rush items): 0500 to 0700 1elf2f

Catalog generation: 0500 to 0800. 1elf2g

NOTE: in order to make good use o the 0500 to 0800 slot for heavy processes, we would like people not to do editing during this time unless it is to support the use of one of the above processes. 1elf2h

NOTE: A process similar to that used by the NLS programmers to get their files automatticaly compiled and/or printed will be made available for having files automaticaly formatted by the Output Processor during the 0500 to 0800 time period. 1elf2i

Fix all known bugs in one monitor before going on to the next BBN release (unless the bug has been fixed in the next release). I believe this is the current philosophy among the TSS people. 1elg

Find out where NLS and the monitor are spending their time -- DIA is about ready to start doing this. 1elh

Prevent login if the load is too high -- This is pending a minor change to the EXEC. 1eli

Auto-logout inactive terminals -- this Will make better use of terminals and will make sysstat more meaningful. 1elj

Make the journal more reliable. This is currently being pursued. 1elk

Notify users when they are being used as subjects to find a problem in the monitor or hardware. 1ell

I believe the Journal has been changed to automatically distribute submitted files to its various directories (this should be done if it hasn't) -- this should prevent journal directories from filling up (and being destroyed) in the future. The IDENTFILE (and maybe some others) are being moved out of the journal directory. 1elm

When hardware, like the Briant drum, goes down, The TSS people should turn their attention to helping the hardware people find the difficulty. 1eln

space problems 1f

We have filled the disk again!!! If a user is requesting another page and there is none, the job will crash, but if the monitor is requesting a page and there is none, we all lose!! The EMC proposes that we go ahead and put limitation on individual directory size and that Bill Furgison once a week post a list of files which have not been touched in three weeks. 1f1

We would put this in the journal but it is a very long list!! 1f1a

Users will be asked to keep their directoies a little more in order. 1f2

TRIM and EXPUNGE will be run on all error-free directories after each dump. 1f3

TRIM deletes all versions of files except the two highest and the lowest. 1f3a

NOTE: subjectively, it seems that system response seems to get worse when we have fewer free pages available on te disk -- maybe something about the arm having to move more to write on a free page? This sounds ripe for some measurements. 1f4

terminals and cassette recorders 1g

A final decision will be made on these the first of this week. We will probably order something like six terminals and six Cassette recorders. Should we order more? 1g1

I recommend that everyone read RWW's memo (Journal,8429,1). 1h

cleaning the printer 1i

This should not be done during the day. How about 0700 to 0800 once a week. NOTE: we now have a maintenance contract for the printer -- it will be serviced once a month -- hopefully during off hours. 1i1

pager maintenance 1j

DEC has aggreed to maintain the BBN pager for $1000 a year plus initial training expenses for one man. They will have six men trained in maintenance of these pagers. 1j1

disk pack arrival 1k

Currently scheduled for 20-feb t 25-feb. 1k1

CHI 17-JAN-72 8:52 8513

EMC Meeting Notes 6-JAN, 11-JAN, 13-JAN

(J8513) 17-JAN-72 8:52; Title: Author(s): Charles H. Irby/CHI; Distribution: Paul Rech, Stephen W. Miller, Michael D. Kudlick, George J Eilers, Donald R. CONE, Bonnar Cox, David R. Brown, Don Limuti, William R. Ferguson, Priscilla Lister, Robert L. Dendy, Linda L. Lane, Marilyn F. Auerbach, Walter L. Bass, Mary S. Church, William S. Duvall, Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Mil Jernigan, Harvey G. Lehtman, John T. Melvin, Jeanne B. North, James C. Norton, Cindy Page, Bruce L. Parsley, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Don C. Wallace, Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections: SRI-ARC; Clerk: CHI; Origin: <IRBY>EMC-MINUTES.NLS;9, 17-JAN-72 8:48 CHI ;

JANUARY TNLS COURSE 1

THE FOLLOWING PEOPLE ARE COMMITTED FOR THE TNLS CLASS ON THE 27TH AND 28TH OF THIS MONTH: 2

Stephen C Butterfield (SCB) from BBN-IMP 2a

Ken Showalter from ONR 2b

Don Cone from SRI 2c

One person from SRI-AI 2d

Steve Miller from SRI. 2e

Mike Kudlick from SRI ARC. 2f

Stephen T Walker from NSA may come at the last minute. 3

(J8514) 17-JAN-72 9:33; Title: Author(s): Dirk H. van Nouhuys/DVN;
Distribution: Stephen W. Miller, Donald R. CONE, Richard W. Watson,
James C. Norton, Ed K. Van De Riet, Mil Jernigan/SWM DRC RWW JCN EKV
MEJ; Sub-Collections: SRI-ARC; Clerk: DVN;
Origin: <VANNOUHUYS>ATTND.NLS;1, 17-JAN-72 9:13 DVN ;";

DDT-resistant NLS bugs

NLS has several bugs which are extremely hard to fix because they seem to happen randomly. The bugs that appear to occur spontaneously are: 1

1. Cross-file edits, particularly Move Branch, occasionally causes a bad file. 1a

2. After an Output File, the display does not begin at the right point. 1b

3. Jump to Name, Word, and Content do not always find the item specified, although it is in the file. 1c

Since we can't make any of these occur at will, we need to look at them when they happen during a normal NLS session. If you encounter one of the bugs listed above, please don't do anything more, and get Mimi or Bruce to look at the problem. 2

MSC 17-JAN-72 15:50 8519

DDT-resistant NLS bugs

(J8519) 17-JAN-72 15:50; Title: Author(s): Mary S. Church/MSC; Distribution: Paul Rech, Stephen W. Miller, Michael D. Kudlick, George J Eilers, Donald R. CONE, Bonnar Cox, David R. BroWn, Don Limuti, William R. Ferguson, Priscilla Lister, Robert L. Dendy, Linda L. Lane, Marilyn F. Auerbach, Walter L. Bass, Mary S. Church, William S. Duvall, Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Mil Jernigan, Harvey G. Lehtman, John T. Melvin, Jeanne B. North, James C. Norton, Cindy Page, Bruce L. Parsley, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Don C. Wallace, Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections: NIC SRI-ARC; Clerk: MSC;

8520

See
Baseline
Book

8521

See Baseline Book

BLP 17-JAN-72 17:18 8522

Working hours and justification in response to (7701,)

Re 7701:
Working hours: 1200 to 2200 or 300 MTWTh, some Sunday afternoons and evenings
Reasons: mornings are very painful to me; system response 1

BLP 17-JAN-72 17:18 8522
Working hours and justification in response to (7701,)

(J8522) 17-JAN-72 17:18; Title: Author(s): Bruce L. Parsley/BLP;
Distribution: James C. Norton/JCN; Sub-Collections: SRI-ARC; Clerk: BLP;

WSD 17-JAN-72 17:21 8523

Possible explanation of DDT-Restant bug

The Jump name/word/content bugs may have been caused by the ↑O problem 1

WSD 17-JAN-72 17:21 8523

Possible explanation of DDT-Restant bug

(J8523) 17-JAN-72 17:21; Title: Author(s): William S. Duvall/WSD; Distribution: Walter L. Bass, William S. Duvall, Mary S. Church, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, John T. Melvin, Bruce L. Parsley, William H. Paxton/NPG; Sub-Collections: SRI-ARC NPG; Clerk: WSD;

HGL 17-JAN-72 17:24 8524

DEX-2 Design Meeting-- 14 January 1972

The first meeting of the DEX-2 software group was held on Friday 14 January. Present were HGL, WLB, CHI and WHP. These notes summarize the content of the meeting and are recorded by HGL. None of the features discussed is presented in a final form in this document-- the discussion has just begun. 1

The Journal group ident is DEX2; the members are HGL, WLB, CHI, WHP and DCE. 1a

The meeting dealt with additions and modifications to the basic DEX-1 design contained in (6965,). It has been decided to have more of these relatively short meetings (about 2 hours in length) until a final design has been agreed upon. The next such meeting is scheduled for Tuesday, 18 January at 1400. 1b

I lost energy toward the end of the creation of this file. Thus the description of the commands is not a complete reflection of the discussion took place at the meeting on the subject. 1c

Additonal capabilities-- a question of design philosophy 2

DEX as primary input device vs. DEX as editor-- need for a "center-dot" capability. 2a

Different types of users have different needs. 2a1

The prime users of DEX for quite a while will be people (primarily PSO members) who will be doing primary input of original material and of material for insertion into existing files. 2a1a

Walter and Charles both suggested that these users are not particularly interested in DEX's editing capabilities; thus the need to have statement numbers in the left margin for future editing at a session should be tempered by the desire to have a simpler method of inputting than the current mode of specifying a complete location number before the text. 2a2

The suggestion was to permit the use an effective "center-dot" coontinue facility; a possible implementation would use the letters "u", "d", and "s" for "up", "down", and "successor", respectively, rather than a statement number. This would be followed by a gap followed by text terminated in the usual DEX manner with a statement delimiter. (The first character in the

gap will beommitted in the inserted text and serves as a separator.) The text will be inserted up from, down from, or after the statement immediately preceding it in the input stream. 2a2a

At first I objected to this on the grounds that it would violate the earlier design decision to have location numbers in the left-hand margin of the input or on a listing to facilitate interpolations and editting at a session (one refers to what one sees on the paper in order to compensate for the inherent lack of interaction in the system.) 2a2b

I later changed my mind when the ease of operation for the most common user (PSO clerk) of the system was considered. It would still be possible even for those who use this proposed facility to edit statements using "u", "d", or "s" in a locaton specification delimited by some character. For example, 2a'udd' would refer to a statement two levels down the statement up form 2a. 2a2c

It should be obvious to the person who uses this possibility in DEX that there is a danger involved in selecting the wrong statement and that if later editing is anticipated the original DEX input method should be used. However, for draft input material, mistakes can just as easily be editted out ad a later time using any of the system modes. You may pay for the ease in inputting with increased difficulty in immediate error correction. 2a2d

Walter questioned the difference between DEX and our other subsystems. He felt that the "languages" were too different. I felt that the transition between systems was not as great as it could be considering the inherent differences in the media. Bill agreed. Also, Barbara has picked up DEX very rapidly. The primary difference-- the fact that items get the numbers listed, is a convenience for the non-interactive user. 2b

Commands in an expanded DEX 3

New commands 3a

Substitute will be used for text editing of statements 3a1

easier to provide context, safer in a deferred mode 3a1a

Substitute only over statement? Otherwise problems? 3a1b

Most NLS structural commands 3a2

Some may be left out because of ambiguity in referring to statements later in the input file. The following seem to be safe: 3a2a

Append 3a2a1

Break 3a2a2

Copy 3a2a3

see below for way to refer to item copied. 3a2a3a

Delete-- expand to structures larger than statements 3a2a4

Move-- how do we refer to statements afetr they have been moved? 3a2a5

Old number in slashes after first in group for move group, for example 3c/1b/ would refer to statement 1b which had been moved (copied,etc.) in a group (e.g., 1a to 1d) to location 3c. 3a2a5a

Replace 3a2a6

Transpose dangerous-- how do we refer to statements if we must be able to refer to a statement by both its old and new number? 3a2b

Access existing files. 3b

Assign number to file, existing statements prefaced by number in delimiters. 3b1

(1)1a-- 1a in file 1. 3b1a

Making use of TNLS address specifications 3c

permitting specification of existing items by statement names 3c1

Sequence of execution 3d

It was noted that the commands sould have an execution precedence (as was earlier noted) in order to make the semantics of a DEX input file unambiguous. 3d1

Dividing the load among team members 4

We will consider this after the design has been finished. 4a

HGL 17-JAN-72 17:24 8524

DEX-2 Design Meeting-- 14 January 1972

(J8524) 17-JAN-72 17:24; Title: Author(s): Harvey G. Lehtman/HGL;
Distribution: Harvey G. Lehtman, Charles H. Irby, Walter L. Bass,
William H. Paxton, Douglas C. Engelbart/DEX2; Sub-Collections: SRI-ARC
DEX2; Clerk: HGL;
Origin: <LEHTMAN>JCOMENT.NLS;4, 17-JAN-72 16:57 HGL ;

BLP 17-JAN-72 19:53 8525

New Arrangement of Highcore for NLS

Herein is described the new arrangement of high core (>=400000B) for NLS. 1

The reason for moving things around was to allow more room for MPS. 2

There are several SET variables that are set to the various blocks in high core. They should be used by anybody that mucking about up there. 3

Core map: 4

OB -- xB 4a

NLS instructions and data 4a1

xB + 1 -- yB (where xB < yB < 400000B) 4b

DDT's symbol table 4b1

400000B = $bfree -- 553777B = $efree - 1 4c

Compilers 4c1

Output Processor 4c2

Load 940 files buffers 4c3

Journal delivery buffer 4c4

sort/merge buffer 4c5

and checkpg = $bfree is pointed there (I don't know to what end) 4c6

554000B = $upgbuf = $efree -- 573777B = $upgbend 4d

buffer for User Program code 4d1

574000B = crpad[1] -- 673777 = crpgad[rfpmax] + 777B) 4e

100B File Pages 4e1

674000B = $sqstks -- 677777B 4f

4 Sequence Work Area Stacks 4f1

700000B -- 777777B 4g

New Arrangement of Highcore for NLS

DDT 4g1

BLP 17-JAN-72 19:53 8525

New Arrangement of Highcore for NLS

(J8525) 17-JAN-72 19:53; Title: Author(s): Bruce L. Parsley/BLP; Distribution: Walter L. Bass, William S. Duvall, Mary S. Church, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, John T. Melvin, Bruce L. Parsley, William H. Paxton/NPG; Sub-Collections: SRI-ARC NPG; Clerk: BLP;
Origin: <MSR>HIGHCORE.NLS;2, 6-JAN-72 17:02 BLP ;

journal system

the user enters the journal submode with the execute journal command. 1

MBC 18-JAN-72 7:07 8528

journal system

(J8528) 18-JAN-72 7:07; Title: Author(s): Madge B. Cornell/MBC;
Distribution: Ernest H Forman, Madge B. Cornell/EHF MBC;
Sub-Collections: NIC; Clerk: MBC;

MESSAGE TO JEANNE NORTH

(J8529) 18-JAN-72 8:07; Title: Author(s): Alex A. McKenzie/AAM;
Distribution: Alex A. McKenzie/AAM; Sub-Collections: NIC; Clerk: AAM;

AAM 18-JAN-72 8:09 8530

MESSAGE TO JEANNE NORTH 1

DEAR JEANNE,
WE HAVE BEEN TRYING VARIOUS ASPECTS OF THE MESSAGE SYSTEM FROM
HERE. WE SEEM TO HAVE TWO PROBLEMS: 1a

MESSAGES SEEM TO NOT, REPEAT NOT, BE DISTRIBUTED TO EW, JBM, JBL
ET CETERA. IN FACT, I SEEM TO BE THE ONLY INDIVIDUAL WHO CAN
GET MESSAGES PLACED IN HIS (OR HER) INITIAL FILE. I AM REFERRING
TO MESSAGES WHICH ARE DIRECTLY ADDRESSED TO THE INDIVIDUALS
MENTIONED, I KNOW THAT THEY ARE NOT ON ANY OF THE GROUP
DISTRIBUTION LISTS. THIS IS PROBABLY NOT TOO IMPORTANT RIGHT NOW
BUT IT'S ALREADY ANNOYING AND PROBABLY WILL BECOME MUCH MORE SO
IN THE NEAR FUTURE! 1a1

WHEN I SEND A MESSAGE TO A LIST OF INDIVIDUALS, AND INCLUDE MY
OWN IDENT IN THE LIST, THE MESSAGE NEVER GETS DELIVERED TO MY
INITIAL FILE. THIS IS THE PROBLEM I ONCE (A WEEK OR TWO AGO)
CALLED YOU ABOUT. IS THIS A SYSTEM PROBLEM OR A DESIGN
"FEATURE"? 1a2

AAM 18-JAN-72 8:09 8530

(J8530) 18-JAN-72 8:09; Title: Author(s): Alex A. McKenzie/AAM;
Distribution: Jeanne B. North, Alex A. McKenzie/JBN AAM;
Sub-Collections: NIC; Clerk: AAM;

JBL 18-JAN-72 8:28 8531

Supplement to Alex's note.

Jeanne,
A slight correction to the message Alex just sent you....I in fact am the only one in his list who can receive online delivery. Thought you should know about that.
Pax, Joel

1

JBL 18-JAN-72 8:28 8531

Supplement to Alex's note.

(J8531) 18-JAN-72 8:28; Title: Author(s): Joel B. Levin/JBL; Distribution: Jeanne B. North, Joel B. Levin/JBN JBL; Sub-Collections: NIC; Clerk: JBL;

WSD 18-JAN-72 9:14 8532

Baseline note

Bruce....my updated baseline is under <MSR>WSD.NLS;10... 1

WSD 18-JAN-72 9:14 8532

Baseline note

(J8532) 18-JAN-72 9:14; Title: Author(s): William S. Duvall/WSD; Distribution: Bruce L. Parsley/BLP; Sub-Collections: SRI-ARC; Clerk: WSD;

Comments on Dump and Bad Files

The following document is intended to help clarify present procedures concerning the dump and files which go bad on the disk. 1

Any file which is being used during the time of the dump cannot be opened by the program DUMPER, and will therefore not be included in the dump that evening. 1a

The normal dump hours are 10:00pm to Midnight. If the dump will be run at any other time, I (Bill Ferguson) will leave a message to that effect with the anwering service (321-4412). 1b

In general, if a person wants to work during the dump he can insure that all his files will be dumped by making an extra working copy of whatever file he wishes to reference. Then, only that one working copy will not be dumped. 1c

However, though a person can work during the dump with relative confidence of having his files dumped, we cannot allow many users on the system during the dump for two reasons: 1d

1)The dump runs considerably slower if the system has many uers, and 1d1

2)DUMPER has a tendency to crash if the system load is very high. 1d2

For these two reasons, no users will be allowed on the system during the dump , except by special permission of Smokey Wallace or Ken Victor. 1e

The second area requiring clarification is the problem of files which go bad on the disk. 2

Presently, I check the dump listing which indicates which files are bad. 2a

Each morning I notify the persons in charge of any directory of the status of their bad files via SNDMSG, and request them to advise me of "the proper recovery procedure". 2b

There are essentially three options which exist when a file goes bad: 2c

1)The file may have been superceded by another version, and then the bad file is simply deleted and expunged, 2c1

2)the file may have been in existence for at least two (2) days, and therefore appears on a previous dump tape. It can then be reloaded to the disk by the operator, and 2c2

3)the programmer may recreate the file. 2c3

All users should therefore check their MESSAGE.TXT file (via COPY MESSAGE.TXT (TO) TTY:) in the morning and tell me which of the above three options they have chosen. 2d

Unfortunately, at the present time, there is no way for the NET installations to read the contents of MESSAGE.TXT. A procedure for notifying these sites is under consideration. 2e

WRF 18-JAN-72 13:57 8537

Comments on Dump and Bad Files

(J8537) 18-JAN-72 13:57; Title: Author(s): William R. Ferguson/WRF; Distribution: Paul Rech, Stephen W. Miller, Michael D. Kudlick, George J Eilers, Donald R. CONE, Bonnar Cox, David R. Brown, Don Limuti, William R. Ferguson, Priscilla Lister, Robert L. Dendy, Linda L. Lane, Marilyn F. Auerbach, Walter L. Bass, Mary S. Church, William S. Duvall, Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Mil Jernigan, Harvey G. Lehtman, John T. Melvin, Jeanne B. North, James C. Norton, Cindy Page, Bruce L. Parsley, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Don C. Wallace, Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections: SRI-ARC; Clerk: WRF; Origin: <FERGUSON>DUMP-WRK.NLS;6, 14-JAN-72 15:34 WRF ;

A tutorial file for practice in the output processor directives described in the TNLS User's Manual (journal,7477,) is now available as a NIC file (nic,xprint,). 1

Future supplements of The Network Information Center User Guide will include copies of xprint. 1a

Other exercise files may be found through (nic,locator,2c:xb) 2

(J8542) 18-JAN-72 15:58; Title: Author(s): Dirk H. van Nouhuys/DVN; Distribution: Jeanne B. North, John W. McConnell, L. Peter Deutsch, James G. Mitchell, Alan C. Kay, Marilyn F. Auerbach, Martin E. Hardy, Charles H. Irby, Mil Jernigan, Jeanne B. North, James C. Norton, Cindy Page, William H. Paxton, Barbara E. Row, Dirk H. van Nouhuys, Richard W. Watson, John T. Melvin, Steve D. Crocker, Thomas F. Lawrence, John F. Heafner, Robert E. Long, Ari O. J. Ollikainen, James E. White, A. Wayne Hathaway, Dan L. Murphy, Patrick W. Foulk, Richard A. Winter, Harold R. Van Zoeren, Alex A. McKenzie, Robert L. Sundberg, James M. Madden, Abhay K. Bhushan, Peggy M. Karp, Ellen Westheimer, Douglas C. Engelbart, Priscilla Lister, Linda L. Lane, Ernest H Forman, William R. Ferguson, Richard C. Roistacher, Donald R. CONE, Stephen W. Miller, Beauregard A. Hardeman/TU EW DCE PL LLL EHF WRF RCR DRC SWM BAH; Sub-Collections: SRI-ARC TU; Clerk: DVN;
Origin: <VANNOUHUYS>X-FLASH.NLS;2, 18-JAN-72 15:54 DVN ;";

SUPERWATCH OPERATION 1

Monitor Functions 1a

The TENEX monitor, as we get it from BB&N contains some information collection, in the form of meters, concerning what is happening within the system. 1a1

By meters I mean counters that continually increase in value. The difference between two readings, and the time interval between the readings, can be used to compute an average rate over the interval, for example. 1a1a

Nearly all of our information collecting has been in this form. 1a1b

We have added a considerable amount of metering at ARC, notably: 1a2

Some sampling is done at a 50ms rate. The results of this sampling are again meters, which register the sum of the samples. The meter differences and number of samples give us the average sampled value. 1a2a

In this way we sample: 1a2a1

Drum and disk queue length and per cent busy 1a2a1a

Number of jobs in the balance set, number of pages in balance set, number of free pages, number of reserved pages 1a2a1b

(under an of-off flag) PC sampling (the unmapped PC at the time of the 60Hz clock interrupt) 1a2a1c

At a slower rate, controlled by a process clock, we can sample the use of user memory pages. 1a2b

This sampling is done at a 500ms rate and is under the control of an on-off flag. 1a2b1

The user pages are categorized as private-modified, private-unmodified, shared-0, shared-1, shared-2. The types of shared pages refer to the number of processes referencing those pages (i.e. process bits in the process use field for that page). Shared-2 represents pages referenced by two or more processes. 1a2b2

From the metering of the number of pages of each type, we get a profile of the kinds of pages taking up user memory. 1a2b3

Meter type information is also collected from NLS via a JSYS, concering 1a2c

The number of tasks completed. 1a2c1

The elapsed execution time for a task. 1a2c2

The elapsed real time for the execution of a task. 1a2c3

The elapsed real time from one task to the next. 1a2c4

At this time, a task is defined an interaction on the character level. 1a2c5

We have also added several other meters to record such things as 1a2d

actual scheduler overhead, process clock overhead, IO wait 1a2d1

activity of garbage collector 1a2d2

page faults by type of fault and page 1a2d3

The monitor contains JSYS's to return the meter readings to a user program -- in the registers so that differences can be quickly taken. 1a3

The JSYS's have been written with speed in mind, so that the user program collecting information disrupts the system load as little as possible. 1a3a

More meters can be easily added. 1a3b

A user program - superwatch - collects the information from the monitor. 1a4

The program runs a a specified interval. At each interval it collects the meters from the system, takes the differences, and spills them onto a file (stat file). 1a4a

There are two modes of information collection: detail and no detail. One puts a significantly heavier load on

the system and must be run at longer intervals, but collects more information. 1a4b

A separate command starts the program running on a 10 minute interval with detail turned on. This cound run as an autojob to provide a profile of the day. 1a4c

Another superwatch command will read the stat file, format and print it. 1a5

The compact file of (mostly) meter differences, can be read and converted to textual form after the collection is done. 1a5a

There are many computed values, mostly averages, which are produced from the stat file. Others can be added, and they can be almost any combination of the values present in the stat file. 1a5o

There are several "print options", which are just different collections of the computed values that can be printed. One of them includes everything, but in general only a certain type of measurement is desired. 1a5c

PC sampling results are printed with a special command which requests a "GET" file with a DDT symbol table in it, as well as a stat file. 1a5d

Averages over the entire test may be printed, and/or values for each collection interval may be printed, either for the entire test or for a specified interval of the test, given two times of day. 1a5e

The collecting command has a special "print while running" mode that does the processing and formatting to any output file (e.g. TTY:) at collection time (as well as producing the stat file). 1a5f

A display command, which is like the "print while running" mode with the display tube as the output device. The display is a set of histograms. 1a5g

COMMAND STRUCTURE 2

(Collect statistics) 2a

Specify: 2a1

The output file 2a1a

The program sampling interval in seconds. 2a1b

This determines the rate at which the program collects information from the system. 2a1b1

The total run time for the test in minutes. 2a1c

The program can be stopped at any time and the file can still be printed, however. 2a1c1

Do a ↑C and RESET before printing the file. 2a1c2

Detail (reply Y or N). 2a1d

The primary difference is that Detail includes information by job and subsystem, memory status information, and program counter sampling results. 2a1d1

Print while running (reply Y or N) 2a1e

Allows one to see the results while the program is running. 2a1e1

The interval should be longer than the time needed to print the results. A shorter interval is essentially not acknowledged - it run at the minimum interval. 2a1e2

An output file and print option will be requested. 2a1e3

Be advised that the superwatch program will be a measureable load on the system if run in this mode -- depending on the interval of course. 2a1e4

Action: 2a2

The program samples information from the system at the specified interval, and writes a compact form on the output file. Averages are maintained as well. 2a2a

The file is kept in good form so the program may be terminated by ↑C without messing up the file. 2a2b

Averages are maintained on a 10 minute interval so that ↑C may make the averages somewhat incorrect. 2a2b1

(Display statistics) 2b

Specify: 2b1

Same as for Collect statistics except for a few specifications which are preset. 2b1a

The print option determines the contents of the display. 2b1b

Action: 2b2

The program produces a file as in Collect statistics, and also creates a display of the information specified in the print option. 2b2a

The display is updated at each interval, in the form of histograms and numbers. 2b2b

(Print) 2c

(Averages) 2c1

Action: 2c1a

Prints averages only. 2c1a1

(Statistics) 2c2

Action: 2c2a

Prints averages and statistics from each individual sample made when the collection was being done. 2c2a1

(Time interval) 2c3

Specify: 2c3a

the time interval as two daytimes (hrs and min). 2c3a1

Action: 2c3b

Prints averages and individual sampales that were made in the specified time period. 2c3b1

For all of the above: 2c4

Specify: 2c4a

The statistics file generated by a Collect or Dispplay command. 2c4a1

The output file. 2c4a2

The print option number. 2c4a3

(Interpret PC sample) 2d

Specify: 2d1

The statistics input file. 2d1a

The GET file containing the relevant DDT symbol table. 2d1b

The output file. 2d1c

Action: 2d2

The PC sample results are written on the output file in both symbolic and numeric form. 2d2a

Global symbols are taken from the DDT symbol table in the get file. 2d2b

Number and per centage of executions in each "bucket" are printed. (See Turn ON PC sample). 2d2c

(Scheduler parameter set) 2e

Specify: 2e1

Your initials. 2e1a

(restricted) 2e1a1

Scheduling mode (Normal or Compile time). 2e1b

Action: 2e2

The scheduler parameters are set as specified. If the system rejected the parameters (which should not happen) a message to that effect is written on the terminal. 2e2a

The system logs the fact that the parameters were changed and specifies the user and initials. 2e2b

(Turn) 2f

(ON) 2f1

(Pc sample) 2f1a

Specify: 2f1a1

User bit 2f1a1a

=0 sample system PC 2f1a1a1

=1 sample user PC 2f1a1a2

anything else turns off the PC sampler 2f1a1a3

subsystem name (only if you set user bit = 1) 2f1a1b

lower bound address (in octal) 2f1a1c

number of words per bucket (in octal) 2f1a1d

Action: 2f1a2

The system's program counter sampling code is invoked (on a 50 ms interval). 2f1a2a

Either system mode or user mode PC is sampled. IF user mode, either a specified subsystem or all user programs are sampled. 2f1a2b

The information is collected as counts of samples within specified ranges, (or "buckets") with 13 ranges and one count for out-of-range in each direction for a total of 15 counters. 2f1a2c

The ranges are specified as a lower bound and word count per range (or bucket). The word count is rounded down to a power to two, but the lower bound is not. For example, if the word count were 4 and the lower bound 123, the buckets would be: 2f1a2d

0-122 2f1a2d1

123-126 2f1a2d2

127-132 2f1a2d3

133-136 etc. 2f1a2d4

(Memory sampler) 2f1b

Specify: ca 2f1b1

Action: 2f1b2

Turns on sampling of core status tables. 2f1b2a

This must be on to collect memory usage information. 2f1b2b

(OFF) 2f2

(Pc sampler) 2f2a

Specify: ca 2f2a1

(Memory sampler) 2f2b

Specify: ca 2f2b1

(Response cutoff set) 2g

Specify: 2g1

Your id. 2g1a

(restricted) 2g1a1

The upper cutoff in ms. 2g1b

The lower cutoff in ms. 2g1c

Action: 2g2

The systems response cutoff parameters are set as specified. 2g2a

When the response index goes above the upper cutoff, a flag is set for the EXEC to prevent new logins, until the response index goes below the lower cutof, at which time the flag is reset. 2g2b

(Option set) 2h

Specify: 2h1

A string of option names (as they appear in printouts) delimited by CR, ending with a -2. 2h1a

A -1 item in the option string inserts a CR in the output at the corresponding point. 2h1b

Some names are lower case, so type NO RAISE at the EXEC. 2h1c

Action: 2h2

This option string may be referenced as print option zero. 2h2a

(High queue on dismiss) 2i

Specify: ca (requires Wheel status) 2i1

Action: 2i2

Does not appear to be necessary to do this to get satisfactory service. 2i2a

(Quit) returns to the exec 2j

LIST OF MEASUREMENTS THAT CAN BE PRINTED 3

Each item will be described in the following format: 3a

(name) 3a1

meaning: 3a1a

units: 3a1b

normal values: 3a1c

indications: 3a1d

System times, etc. 3b

(t ms) 3b1

meaning: time in collection interval actually experienced by collection program 3b1a

units: ms. 3b1b

normal values: several ms off of the specified interval, but should average pretty close to it. 3b1c

indications: way off indicates heavy load and bad response. 3b1d

Drum and Disk activity, and related things 3c

Balance set statistics 3d

Memory information 3e

Information by job 3f

(JOBn) One value for each job: 3f1

meaning: The job number 3f1a

(TTYn) 3f2

meaning: TTY number (in decimal) or DET for detached job 3f2a

(SUBS) 3f3

meaning: name of subsystem that job is running as recorded by SETNM JSYS 3f3a

(USER) 3f4

meaning: the user name for that job 3f4a

(%JU) 3f5

meaning: per cent of real CPU time used by that job 3f5a

units: per centage times ten 3f5b

normal values: 0 to 900 (90%) 3f5c

indications: how the scheduler is dividing up the CPU among runnable jobs 3f5d

Information by subsystem 3g

(SUBn) One value for each subsystem in systems list of subsystems 3g1

meaning: the name of the subsystem (first 6 characters) 3g1a

(%SU) 3g2

meaning: per cent of real CPU time spent running that subsystem 3g2a

units: per centage times ten 3g2b

normal values: 0 to 900 (90%) 3g2c

indications: how much each of the subsystems are used. the name is set by SETNM JSYS and may be messed up by user program. 3g2d

(Tav) 3g3

meaning: average time between page faults (requiring page swap) 3g3a

units: ms. times ten 3g3b

normal values: 0 to very large numbers depending of compute-boundedness and system load. NLS is generally about 10 to 20 ms. 3g3c

indications: small numbers indicate that working set is not large enough or program poorly organized 3g3d

NLS statistics 3h

DIA 18-JAN-72 16:27 8544

preliminary superwatch documentation

(J8544) 18-JAN-72 16:27; Title: Author(s): Don I. Andrews/DIA;
Distribution: Charles H. Irby, Richard W. Watson, John T. Melvin,
William H. Paxton, Kenneth E. Victor, Don C. Wallace, John T. Melvin,
Robert L. Dendy/CHI RWW JTM WHP KEV DCW JTM RLD; Sub-Collections:
SRI-ARC; Clerk: DIA;
Origin: <ANDREWS>DOCSUPER.NLS;7, 17-JAN-72 18:19 DIA ;

JBP 18-JAN-72 16:39 8546

Talking to ones self ?

is it true that i dont get messages i send to myself, or messages i send to a group which includes me ? 1

JBP 18-JAN-72 16:39 8546

Talking to ones self ?

(J8546) 18-JAN-72 16:39; Title: Author(s): Jon B. Postel/JBP;
Distribution: Richard W. Watson, John T. Melvin/RWW JTM;
Sub-Collections: NIC; Clerk: JBP;

parameterizing bug chks and hlts

The following changes are needed to PARAMETERIZE bug handling: 1

ZLAST: 1a

SET TPC,5400 should be SET TPC,FILBGP 1a1

LOC 10000 should be LOC FILBGS 1a2

FPARAM: 1b

add the following code: 1b1

INTERN FILBGP,FILBGS 1b1a

NBUGS←←240 1b1b

BGSSIZ←←1400 1b1c

?FILBGP←←2*NBUGS+7000 1b1d

?FILBGS←←<<3*NBUGS+777>/1000*1000>+<2*BGSSIZ> 1b1e

SWPMON: 1c

page 1: 1c1

NGSP BUGTAB,6 should be NGSP
BUGTAB,<BGPTSZ+BGSTSZ>/1000 1c1a

page 20: 1c2

BUGLK3-1 is MOVE 7,(XWD -6000,BUGTAB) 1c2a

should be MOVE 7,(XWD -<BGPTSZ+BGSTSZ>,BUGTAB) 1c2a1

BUGLK1-1 is MOVSI 7,-1000 should be MOVSI 7,-BGPTSZ 1c2b

line 108 is HRROI 1,BUGTAB+1000(6) 1c2c

should be HRROI 1,BUGTAB+BGPTSZ(6) 1c2c1

PROLOG: 1d

page 6: 1d1

IFL PC2+1000-.,<PRINTX BUGSTRINGS OVERFLOW ONE PAGE> 1d1a

should be 1d1a1

```
        IFL PG2+BGPTSZ-.,<PRINTX BUGSTRINGS OVERFLOW ALLOTTED
        SPACE>                                                          1d1b

POSTLD:                                                                 1e

   page 2:                                                              1e1

            MOVSI 7,-1000                                               1e1a

      BUGSR4:MOVSI 5,-1000(7)                                           1e1b

         should be                                                      1e1b1

            MOVSI 7,-BGPTSZ                                             1e1c

      BUGSR4:MOVSI 5,-BGPTSZ(7)                                         1e1d


                                                                        1e1e
      BUGD1-1 is  MOVSI 7,-1000  should be  MOVSI 7,-BGPTSZ            1e1f

      line 64 is  MOVSI 7,-1000  should be  MOVSI 7,-BGPTSZ            1e1g

      line 69 is  MOVSI 7,-5000  should be  MOVSI 7,-BGSTSZ            1e1h

PARAMS:                                                                 1f

   add and make the following changes:                                  1f1

      NBUGS==240                                                        1f1a

      BGSSIZ==1400                                                      1f1b

      BGPTSZ==<3*NBUGS+777>/1000*1000                                   1f1c

      BGSTSZ==<3*BGSSIZ+777>/1000*1000                                  1f1d


                                                                        1f1e
      MONBGP==7000                                                      1f1f

      SWPBGP==MONBGP+NBUGS                                              1f1g

      MONBGS==MONBGP+BGPTSZ                                             1f1h

      SWPBGS==MONBGS+BGSSIZ                                             1f1i
```

KEV 18-JAN-72 17:39 8555

parameterizing bug chks and hlts

(J8555) 18-JAN-72 17:39; Title: Author(s): Kenneth E. Victor/KEV;
Distribution: Dan L. Murphy, Don C. Wallace/DLM DCW; Sub-Collections:
SRI-ARC; Clerk: KEV;
Origin: <VICTOR>BUG-PARAMETERS.DLM;2, 12-JAN-72 20:35 KEV ;

Kenneth E. Victor
Augmentation Research Center
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Menlo Park, California 94025

To:
Access Copy

8556

128 bugs

The following bugs exist in version 126: 1

SWPMON: 1a

LOKSM2-1 is ADDI 10,4 should be ADDI 10,NSECPG 1a1

KEV 18-JAN-72 17:51 8556

128 bugs

(J8556) 18-JAN-72 17:51; Title: Author(s): Kenneth E. Victor/KEV; Distribution: Bob Van Tyul, Jeanne B. North, Robert L. Dendy, John T. Melvin, Kenneth E. Victor, John W. McConnell, Peggy M. Karp, Dan L. Murphy, Rod M. Fredrickson, Peter H. Lipman, Don C. Wallace, Carl M. Ellison, Ted R. Strollo/TUG; Sub-Collections: SRI-ARC TUG; Clerk: KEV; Origin: <VICTOR>TENEX-BUGS.TUG;2, 18-JAN-72 17:49 KEV ;

KEV 18-JAN-72 17:58 8557

tab bug ???

dan,
i mentioned what we thought was tha tab bug to p.lipman and he pointed oout that what is being checked is the ccoc words and not the file mode word. however, i havent seen anyplace where the file mode word is checked to see whether or not the device has real tabs???

1

KEV 18-JAN-72 17:58 8557

tab bug ???

(J8557) 18-JAN-72 17:58; Title: Author(s): Kenneth E. Victor/KEV;
Distribution: Dan L. Murphy/DLM; Sub-Collections: SRI-ARC; Clerk: KEV;

symbol checking, etc.

SYMBOL VALUE CHECKER 1

The file <SRI-DLM>SYMCHK.MAC is a file that is assembled with POSTLD 1a

basically it replaces the checking that was done by DDT when creating a new monitor 1a1

it will type out the values of some relevant symbols and check for most boundary overflows 1a2

if it finds an overflow it will tell how to fix it 1a2a

to implement it will be necessary to change it as needed for each system 1a3

also some moving around of some symbols IS necessary 1a3a

ALRMAX must be moved from PROLOG to PARAMS 1a3a1

also the appropriate symbols must be declared INTERNS 1a3b

VERSION NUMBERS 2

The files <SRI-DLM>VERNUM.MAC and <SRI-DLM>ZNMFIL.MAC are used to maintain a record of which versions of files were used to create a monitor 2a

both files are assembled wist POSTLD and ZNMFIL must also be assembled with SWPMON 2a1

SWPASS is a flag we use to distinguish the MON and SWPMON assemblies 2a1a

KEV 18-JAN-72 18:08 8558

symbol checking, etc.

(J8558) 18-JAN-72 18:08; Title: Author(s): Kenneth E. Victor/KEV;
Distribution: Dan L. Murphy/DLM; sub-Collections: SRI-ARC; Clerk: KEV;
Origin: <VICTOR>VER-SYM.DLM;1, 12-JAN-72 20:55 KEV ;

AAM 19-JAN-72 6:53 8559

TEST MESSAGE TO ALL OF BBN-NET

THIS IS A TEST MESSAGE TO JBN, AAM, EW, JBL, JBM, BPC
AT THE TIME THE MESSAGE WAS BEING TYPED, ALL OF THE ABOVE
INDIVIDUALS WERE SUPPOSED TO BE SET UP FOR ONLINE DELIVERY
(ACCORDING TO "EID" FOLLOWED BY "S" COMMANDS). 1

AAM 19-JAN-72 6:53 8559

TEST MESSAGE TO ALL OF BBN-NET

(J8559) 19-JAN-72 6:53; Title: Author(s): Alex A. McKenzie/AAM; Distribution: Jeanne B. North, Alex A. McKenzie, Ellen Westheimer, Joel B. Levin, Julie B. Moore, Bernie P. Cosell/JBN AAM EW JBL JBM BPC; Sub-Collections: NIC; Clerk: AAM;

JBN 19-JAN-72 8:01 8560

AAM's Online Message Experiment

Alex: Your message received in my initial file. Let me know your other results. Jeanne 1

JBN 19-JAN-72 8:01 8560

AAM's Online Message Experiment

(J8560) 19-JAN-72 8:01; Title: Author(s): Jeanne B. North/JBN; Distribution: Alex A. McKenzie, Ellen Westheimer, Joel B. Levin/AAM EW JBL; Sub-Collections: SRI-ARC; Clerk: JBN;