

considering your fellow workers and long journal items

Until either Output Journal or the printer spoolers get smarter, (or until users get more considerate) I propose the following with respect to long journal items,

1

Rather than journalizing a very long file, journalize the long file and obtain a number but dont distribute it to anyone,

1a

Then jouranlize a short message giving the number of the long file,

1b

considering your fellow workers and long journal items

(J26979) 20-NOV-75 09:14;;; Title: Author(s): Kenneth E. (Ken)
Victor/KEV; Distribution: /SRI-ARC([ACTION]) ; Sub-Collections:
SRI-ARC; Clerk: KEV;

26979 distribution

N. Dean Meyer, James E. (Jim) White, Douglas C. Engelbart, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, James C. Norton, Jeffrey C. Peters, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor, Richard W. Watson, Don I. Andrews, Sandra Lee Miranda, Bonny Penny Mosher, Israel A. Torres, Jan H. Kremers, Susan K. Ocken, Raphael Rom, David C. Smith, Buddie J. Pine, Andy Poggio, David L. Retz, Laura J. Metzger, Karolyn J. Martin, Jan A. Cornish, Larry L. Garlick, Priscilla A. Wold, Pamela K. Allen, Delorse M. Brooks, Beverly Boli, Rita Hysmith, Log Augmentation, Raymond R. Panko, Susan Gail Roetter, Robert Louis Belleville, Ann Weinberg, Adrian C. McGinnis, Robert S. Ratner, David S. Maynard, Robert N. Lieberman, James H. Bair, Jeanne M. Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Marcia L. Keeney, Elizabeth K. Michael, Jonathan B. Postel, Elizabeth J. Feinler, Kirk E. Kelley

I like your reports

I like the format of your Course Reports. Having regular categories -- Persons, Course, Assistance, Application, Issues -- greatly simplifies reading them and makes them more enjoyable and useful. I found myself, for example, skimming most of the categories and concentrating on ISSUES. In other words, I was extracting the ISSUES entry from each report. Your nice format permitted me to do this very easily. This is the kind of flexibility I would like to get into our online documents. Thanks. -- Dave

1

I like your reports

(J26980) 20-NOV-75 13:09;;; Title: Author(s): David C. Smith/DAV;
Distribution: /PKA([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk:
DAV;

26980 distribution
Pamela K. Allen,

Schedule for visit by Dr. Barry Boehm of TRW: Tuesday, 25 November,
10 AM -- 4 PM

Dr. Barry Boehm of TRW will be visiting ARC on Tuesday, 25 November, from 10 AM to 4 PM. He is interested in the possible use of NLS and its tools in a system development environment. As Dick will not be around next week, I have arranged the following (tentative) schedule. Since Dr. Boehm is one of the leading contributors to the fields of Software Engineering and Structured Programming, we will ask him to give a brief seminar at about 2 PM to which you are all invited. Comments on the schedule are invited and changes are possible.

Schedule for visit of Dr. Barry Boehm, TRW	2
10 AM: Arrival, introduction by Doug to HGL, RLB2, KEV, and JBP,	2a
10 AM -- 12:30 PM: Demonstrations and discussion of ARC programming environment	2b
HGL -- General presentation of NLS (45 minutes - 1 hour)	2b1
Emphasis on use in programming	2b1a
ARC programming environment and languages	2b1b
L10	2b1b1
CML	2b1b2
Tree Meta	2b1b3
Structured code files	2b1c
Code development and checkout	2b1d
Sysgd	2b1e
NLS as a documentation tool	2b1f
Documentation in the Journal	2b1f1
Debugger	2b1f1a
Middle end documentation	2b1f1b
Output Processor, COM	2b1f2
Use of NLS for other languages	2b1g
KEV -- Debugger and architecture (30 - 45 minutes)	2b2

Schedule for visit by Dr. Barry Boehm of TRW: Tuesday, 25 November,
10 AM -- 4 PM

Debugger	2b2a
Basic discussion FE/BE split,	2b2b
BE/OSI split	2b2c
RLB2 -- Graphics and hardware (30 - 45 minutes)	2b3
Graphics	2b3a
Hardware developments	2b3b
Line processor work station	2b3c
(JBP -- available for discussion of NSW)	2b4
12:30 -- 1:30 PM: Lunch (Dr. Boehm + associate, DCE, HGL, KEV, RLB2, JBP, Jack Goldberg (?))	2c
1:30 -- 2 PM: Dr. Boehm discussion with Jack Goldberg	2d
2 -- 3 PM: Seminar by Dr. Boehm in conference room	2e
3 -- 4 PM: Dr. Boehm discussion with Doug	2f
4 PM: Departure	2g

Schedule for visit by Dr. Barry Boehm of TRW: Tuesday, 25 November,
10 AM -- 4 PM

(J26981) 20-NOV-75 13:48;;; Title: Author(s): Harvey G.
Lehtman/HGL; Distribution: /DCE([ACTION]) RLB2([ACTION]) KEV([ACTION]) JBP([ACTION]) SRI-ARC([INFO-ONLY]) NPG([INFO-ONLY]
Please note the seminar scheduled for the afternoon) ; Sub-Collections:
SRI-ARC NPG; Clerk: HGL; Origin: < LEHTMAN, VISIT.NLS;1, >
19-NOV-75 14:41 HGL ;;;;###;

26981 Distribution

Don I. Andrews, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, Marcia L. Keeney, Elizabeth K. Michael, Jonathan B. Postel, Elizabeth J. Feinler, Kirk E. Kelley, N. Dean Meyer, James E. (Jim) White, Douglas C. Engelbart, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, James C. Norton, Jeffrey C. Peters, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor, Richard W. Watson, Don I. Andrews, Susan K. Ocken, Raphael Rom, Jan H. Kremers, David C. Smith, Andy Poggio, David L. Retz, Jan A. Cornish, Larry L. Garlick, Robert Louis Belleville, Elizabeth J. Feinler, Joseph L. Ehardt, Jonathan B. Postel, Kirk E. Kelley, Carolyn J. Martin, David S. Maynard, Kenneth E. (Ken) Victor, James E. (Jim) White, Elizabeth K. Michael Douglas C. Engelbart, Robert Louis Belleville, Kenneth E. (Ken) Victor, Jonathan B. Postel, Sandra Lee Miranda, Bonny Penny Mosher, Israel A. Torres, Jan H. Kremers, Susan K. Ocken, Raphael Rom, David C. Smith, Buddie J. Pine, Andy Poggio, David L. Retz, Laura J. Metzger, Carolyn J. Martin, Jan A. Cornish, Larry L. Garlick, Priscilla A. Wold, Pamela K. Allen, Delorse M. Brooks, Beverly Boli, Rita Hysmith, Log Augmentation, Raymond R. Panko, Susan Gail Roetter, Robert Louis Belleville, Ann Weinberg, Adrian C. McGinnis, Robert S. Ratner, David S. Maynard, Robert N. Lieberman, James H. Bair, Jeanne M. Leavitt, Rodney A. Bondurant, Jeanne M. Beck

My next step with regard to RETRIEVE

After thinking about it for a week, I think the RETRIEVE subsystem does have enough value to "noodle". While it does not pretend to be a general data-base mangement system, I feel that it does represent an important capability.

1

In terms of a longer range solution to data-mangement with NLS, I think that "sets" hold the greatest promise. Since their implementation is a long way down the road, RETRIEVE or something within an "order of mangitude" of it's capabilities is desireable.

2

So taking what I feel is an "Applications" point of view, what I propose to do is to implement as much as possible of what Norton and I have discussed in conjunction with <cornish,retrievethots,> based on the existing RETRIEVE code as much as is possible.

3

My notes are at ISIC

4

<cornish,retrievethots,>

4a

<cornish,rules,>

4b

<cornish,sets,>

4c

My next step with regard to RETRIEVE

(J26982) 20-NOV-75 14:17;;; Title: Author(s): Jan A. Cornish/JAC3;
Distribution: /JCN([ACTION]) RWW([ACTION]) DCE([ACTION])
DAV([INFO-ONLY]) HGL([INFO-ONLY]) KEV([INFO-ONLY]) DSM([INFO-ONLY]) GAS2([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk:
JAC3;

26982 Distribution

James C. Norton, Richard W. Watson, Douglas C. Engelbart, David C. Smith, Harvey G. Lehtman, Kenneth E. (Ken) Victor, David S. Maynard, Glenn A. Sherwood,

Output Journal, Output Processor and Printing Large files

See (26957,) and (26972,).

Output Journal, Output Processor and Printing Large Files

The Output Journal command should check the size of documents (by checking the number of pages in the file) and only print those files smaller than some arbitrary, but reasonable, limit. If a file is not printed, its citation should be printed with the notation "File not printed: size too large" or some other appropriate message. Of course, the user may print it out individually at some other time.

1

Note that this is a problem with the "Output Journal" command and not with the "Output Processor" as suggested by DAV in (26957,). However, perhaps changes could be made to the output processor to follow a directive or part of the command to optionally put out a certain number of pages. Since changing the Output Processor is more difficult than changing the Output Journal command, I recommend the latter solution.

1a

The suggestion by ROM in (26972,) also warrants investigation. Perhaps a special extension could be put on the files placed in the ARCPINTER directories which would tell the PRINTER spooler to only attempt to print the file between certain hours and/or after files with other extensions have been printed. This would require modification of the NLS Output commands and of the printer spooler. Alternatively, the printer spooler could check the page size and avoid printing files larger than a certain size between certain hours. (But how would this be overridden in the case of large files which must be printed to meet some deadlines? There probably would have to be some new interface into the spooler, an idea which is not particularly safe for a system utility program.)

2

Output Journal, Output Processor and Printing Large files

(J26983) 20-NOV-75 14:31;;; Title: Author(s): Harvey G.
Lehtman/HGL; Distribution: /FEEDBACK([ACTION]) SRI-ARC([INFO-ONLY
]) ; Sub-Collections: SRI-ARC FEEDBACK; Clerk: HGL;

26983 Distribution

Kirk E. Kelley, N. Dean Meyer, James E. (Jim) White, Douglas C. Engelbart, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, James C. Norton, Jeffrey C. Peters, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor, Richard W. Watson, Don I. Andrews, Special Jhb Feedback, Sandra Lee Miranda, Bonny Penny Mosher, Israel A. Torres, Jan H. Kremers, Susan K. Ocken, Raphael Rom, David C. Smith, Buddie J. Pine, Andy Poggio, David L. Retz, Laura J. Metzger, Karolyn J. Martin, Jan A. Cornish, Larry L. Garlick, Priscilla A. Wold, Pamela K. Allen, Delorse M. Brooks, Beverly Boli, Rita Hysmith, Log Augmentation, Raymond R. Panko, Susan Gail Roetter, Robert Louis Belleville, Ann Weinberg, Adrian C. McGinnis, Robert S. Ratner, David S. Maynard, Robert N. Lieberman, James H. Bair, Jeanne M. Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Marcia L. Keeney, Elizabeth K. Michael, Jonathan B. Postel, Elizabeth J. Feinler

Printing Very Long Journal Items & a Suggestion

cf. <DAV--26957,> <ROM--26972,> <KEV--26979,> <HGL--26983,>

Printing Very Long Journal Items & a Suggestion

It is agreed that the Output Journal (quickprint) command is dangerous: you can tie up the printer with long documents and with already-read mail and with UNWANTED mail. Maybe if the journal citation could include the page length of the item (as DVN suggested sometime back), then printing with the Output Journal & Print Journal commands could be controlled. But long documents are not the only useless ones. As for right now, a suggested method:

1

Since the Print Branch and Output Quickprint commands, when applied to the journal branch, do indirectly control the printing of your mail by length (when under 2000 characters the message comes with the branch, otherwise only citation). I usually go up to a TI--if I can find one--(response is better in TNLS, and you don't have to wait for it anyway), go into TNLS, Print Branch A:journal V:m, then come back 10 or so minutes later and tear the paper.

2

Starting from the bottom, I use the statement numbers to move or delete branches of old mail, uninteresting mail (cuts it down a lot right there), and long documents.

3

Of course, I depend on senders of items to warn me of long documents (proposals & reports, feedback dialog, documentation, etc.--all of which are necessary to journalize) in the Comments field. Possibly we need to agree on a standard range of pages, above which senders should include the number in the comment.

3a

Thus I leave in the branch those items I really want to see printed. Then Output Journal or Print Journal.

4

I prefer that the printing of long documents NOT be limited with these commands, because I use them for other applications besides my mail. One can construct a branch of citations to any set of files/documents, subsumed under a (journal) statement, and then print the whole collection (see ETS Applications Description--33201,). I wouldn't like to have a long document fail to be printed in this case.

5

Printing Very Long Journal Items & a Suggestion

(J26985) 20-NOV-75 17:44;;; Title: Author(s): Jeanne M. Beck/JMB;
Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC;
Clerk: JMB;

26985 Distribution

N. Dean Meyer, James E. (Jim) White, Douglas C. Engelbart, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, James C. Norton, Jeffrey C. Peters, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor, Richard W. Watson, Don I. Andrews, Sandra Lee Miranda, Bonny Penny Mosher, Israel A. Torres, Jan H. Kremers, Susan K. Ocken, Raphael Rom, David C. Smith, Buddie J. Pine, Andy Poggio, David L. Retz, Laura J. Metzger, Karolyn J. Martin, Jan A. Cornish, Larry L. Garlick, Priscilla A. Wold, Pamela K. Allen, Delorse M. Brooks, Beverly Boli, Rita Hysmith, Log Augmentation, Raymond R. Panko, Susan Gail Roetter, Robert Louis Belleville, Ann Weinberg, Adrian C. McGinnis, Robert S. Ratner, David S. Maynard, Robert N. Lieberman, James H. Bair, Jeanne M. Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Marcia L. Keeney, Elizabeth K. Michael, Jonathan B. Postel, Elizabeth J. Feinler, Kirk E. Kelley

DPS Mailing List

Jim-

I would be interested in being added to the DPS mailing list,
SRI-ARC is fine as the address.

THANKS

DPS Mailing List

(J26986) 20-NOV-75 19:30;;; Title: Author(s): Andy Poggio/ANDY;
Distribution: /JEW([ACTION]) ; Sub-Collections: SRI-ARC; Clerk:
ANDY;

26986 Distribution
James E. (Jim) White,

Grumble grumble

Nowhere in my Author Copy of messages I SENDMAIL'ed does it say who I sent them to. Neither does the header of messages I receive tell me WHY I received them -- e.g. what group am I in that I should be so favored as to receive the message, or am I the only one who received it? Both would be very useful to me, particularly the second, since it would give me an indication of the classification of the message. (Specific groups are probably of more interest to me than merely SRI=ARC.) Sandy, you might classify this as a "design recommendation" or you might just throw it in the waste basket.

1

Grumble grumble

(J26987) 20-NOV-75 21:03;;; Title: Author(s): David C. Smith/DAV;
Distribution: /FEEDBACK([ACTION]) ; Sub-Collections: SRI-ARC
FEEDBACK; Clerk: DAV;

26987 Distribution
Special Jhb Feedback,

NLS STRING TOO LONG in Modify Sustritute Command

Running at BBNB in NLS 8 I have recently gotten that error message. The files have been short...3 to 6 pages, Although they have had several large statements each. The the command always give that answer and I was not able to make my subsitution.

1

NLS STRING TOO LONG in Modify Sustainute Command

(J26988) 20-NOV-75 20:41;;; Title: Author(s): Dirk H. Van
Nouhuys/DVN; Distribution: /FEEDBACK([ACTION]) KIRK([INFO-ONLY])
; Sub-Collections: SRI-ARC FEEDBACK; Clerk: DVN;

26988 Distribution
Special Jhb Feedback, Kirk E. Kelley,

Upgrading process commands - or providing a powerful user programming language

I have written a user program that can be loaded to modify the way process commands work. This program is a hack and I will not support it. I wrote it to demonstrate the feasibility of providing a powerful process commands facility for NLS. I think what is needed is approximately 1-4 man weeks of design and 1-8 man weeks of implementation time to provide a truly nice, and powerful facility. (Some suggestions appear later.)

To use this hack load the program [ISIC]<VICTOR>AUXSTARTUP.PROC-REP for use in NLS 8.5 or the program [BBNB]<VICTOR>AUXSTARTUP.PROC-REP for use in NLS 8.

When writing your process commands code, if 2 percent signs appear, not separated by any characters (i.e. %) it means interpret the immediate next character as a meta command. If the meta command is not one of the following 3 implemented commands, then the 2 percent signs (%%) will act as if you hadn't loaded the special program. The implemented commands are:

% - (place %% in your text)

this means accept user input. the next character the user enters will be interpreted as a delimiter character. All user input after that, up to, but not including the next occurrence of the delimiter character will be fed to NLS command interpreter.

<CA> - (place %%<CA> in your text)

same as above except the delimiter is automatically set to <CA>, and thus all user input (including the first character) up to, but not including the next <CA> will be fed to the NLS command interpreter.

_ - (place %%_ in your text)

this implements a very primitive looping facility. when this command is encountered the process commands will loop to the start of the statement in which the command appears. note that there is no way of getting out of the loop without typing a ^O.

Some suggestions

I see the following as being a bare minimum of capabilities needed for a powerful facility:

ability to get user input

upgrading process commands - or providing a powerful user programming language

one or more meta variables that can be set to true or false 3a2
 a meta IF meta-variable THEN ... statement 3a3
 a meta GOTO sid command 3a4

A full blown system might be based on the following (I feel that what we should do is to design a complete system and then implement a subset initially rather than continuing to implement hacks...): 3b

All NLS commands should have a value of true or false; for example a move command is true if it succeeds, false otherwise; jump down is true if there was a down, false otherwise; jump content is true if content found, false otherwise; etc. 3b1

This value should be available when writing process commands meta commands. 3b1a

Meta variables that can be set to integer or boolean values (including the above boolean). These variables can then be tested by other meta commands for flow control. 3b2

The ability to specify get user input might have the following flavors: 3b3

%%ADDRESS - get an address from the user, either typein or bugged 3b3a

%%TEXT - get text from user, either typein or bugged 3b3b

%%DELIM - get delimited input from user, i.e. something similar to %% in my hack 3b3c

%%CHAR - get input from user up to CA (or some other special character) 3b3d

%%nCHAR - get n characters from user, most frequent case probably being 1 3b3e

Implement a block structured flow control meta language, Minimum needed commands: 3b4

STOP PROCESS COMMANDS 3b4a

LOOP, EXIT LOOP, and REPEAT LOOP 3b4b

IF ... THEN ... ELSE ... 3b4c

upgrading process commands - or providing a powerful user programming language

subroutine facility - i.e. make it possible for one set of process commands to process another set of process commands

3b4d

etc.

3b4e

upgrading process commands - or providing a powerful user programming language

(J26989) 21-NOV-75 08:17;;; Title: Author(s): Kenneth E. (Ken) Victor/KEV; Distribution: /SRI-ARC([ACTION]); Sub-Collections: SRI-ARC; Clerk: KEV;

26989 Distribution

N. Dean Meyer, James E. (Jim) White, Douglas C. Engelbart, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, James C. Norton, Jeffrey C. Peters, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor, Richard W. Watson, Don I. Andrews, Sandra Lee Miranda, Bonny Penny Mosher, Israel A. Torres, Jan H. Kremers, Susan K. Ocken, Raphael Rom, David C. Smith, Buddie J. Pine, Andy Poggio, David L. Retz, Laura J. Metzger, Karolyn J. Martin, Jan A. Cornish, Larry L. Garlick, Priscilla A. Wold, Pamela K. Allen, Delorse M. Brooks, Beverly Boli, Rita Hysmith, Log Augmentation, Raymond R. Panko, Susan Gail Roetter, Robert Louis Belleville, Ann Weinberg, Adrian C. McGinnis, Robert S. Ratner, David S. Maynard, Robert N. Lieberman, James H. Bair, Jeanne M. Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Marcia L. Keeney, Elizabeth K. Michael, Jonathan B. Postel, Elizabeth J. Feinler, Kirk E. Kelley

watson messages

(work) temporary work space

1

19-NOV-75 16:45:00-EST,694;000000000000
 Mail from BBN-TENEXB rcvd at 19-NOV-75 1644-EST
 Date: 19 NOV 1975 1642-EST
 Sender: WATSON at BBN-TENEXB
 Subject: Protocol Meeting in December
 From: WATSON at BBN-TENEXB
 To: ANDREWS
 Cc: POSTEL, JWHITE, VICTOR
 Message-ID: <[BBN-TENEXB]19-NOV-75 16:42:37-EST,WATSON>

1a

Don, it looks like there is going to be a protocol meeting in early Dec to decide on the inter host version of msg. You are supposed to get invited to represent the FE needs and other ARC needs such as those of the debugger. You should probably get together with Jim Ken and Jon and be sure we have a clear position. If we have not heard from MCA by around Dec 1 we should probably check on the date etc. Dick -----
 20-NOV-75 11:19:24-EST,847;000000000000
 Date: 20 NOV 1975 1119-EST
 From: VICTOR
 Subject: response to dicks message about protocol meeting
 To: postel, jwhite, andrews

1b

i have been planning for some time now on attending this meeting. (I have made some tentative personal plans based on this assumption.) I believe one of the reasons the meeting is being held is because of my pushing for for such a meeting. I would like to see the following people from arc attend such a meeting: Don or Andy to represent the FE
 Larry or Dave to represent the NLS backend
 and myself to represent the debugger.
 For personal reasons i would like to see the meeting held between Dec. 5 and Dec 15.
 Dick and Jon can you get back to me ASAP so i can arrange my personal life and if i am to attend so that i can call MCA and request a convenient date for the meeting. thanx, -----
 20-NOV-75 12:54:16-EST,509;000000000000
 Date: 20 NOV 1975 1254-EST
 From: ANDREWS
 Subject: Inter-host MSG protocol meeting
 To: watson, postel, white, victor, garlick, poggio
 cc: andrews

1c

The current MSG is such a hack and caused us so much grief, I think we should take ALL our guns to the meeting> Seems to me Jon should be there too.
 (... IN FACT, if enough of us attend, perhaps we can push for a

watson messages

west coast meeting [sorry Ken]),
 With respect to the CLI/11, we are ready to start testing
 inter-host stuff now!

--Don

20-NOV-75 17:07:56-EST,146;000000000000

Date: 20 NOV 1975 1707-EST

From: POSTEL

Subject: mtg in dec on protocol

To: watson

cc: postel

1d

i think ken should go,

--jon,

21-NOV-75 10:23:16-EST,523;000000000000

Mail from BBN-TENEXB rcvd at 21-NOV-75 1023-EST

Date: 21 NOV 1975 1013-EST

Sender: WATSON at BBN-TENEXB

Subject: Meeting in Dec on Protocols

From: WATSON at BBN-TENEXB

To: POSTEL

Cc: WATSON

Message-ID: <[BBN-TENEXB]21-NOV-75 10:13:56-EST,WATSON>

1e

Before deciding whether to try and get Ken invited to meeting i
 would want to understand better what the issues are and why Don
 could not represent them also, Carlson seemed fairly strongly
 against more than one ARC or person from other sites going. Dick

1f

21-NOV-75 10:33:55-EST,1302;000000000000

Mail from BBN-TENEXB rcvd at 21-NOV-75 1033-EST

Date: 21 NOV 1975 1026-EST

Sender: WATSON at BBN-TENEXB

Subject: Protocol Meeting

From: WATSON at BBN-TENEXB

To: POSTEL, ANDREWS, VICTOR, POGGIO, JWWHITE, GARLICK

Cc: WATSON

Message-ID: <[BBN-TENEXB]21-NOV-75 10:26:43-EST,WATSON>

1g

The idea of the protocol meeting in the MCA sstyle is to keep it
 small, one person representing MIT, UCLA, SRI, MCA, BBN. We
 represent an embarrassment to them as deep down they recognize I
 believe that they really improperly handled this. Psychologically
 people have a hard time with people they have been dishonorable
 to, I would very much like several people to go my choice being
 Jim, Ken and Don. I would think it particularly important for Ken
 and Don. It appears you are telling me that the NLS Backend work

watson messages

is also having problems of a serious nature with MSG which I did not know before and maybe there should be someone representing them also. I would like to have a meeting this morning at 11:00 to understand the issues better and decide what to do. Don phone your views to Jon to represent you or Andy. I want to come away from the meeting with an outline of the issues we want brought up at the meeting and understand why 1 or at most 2 people cannot represent us adequately. Thanks Dick

1h

watson messages

(J26990) 21-NOV-75 11:04;;; Title: Author(s): Jonathan B.
Postel/JBP; Distribution: /JBP([INFO-ONLY]) LLG([INFO-ONLY])
ANDY([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: JBP;

26990 Distribution

Jonathan B. Postel, Larry L. Garlick, Andy Poggio,

Preface

1

This document is intended to be ultimately expanded into a User's Guide to the Debugger. In the mean time, it is primarily a command summary with some explanation of needed concepts in an attempt to provide enough information so that people can use the debugger.

1a

Syntax Conventions Used In This Document

2

With the exception of the formal definition of an address list (which uses a modified BNF), the following syntactical conventions are adhered to in the command summaries:

2a

Command words appear as first letter of the word being upper case and the rest of the word in lower case.

Noise words appear as lower case words enclosed in parentheses.

Alternative paths through a rule or command appear as statements at the same level in a plex.

The end of a command or rule is indicated by a colon (:).

An upper case word preceded by an atsign (@) is a reference to a rule described elsewhere.

An upper case word preceded by an uparrow (^) is a reference to a selection entity. Selection entity types (text, character, etc.) are listed in a separate branch.

An uppercase word preceded by an asterick (*) refers to that character currently serving the generic function (discussed below) specified.

An uppercase word not preceded by an atsign or uparrow is a builtin CLI construct (e.g. OK).

Angle brackets (<>) are used to inclose single character keystrokes (e.g. <LINEFEED> refers to hitting the linefeed key on a terminal).

Concepts

3

Entering the Debugger

3a

The following discussion is relevant to the current release of the debugger and will most likely change in the future.

To use the debugger, the first command you give to the NSW EXEC must be the Arm Debugger (^L) command. Thereafter, you may do whatever you like. When you are ready to do some debugging enter a control-L (<^L>).

Control-L is a deferred pseudo-interrupt (PSI), which means that you won't actually enter the debugger until the control-L is read. If you wish to enter the debugger immediately, type 2 control-Ls without any intervening typein.

(Current restrictions do not enable the typing of a control-L while the FE is in a MSG WAIT-RECEIVE state. This translates into only being able to type ^L while you are talking to the frontend, i.e. are in command specification mode.)

The first time you enter the debugger, the debugger will ask you for the MSG fork number of the PSI fork.

To find this out, type control-K, then type an 's. Then search through the resulting display to find out the fork number of the fork with the name PSI. Then type an 'r. Then type the number you found followed by an OK.

The debugger will then ask you which tool you wish to debug.

The specification of which tool to debug is just a back door into the Debug command, so you may look it up below. However, due to current limitations of MSG, the first time you specify a tool for debugging, the debugger will ask you for the MSG fork number of the tool. This number is found by using the same procedure discussed above, namely: type control-K, type 's, find out the fork number, type 'r, enter the found number.

To continue execution of what was happening before you entered the debugger use the Continue command. If you wish to get back to the debugger later, you may enter the debugger either by typing a control-L (one or two, but remember caveat mentioned above) or by taking a breakpoint.

Tools, Processes, Languages, Etc.

3b

The debugger is designed to be a multi-tool, multi-process, multi-machine, multi-high level language debugger. What this glorious statement means is:

The debugger is able to debug more than one tool at a time, and in fact, able to debug tool interactions.

(If you don't know what a tool is, you are in trouble, but see other NSW documentation for a definition.)

Any tool is allowed to contain any internal process structure it desires, and the debugger is able to debug more than one process.

(Process is being used in the conventional computer science meaning of the word.)

Some tools may be capable of running on more than one machine, or different tools may run on different machines. The debugger is capable of coping with this situation.

And lastly, the debugger is capable of accepting from, and presenting to, the user data structures in a format that resembles the (hopefully) high level language in which the tool was coded.

To cope with this multitude of entities, the debugger uses the concept of an Internal Debugger Handle (IDH). An IDH is a unique (per debugging session) positive integer. Each process that the debugger knows about is assigned an IDH. A user may always refer to a process by its IDH, and, in some commands, if the process is the top process for a tool, the user may also refer to it by the tool's username (see NSW documentation).

A process is assigned an IDH when the debugger first learns of the process. When the debugger is first pointed at a tool, it will determine the process structure for that tool and assign an IDH for each process. Thereafter, the debugger will monitor the tool's execution, and will assign new IDHs to newly created processes at the time they are created.

When the debugger is first pointed at a tool, the user will be asked which language the debugger should use for interpreting data structures. Sub-processes will have the same language as

the top process in the tool, but the language being used may be changed by the user via the High (level language) Use command.

The debugger is not capable of debugging a tool that is split on more than one machine. This means that the debugger is capable of debugging a tool on one machine for one instance of the tool, and on a different machine for a separate instance of the tool, but for any one instance, the entire tool must exist on one, and only one, machine.

At any instance, the debugger can be pointed at one, and only one, process. This process will be referred to as the current or active target process. This does not mean that the debugger can not know about more than one process, nor that the debugger is not capable of varying the current target process over time. It just means that at any instance, all commands are referring to the current process (with the obvious exception of the debug command to point at another process). During a debugging session, when a breakpoint is encountered, the process containing the breakpoint will automatically be made the current target process, regardless of which process was current previously.

Character Sets and Generic Functions

3c

Since the debugger is designed to support a number of different languages, and since most languages do not use the same character sets as valid characters in identifiers, etc., it is not possible for the debugger to always use the same character to mean the same thing in a command. For example, a semi-colon character may be a valid character in an identifier in some languages, and it cannot therefore be used to separate address ranges (discussed below, but for now they are composed of expressions which may contain identifiers) in an address list. Therefore the debugger has adopted the concept of a generic function and a generic function character (GFC). A GFC is that character which is currently serving a specific generic function.

For documentation and communication purposes, it is convenient to have a generic name to refer to the character that is currently serving a specific generic function. Thus, while the specific character may change, it can still be referred to by its generic name. The generic name for a character is the uppercase word of the generic function symbolic name preceded by an asterick, e.g. the generic name for the GFC that is currently serving the generic function of an address list delimiter (semicolonchar) is *SEMICOLONCHAR.

The current values of each GFC can be determined by using the Character (set) Display command.

The symbolic names and the meaning of these generic functions are as follows (the debugger default character, in the absence of user or Language Module modification, for a generic function will appear under the meaning column delimited by a left angle bracket (<) and a right angle bracket followed by a semicolon (>);):

generic function	
symbolic name	meaning of character i
-----	-----
pluschar	<+>; the user is using this character as the arithmetic addition operator
minuschar	<->; the user is using this character as the arithmetic subtraction operator

timeschar <*>; the user is using this character as the arithmetic multiplication operator

dividechar <'>; the user is using this character as the arithmetic division operator

lparenchar <(>; the user is using this character as the arithmetic left grouping character

rparenchar <)>; the user is using this character as the arithmetic right grouping character

blockchar <&>; the user is using this character as a block delimiter; e.g. the string:
string1&string2
should be interpreted as symbol string2
in block string1 if & is the current

BLOCKCHAR

fieldchar <,>; the user is using this character to delimit the fields of a record

escapechar <ALTMODE or ESCAPE>; the user is using this character to mean interpret the next character
as a debugger builtin variable; e.g.,
ESCAPECHAR followed by a 'Q (or 'q) refers to the builtin debugger variable which has the value of the last displayed cell

commachar <,>; the user is using this character as an address range delimiter to separate the two elements of an address range; under normal circumstances, a LM will never see the COMMACHAR in user input strings

semicolonchar <,>; the user is using this character to
separate address ranges within address lists

larrowchar <_>; the user is using this character as the debugger assignment character

tabchar <tab>; the user is using this character to mean display the cell addressed by the most recently displayed cell

poundchar <#>; the user is using this character to mean back up to the previous displayed cell

lfchar <LINEFEED>; the user is using this character to mean display the next sequential cell

uparrowchar <^>; the user is using this character to mean display the previous sequential cell

bslashchar <\>; the user is using this character to mean display an address list in string mode

equalchar <=>; the user is using this character to mean display the value of the input address list

exclamchar <!>; the user is using this character to mean display cells as ascii values

lsquarechar <[>; the user is using this character to mean display an address list numerically

qmarkchar <?>; the user is using this character to mean tell where symbols in an address list are defined

rsquarechar <]>; the user is using this character to mean display an address list as records

slashchar </>; the user is using this character to mean display an address list symbolically

User Input and Debugger Output

3d

All communication with the debugger is governed by the values of 4 records: the permanent and current input mode records, and the permanent and current output mode records. At the beginning of most commands (exceptions discussed below) the permanent input and output mode records are copied to the current input and output mode records, and thereafter the command is governed by the value of these current records.

For example, all numbers entered by the user will be interpreted as being numbers in the base specified by the current input mode radix, and all numbers displayed to the user will be formatted to conform to the current output mode radix.

(The only exception for these specific examples is that when specifying or viewing these radices, the radix will always be interpreted as being decimal numbers.)

The values of the permanent input and output mode records can be displayed and viewed via the Typeout (mode) and Input (mode) commands.

Several commands provide for modifying the current input and/or output mode records for a specific instance of a command. These ephemeral values are then lost at the start of the next command (see exceptions discussed below).

The exceptions mentioned above refer to the commands that consist of a single GFC, e.g. the assign command as entered by *LARROWCHAR. These commands will use the current values of the input and output mode commands at their beginning, i.e. the values of these records that were in effect for the previous command.

Address Lists

3e

Discussion

An address list is the basic manner in which a user refers to elements in the current target process. Basically, an address list is composed of one or more address ranges; and an address range consists of one or two address range elements (AREs).

(The character that terminates an address list, while it may modify the functional use of the address list, is not a part of the address list itself.)

Address List Terminators

The user may terminate an address list with a number of different characters, depending on which command is being specified. The terminating character is NOT a part of the address list. The following are the generic characters, with their meaning, that may be used to terminate various address lists:

generic character terminator -----	meaning -----
*LARROWCHAR	after each line of the address list is displayed, the user wishes to assign a new value to the just displayed entity
*BSLASHCHAR	the user wishes to see the address list displayed in string mode
*EQUALCHAR	the user wishes to have the value of the input address list displayed to him
*EXCMARKCHAR list	the user wishes to see the address list displayed in ascii mode
*LSQUARECHAR list	the user wishes to see the address list displayed in numeric mode
*GMARKCHAR	the user wishes to find out where the symbols in the entered address list are defined
*RSQUARECHAR list	the user wishes to see the address list displayed in record mode
*SLASHCHAR	the user wishes to see the address list displayed in symbolic mode

Formal Definition

ADRLIST := ADDRANGE [*SEMICOLONCHAR ADRLIST] / NULL
ADDRANGE := RANGE / BUILTIN / RECORDSPEC
BUILTIN := FRAME / PARAM / SIGNAL / CATCH / MEM / PLIST
PLIST := *ESCAPECHAR ('Z / 'z)
MEM := *ESCAPECHAR ('M / 'm)
CATCH := *ESCAPECHAR ('C / 'c)
SIGNAL := *ESCAPECHAR ('S / 's)
PARAM := *ESCAPECHAR ('P / 'p)
FRAME := FSPEC [*COMMACHAR FSPEC]
FSPEC := FF / FR / FO / FT / FB
FF := *ESCAPECHAR ('F / 'f)
FR := *ESCAPECHAR ('F / 'f) ('+ / '-') [NUMBER]
FO := *ESCAPECHAR ('F / 'f) ('O / 'o)
FT := *ESCAPECHAR ('F / 'f) ('T / 't)
FB := *ESCAPECHAR ('F / 'f) ('B / 'b)
RECORDSPEC := EXPRESSION *FIELDCHAR EXPRESSION
RANGE := EXPRESSION [*COMMACHAR EXPRESSION]
EXPRESSION :=
 an expression following the syntactical rules of the
 current language module, usually composed of sums of
 terms, in which terms are composed of IDENTs
IDENT := BLCKIDNT / SMPLIDNT / NUMBER / BLTNTRM
BLCKIDNT := SMPLIDNT *BLOCKCHAR SMPLIDNT
SMPLIDNT :=
 a string composed of valid identifier characters for the
 current language
BLTNTRM := BL / BQ / BA
BL := *ESCAPECHAR ('L / 'l)
BQ := *ESCAPECHAR ('Q / 'q)
BA := *ESCAPECHAR ('A / 'a)
NUMBER := a string of digits in the current input mode radix

Semantics

ADRLIST := ADDRANGE [*SEMICOLONCHAR ADRLIST] / NULL

the NULL address list is equivalent to entering the last input address list

PLIST := *ESCAPECHAR ('Z / 'z)

used as a shorthand notation to be equivalent to the previously typed in address list

MEM := *ESCAPECHAR ('M / 'm)

used to show the utilization of the address space of the target process

CATCH := *ESCAPECHAR ('C / 'c)

used to show the catchphrases for the current frame.

SIGNAL := *ESCAPECHAR ('S / 's)

used to show the signal status of the process.

PARAM := *ESCAPECHAR ('P / 'p)

used to show the formal parameters of the current frame

FF := *ESCAPECHAR ('F / 'f)

FF refers to the current frame, the current frame is the most recently displayed frame or the frame on the top of the stack after the debugger is entered

FO := *ESCAPECHAR ('F / 'f) ('O / 'o)

used to show the owner frame of the current frame; the owner of a procedure is its caller; the owner of a coroutine is the routine that did the openport to the coroutine.

FT := *ESCAPECHAR ('F / 'f) ('T / 't)

used to show the top frame on the stack

FB := *ESCAPECHAR ('F / 'f) ('B / 'b)

used to show the bottom frame on the stack

FR := *ESCAPECHAR ('F / 'f) ('+ / '-) [NUMBER]

if NUMBER is not specified it defaults to 1; no spaces may precede NUMBER; NUMBER specifies the number of frames to move relative to the current frame; e.g. if 's is the current *ESCAPECHAR, and 'f, is the current *COMMACHAR, the FRAME: "sft, sf=2" would display the frame on the top of the stack, and the next two frames towards the bottom of the stack in the control thread.

RECORDSPEC := EXPRESSION *FIELDCHAR EXPRESSION

RECORDSPEC is used to represent a field (specified by the second EXPRESSION) of the record instance at the address specified by the first EXPRESSION; e.g. if period is the current *FIELDCHAR, then the RECORDSPEC: "rec.fld" refers to field "fld" of the record instance at address "rcd".

BLCKIDNT := SMPLIDNT *BLOCKCHAR SMPLIDNT

BLCKIDNT is used to refer to the (local) symbol (specified by the second SMPLIDNT) in the block (or file) specified by the first SMPLIDNT; e.g. if '& is the current *BLOCKCHAR, then the BLCKIDNT: "f1&sflev" would refer to the symbol "sflev" in file "f1".

BL := *ESCAPECHAR ('L / 'l)

this entity has the value of the most recently completely evaluated EXPRESSION

BQ := *ESCAPECHAR ('Q / 'q)

this entity has the value of the most recently displayed cell

BA := *ESCAPECHAR ('A / 'a)

this entity has the value of the address of the most recently displayed cell

Assigning To Address Lists

Many commands allow the user to assign to an address list as it is being displayed. The specifying of new values to be assigned is handled by the @NVLRUL discussed below.

Command Summary	4
Debug Command	4a

Overview

The debug command is used to point the debugger at a target process.

Syntax

Debug (tool) @TOOLSPEC OK;

Debug (tool) @TOOLSPEC (using language) OK;

Debug (tool) @TOOLSPEC (using language) @USELANG OK;

TOOLSPEC Rule

worksmanager:

Frontend:

@ACTIVETOOLS:

*IDH:

OPTION @TOOLS:

USELANG Rule

@ULANG:

@HLANG:

ACTIVETOOLS Rule

the FE maintained rule of the usernames for the tools the user is currently using

TOOLS Rule

the FE maintained rule of allowable tools for this user

Status Command

4b

Overview

The Status commands display the status of the debugger to the user.

Syntax

Status OK:

Status Verbose OK:

This command provides more information about each tool being debugged than the default Status command.

Status For (tool) OK:

This command provides verbose information about the current tool.

Status For (tool) ^IDH OK:

This command provides verbose information for the specified process.

Comment Command

4c

Overview

This command is used to allow comments to appear on a typescript, etc.

Syntax

Comment "CTEXT:

Character Command

4d

Overview

These commands are used either to display which characters are serving which generic functions, or to modify which character is to serve a specific generic function.

Syntax

Character (set definitions) Display OK:

This command is used to determine which characters are serving which generic functions. Non-standard definitions will appear first in the resulting display.

Character (set definitions) Use ^FCHARACTER (instead of) @CHARRULE OK:

This command is used to change which character will serve a specific generic function.

CHARRULE Rule

"+" (for addition):

"-" (for subtraction):

"*" (for multiplication):

"/" (for division):

"(" (for arithmetic grouping left delimiter):

")" (for arithmetic grouping right delimiter):

"&" (for symbol block delimiter):

"," (for record field delimiter):

"<ESCAPE>" (for builtin variable escape):

;" (for address list delimiter):

," (for address range delimiter):

"=" (for display value):

"/" (for display using permanent typeout mode):
"[" (for display numerically):
"\" (for display as a string):
"]" (for display as a record):
"!" (for display in ascii):
"?" (for tell where this symbol is defined):
"_" (for assignment):
"<LINEFEED>" (for move to next address):
"^" (for move to previous address):
"<TAB>" (for move to addressed address):
"#" (for move to previously displayed address):

Input Command

4e

Overview

This command is used to display or change the permanent input mode.

Syntax

Input (mode) Display OK:

Input (mode) @INPTYP OK:

Typeout Command

4f

Overview

This command is used to display or change the permanent output mode.

Syntax

Typeout (mode) Display OK:

Typeout (mode) @OUTTYP OK:

High Command

4g

Overview

This command is used to display or change which LM is being used to debug the current target process. This is useful if different parts of the address space of a process were written in different languages.

Syntax

High (level language to use) Display OK:

High (level language to use) Use @HLANG OK:

Symbol Command

4h

Overview

A process may have more than one symbol table. (For example, if different parts of the address space were compiled and loaded as distinct entities.) The symbol commands allow the user to tell the debugger of the location of the symbol tables. When the debugger, and the appropriate Language Module, is first pointed at a process, the LM will use the default location for finding the symbol table.

The debugger makes its own copy of the process' symbol table. Thus, if a process modifies its symbol table, it is necessary for the user to give a new Symbol command. (Ultimately this will be do-able programmatically.)

If a process contains more than one symbol table then the user can point the debugger to different tables by use of the symbol command and the debugger will copy the symbol table the first time it is pointed to a new location. However, if subsequently, a user points the debugger to a location previously used, the debugger will use its own copy of the symbol table from that location unless the user specifies that there is a new pointer at the location.

Syntax

Symbol (table) Display (status) OK:

This command will display which symbol tables the debugger knows about and will indicate which is the current symbol table and will provide an overview of the current table.

Symbol (table) Pointer (located at) ^SYMADR OK:

Symbol (table) Pointer (located at) ^SYMADR OPTION
(Undefined symbol table pointer located at) ^SYMADR OK:

These 2 commands will point the debugger to the symbol (and undefined symbol) table(s) at the specified location. If the debugger already has a copy of the symbol table at the specified location, it will not copy the process' table.

Symbol (table) Pointer (located at) OPTION (new pointer at)
^SYMADR OK:

Symbol (table) Pointer (located at) OPTION (new pointer at)
^SYMADR OPTION (undefined symbol table pointer located at)
^SYMADR OK:

These 2 commands will point the debugger to the symbol (and undefined symbol) table(s) at the specified location. This version of the command will force the debugger to make a copy of the specified symbol table(s) regardless of whether or not it already has a copy of the symbol table at the specified location. This is useful if a process has modified its symbol table, or if a process is performing its own swapping in its address space.

Breakpoint Command

41

Overview

The breakpoint command allows the user to specify that the debugger (conditionally) be entered just prior to the execution of an instruction at a specified address in a target process.

A breakpoint is said to be "hit" when the instruction at the address specified for the breakpoint is about to be executed. After a breakpoint is hit, it either "takes" and the debugger is entered, or it doesn't take and normal execution of the target process continues.

For each case, i.e. the breakpoint taking or not, the user may specify a string that will be fed to the debugger, as if the user typed it, when the breakpoint is hit.

The decision as to whether or not a breakpoint takes is based on the following algorithm:

If a user has specified a procedure to be called when a breakpoint is hit, this procedure is called and returns one of three values: take the breakpoint, don't take the breakpoint, or base the decision on the proceed mode and counter. If this procedure returns the third value, or if no procedure was specified, then the breakpoint will take if the proceed mode is normal or automatic or if the proceed mode is count and this breakpoint has been hit count times already without taking.

Every breakpoint that is set, i.e. for which an address has been specified, has the following attributes associated with it:

- a) its number, "BTNUMBER"

When a breakpoint is first set, the user can request a specific number, or let the debugger assign an unused number for the breakpoint.

The user uses this number when he or she wishes to modify or examine the status of the breakpoint.

- b) its address, "BTADDRESS"

This is the address at which the breakpoint is set,

Note that specifying an address for a breakpoint that is already set is equivalent to first clearing that breakpoint and then setting the address,

c) its name, "BRNAME

If and when a breakpoint takes, its name will be displayed. A name is simply a string (including the null string) used for information purposes only. If a user is debugging more than one process, he or she may choose to name the breakpoints set in each process with the appropriate process name. Names need not be unique.

d) its proceed mode

Every set breakpoint has one of three proceed modes:

Normal mode

Set either by default or by specify a proceed count of zero.

In this mode, the breakpoint will take each time the breakpoint is hit.

Automatic proceed mode

Set by specifying proceed automatically.

In this mode, the breakpoint will take each time the breakpoint is hit and then the breakpoint will be continued automatically, after processing its take command string if one exists.

Count mode

Set by specifying a non-zero proceed count.

In this mode, the breakpoint will not take until the breakpoint has been hit count plus one times. If a no take command string exists, then the count times this breakpoint is hit before it

takes, the no take command string will be executed.

- e) its call procedure, ^PNAME - NOT IMPLEMENTED YET
- f) its take command string

when a breakpoint takes, if this string is non-null it will be fed to the debugger as if the user entered it on his or her terminal prior to accepting input from the user or automatically continuing.

- g) and its no take command string

If a breakpoint doesn't take, and if this string is non-null it will be fed to the debugger as if the user entered it on his or her terminal when the breakpoint is hit and prior to continuing the breakpoint.

Syntax

Breakpoint Display (all) OK:

This command will display the status of all breakpoints that are currently set.

Breakpoint ^BTNUMBER Display OK:

This command will display the status of breakpoint ^BTNUMBER.

Breakpoint Clear (all) OK:

This command will clear all breakpoints, i.e. make them not set.

Breakpoint ^BTNUMBER Clear OK:

This command will clear breakpoint ^BTNUMBER.

Breakpoint Set (at) ^BTADDRESS @BOPT:

Breakpoint ^BTNUMBER Set (at) ^BTADDRESS @BOPT:

These two commands will set a breakpoint at the specified address, and will set any of the attributes specified. If ^BTNUMBER is not specified, then the debugger will

assign a number for this breakpoint. If `^BTNUMBER` is specified and it refers to a breakpoint that is already set, then that breakpoint will be cleared first, and then set at the new address with any attributes specified in this instance of the command.

Breakpoint `^BTNUMBER @BOPT1:`

This command allows the user to modify the attributes of breakpoint `^BTNUMBER`.

BOPT Rule

OK:

@BOPT1:

BOPT1 Rule

Call (procedure) `^PNAME @BOPT:`

NOT IMPLEMENTED YET.

This rule is used to specify the name of a procedure that will get called when a breakpoint is hit to determine whether or not to take the breakpoint.

Proceed Count (=) `^PNUMBER @BOPT:`

This rule is used to place a breakpoint in either normal proceed mode (if `^PNUMBER` is zero) or in count mode.

Proceed Automatically @BOPT:

This rule is used to place a breakpoint in the automatic proceed mode.

Name (for this breakpoint is) `^BRNAME @BOPT:`

This rule is used to specify the name for a breakpoint.

Break (commands are) `^BRKCMNDS @BOPT:`

This rule is used to specify the take command string that gets executed when a breakpoint takes.

No (break commands are) *BRKCMNDS @BOPT:

This rule is used to specify the no take command string that will get executed if a breakpoint is hit but doesn't take.

Continue Command

4j

Overview

The continue commands allow the user to continue the execution of the process(es) that were executing before entering the debugger (regardless of whether the debugger was entered via a (nested) EXEC DEBUG command or by the taking of a (nested) breakpoint), or to modify the address at which a process will have its execution resumed when execution is ultimately continued, and optionally to modify the speed with which execution will proceed.

Syntax

Continue OK:

This command will continue whatever was going on before the debugger was entered.

Continue OPTION (address for this process is) ^CNADDRESS OK:

This command will change the address at which the current target process will resume execution when it is ultimately continued.

Continue At ^CNADDRESS OK:

This command will change the resume address of the current target process and then continue what was going on before the debugger was entered.

Continue At ^CNADDRESS @CNSPEED OK:

This command will change the resume address of the current target process and then continue what was going on before the debugger was entered, at the specified execution speed.

Continue @CNSPEED OK:

This command will continue what was going on before the debugger was entered, but at the newly specified speed.

CNSPEED Rule NOT IMPLEMENTED YET

Normal (speed):

For (one) Language (instruction):

For (one) Machine (instruction):

Free Command

4k

Overview

Several debugger operations require the use of free cells in the address space of the target process (e.g. breakpoint continuing, executing an instruction on the behalf of the target process). This command allows the user to specify where the debugger should get the cells it requires.

Currently the debugger requires 4 cells to implement breakpoints. I expect that in the future when I implement instruction execution on the behalf of the target process, specifically procedure calls, the debugger will require as many as 2-3 dozen cells (depending on how many parameters are being passed);

The cells that the debugger is currently using can be determined via the Verbose form of the Status command.

Syntax

Free (core available at) ^FCADR OK;

Display Command

41

Overview

This is the basic command for displaying entities (cells, state information, etc.) in the target process.

Syntax

Display `^DADDRESSLIST:`

This command will display the specified address list in the mode specified by the `^DADDRESSLIST` terminator (and for certain values of this terminator will let the user modify the displayed address list).

`DADDRESSLIST` Selector

a `^DADDRESSLIST` is an `^ADDRESSLIST` that is terminated by either an `OK` or `@DTERM`

`DTERM` Rule

`OPTION (timeout mode) @OUTTYP OK:`

This terminator will cause the specified address list to be displayed in the output mode specified by `@OUTTYP`.

`OPTION (timeout mode) @OUTTYP OPTION (and assign to address list) OK:`

This terminator will cause the specified address list to be displayed in the output mode specified by `@OUTTYP`, and will allow the user to modify the displayed cells as they are being displayed.

*`SLASHCHAR`:

*`RSQUARECHAR`:

*`BSLASHCHAR`:

*`LSQUARECHAR`:

*`EXCMARKCHAR`:

*GMARKCHAR:

*EQUALCHAR:

*LARROWCHAR:

Find Command

4m

Overview

The find commands allow the user to display, and optionally assign to, those cells in an address list that meet certain content requirements. The user may specify a mask to select those bits in a cell that he or she is interested in checking against similar bits in the value that he or she has specified.

(In fact, each cell in the address list is logically ANDed with the mask and the result is then compared with the AND of the mask and the specified search value.)

The mask used in a reference search is one that will select the address field of a cell. The mask used for content and not content searches is the debugger default mask, unless the user specifies a mask for this instance of the command. The default debugger mask can be displayed and modified via the Mask command. It is initially set to select all bits in a cell.

A reference and a content search will display, and optionally allow the user to assign to, those cells in the address list for which the above mentioned compare was equal. A not content search will display, and optionally assign to, those cells that compare unequally.

All displayed cells will be displayed in the current output mode unless the user specified ^FADDRESSLIST terminator modifies the display.

The user may optionally specify an input mode that will be used to evaluate the specified search value, ^FVALUE.

Syntax

Find References (to) @FSPEC (in address list) ^FADDRESSLIST:

This command will display, in the output mode specified by ^FADDRESSLIST terminator, (and, if this terminator dictates it, assign to) those cells in the specified address list whose address field is equal to the specified ^FVALUE.

Find Content @FSPEC (masked by) @MSPEC (in address list)
^FADDRESSLIST:

This command will display, in the output mode specified by ^FADDRESSLIST terminator, (and, if this terminator dictates it, assign to) those cells in the specified address list whose selected bits, as specified by @MSPEC, are equal to the corresponding bits in the specified ^FVALUE.

Find Not (content) @FSPEC (masked by) @MSPEC (in address list)
^FADDRESSLIST:

This command will display, in the output mode specified by ^FADDRESSLIST terminator, (and, if this terminator dictates it, assign to) those cells in the specified address list whose selected bits, as specified by @MSPEC, are not equal to the corresponding bits in the specified ^FVALUE.

FSPEC Rule

^FVALUE:

the search value

OPTION (input mode) @INPTYP (value) ^FVALUE:

This rule allows the user to specify a current input mode that will be used to evaluate ^FVALUE and ^MVALUE

MSPEC Rule

OK:

Use the default debugger mask

^MVALUE:

The mask to be used for this instance of the find command.

FADDRESSLIST Selector

a ^FADDRESSLIST is an ^ADDRESSLIST that is terminated either with an OK or @FTERM

FTERM Rule

*SLASHCHAR:

*RSQUARECHAR:

*EXCMARKCHAR:

OPTION @OUTTYP OK:

OPTION @OUTTYP OPTION (and assign to address list) OK:

Mask Command

4n

Overview

This command allows the user to examine or to modify the default debugger mask, which is used by the Find and Memory commands.

Syntax

Mask Display OK:

Mask Set (to) ^MVALUE OK:

Mask Set (to) OPTION (input mode) @INPTYP (mask value)
^MVALUE OK:

Memory Command

40

Overview

The memory commands allow the user to set (selected bits) in all cells in the specified address list to the specified value.

If the user does not specify to use a mask, then all bits in the pertinent cells will be affected. If the user specifies to use a mask, then he or she may use either the default debugger mask, or may specify a mask for this instance of the command.

If a mask is used then only those bits selected by the mask will be set, and they will be set to the corresponding bits in the specified `^MNVALUE`.

Syntax

Memory (set to) @MNSPEC (in address list) ^ADDRESSLIST:

This command will set the selected bits in the cells in the specified address list to the corresponding bits in the specified `^MNVALUE`.

MNSPEC Rule

`^MNVALUE:`

the value to set the selected bits to

OPTION (input mode) @INPTYP (value) ^MVALUE:

this path allows the user to specify a current input mode that will be used to evaluate `^MNVALUE`, and `^MVALUE` (if one is specified)

ADDRESSLIST Selector

a `^ADDRESSLIST` is an `^ADDRESSLIST` is terminated by either an OK or @MTERM

MTERM Rule

OPTION (masked by) OK:

this path indicates to use the default debugger mask
to select bits in the address list for modification

OPTION (masked by) *MVALUE OK:

this path allows the user to specify a mask to use to
select bits in the address list to be modified

Output Command

4p

Overview

The output commands give the user the capability to multiplex output to his or her terminal and/or to a sequential text file. If output is currently going only to a file, the user will not have the ability to modify cells in an address list unless the Type command is used. If output is going only to a terminal, the user can force output to a file by use of the Print command. When the user first specifies a file, output will be sent to both the file and the terminal. When specifying a file, the user can either specify a new file, or an old file to which the output should be appended.

(Current version of the debugger uses local TENEX files for the output file, but ultimately this will be a WM file.)

Syntax

Output (printing) Display:

Output (printing) Append (to file) ^OLDFILELINK OK:

Output (printing) To (file) ^NEWFILELINK OK:

Output (printing) Off OK:

Output (printing) Both (to file and terminal) OK:

Output (printing) Soley (to) File (and not to terminal) OK:

Output (printing) Soley (to) Terminal (and not to file) OK:

Print Command

4q

Overview

This command is used to display the specified address list on the specified file. If there is already a specified output file, then this is the one that will be used, and the user will not be asked to specify a file.

(Note that when using this command, it is not possible to modify the cells as they are being displayed since they will be displayed on an output file and not on the user's terminal. Useful for core dumps, among other uses.)

Syntax

Print ^ADDRESSLIST:

This command will display the specified address list on the current output file in the mode specified by ^ADDRESSLIST terminator.

Print (on file) ^NEWFILELINK ^ADDRESSLIST:

This command will display the specified address list on the specified output file in the mode specified by ^ADDRESSLIST terminator.

PADDRESSLIST Selector

a ^ADDRESSLIST is an ^ADDRESSLIST terminated by either an OK or @PTERM

PTERM Rule

OPTION (typeout mode) @OUTTYP OK:

*SLASHCHAR:

*RSQUARECHAR:

*BSLASHCHAR:

*LSQUARECHAR:

*EXCMARKCHAR:

*QMARKCHAR:

*EGUALCHAR:

Type Command

4r

Overview

This command is used to display the specified address list (in the specified mode) on the user's terminal regardless of his output file settings.

Syntax

Type ^DADDRESSLIST:

(See the Display command.)

Value Command

4s

Overview

This command is equivalent to:

Display ^ADDRESSLIST *EQUALCHAR:

Syntax

Value (of) ^VADDRESSLIST:

VADDRESSLIST SELECTOR

a ^VADDRESSLIST is an ^ADDRESSLIST terminated by either
an OK or @VTERM

VTERM Rule

*EQUALCHAR:

*BSLASHCHAR Command

4t

Overview

This command is equivalent to:

Display *ESCAPECHAR Z *BSLASHCHAR:

Syntax

*BSLASHCHAR:

*EQUALCHAR Command

4u

Overview

This command is equivalent to:

Display *ESCAPECHAR Z *EQUALCHAR:

Syntax

*EQUALCHAR:

*EXCMARKCHAR Command

4v

Overview

This command is equivalent to:

Display *ESCAPECHAR Z *EXCMARKCHAR:

Syntax

*EXCMARKCHAR:

*LSQUARECHAR Command

4w

Overview

This command is equivalent to:

Display *ESCAPECHAR Z *LSQUARECHAR:

Syntax

*LSQUARECHAR:

*RSQUARECHAR Command

4x

Overview

This command is equivalent to:

Display *ESCAPECHAR Z *RSQUARECHAR:

Syntax

*RSQUARECHAR:

*QMARKCHAR Command

4y

Overview

This command is equivalent to:

Display *ESCAPECHAR Z *QMARKCHAR:

Syntax

*QMARKCHAR:

*SLASHCHAR Command

42

Overview

This command is equivalent to:

Display *ESCAPECHAR Z *SLASHCHAR:

Syntax

*SLASHCHAR:

*LARROWCHAR Command

4a@

Overview

This command is equivalent to:

Display *ESCAPECHAR Z *LARROWCHAR:

Syntax

*LARROWCHAR:

*UPARROWCHAR Command

4aa

Overview

This command is equivalent to:

Display *ESCAPECHAR A - 1:

Syntax

*UPARROWCHAR:

*LFCHAR Command

4ab

Overview

This command is equivalent to:

Display *ESCAPECHAR A + 1:

Syntax

*LFCHAR:

*TABCHAR Command

4ac

Overview

This command is equivalent to:

Display *ESCAPECHAR Q:

Syntax

*TABCHAR:

*POUNDCHAR Command

4ad

Overview

This command is the inverse for the last Tab, Linefeed, Uparrow, or Pound command.

Syntax

*POUNDCHAR:

Common Rules

4ae

ULANG Rule

Machine (language):
Assembly (language):
High (level language):

HLANG Rule

Cobol:
Fortran:
L10:
L11:
P11:

BASE Rule

Decimal:
Octal:
Hex:
Binary:

INPTYP Rule

Ascii:
Bytes (with bytesize of) ^BSVALUE:
Floating (point numbers):
Language (should be) @ULANG:
Rad50:
Radix ^RXVALUE:
Radix @BASE:

Sixbit:

Symbolic:

OUTTYP Rule

Addresses (as) Absolute (values):

Addresses (as) Symbolic (values):

Array:

Ascii:

Bytes (with bytesize of) ^BSVALUE:

Floating (point numbers):

Language (should be) @ULANG:

List:

Numeric:

Rad50:

Radix ^RXVALUE:

Radix @BASE:

Records (of name) ^RNAME:

Sixbit:

String:

Symbolic:

NVLRUL Rule

CD:

abort the display of, and assignment to, this address
list

OK:

accept the displayed value of this entity

^NVALUE OK:

replace the value of the displayed entity with ^NVALUE, which will be interpreted according to the current input mode

OPTION (input mode) @INPTYP (new value) ^NVALUE OK:

replace the value of the displayed entity with ^NVALUE, which will be interpreted according to the specified input mode

@MOVRUL:

^NVALUE @MOVRUL:

OPTION (input mode) @INPTYP (new value) ^NVALUE @MOVRUL:

the above 3 paths allow the user to terminate the (optionally) newly specified value (for the displayed entity) with the @MOVRUL paths. When the display of, and assignment to, the specified address list is finished, the last specified @MOVRUL path will take effect as if the user had given the GFC command corresponding the the @MOVRUL path

MOVRUL Rule

*TABCHAR:

*POUNDCHAR:

*LFCHAR:

*UPARROWCHAR:

Selectors

4af

In the following discussion an expression is really a text selector that conforms to the rules for expression generation for the current language being used by the debugger.

ADDRESSLIST Selector

text that conforms to the formal definition of an address list (see above)

BRKCMNDS Selector

any text

BRNAME Selector

any text

BSVALUE Selector

a number in the current input mode radix

BTADDRESS Selector

an expression that evaluates to an address

BTNUMBER Selector

a number in the current input mode radix

CNADDRESS Selector

an expression that evaluates to an address

CTEXT Selector

any text

FCADR Selector

a number in the current input mode radix

FCHARACTER Selector

a single no-alphanumeric character

FVALUE Selector

an expression

IDH Selector

a number in the current input mode radix

MNVALUE Selector

an expression

MVALUE Selector

an expression

NEWFILELINK Selector

an new file name string

NVALUE Selector

any text

OLDFILELINK Selector

an old (pre-existing) file name string

PNAME Selector

an expression that evaluates to an address

PNUMBER Selector

a number in the current input mode radix

RNAME Selector

an expression that evaluates to the address of a record descriptor

RXVALUE Selector

a base ten number

SYMADR Selector

a number in the current input mode radix

(J26992) 21-NOV-75 09:44;;; Title: Author(s): Kenneth E. (Ken)
Victor/KEV; Distribution: /KEV([ACTION]) ; Sub-Collections:
SRI-ARC; Clerk: KEV; Origin: < NSW-DEBUGGER,
!DOC/COMMANDS,NLS;1, >, 21-NOV-75 09:15 KEV ;;;; #####

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Monday Morning

RMS2 - Welcome to Boston: maps, lunch, room layout, terminal layout; how to print files - how to format for xeroxing

FGB - Only concrete suggestions about changing the agenda are to cut short the introductory remarks, do some of Tuesday's stuff on Monday and Wednesday and also Tuesday etc.

DCE - agreed

RMS2 - site presentation earlier

General agreement

CKM - Let's wait until Ron Uhlig gets here tomorrow before we discuss some stuff.

ESV - He would want us to wait

SMT - I won't be here Tuesday or Wednesday.

DAP - Let's cancel Monday and have Tuesday both days.

FGB - We can do some both days - any objection to site reports today?

CKM - Yes - we have heard them before

DCE - I would like to hear them now

JCN - just quick descriptions with more later?

FGB - yes, more later

SMT - RLL kept notes last time - I would like to see more of this.

Discussion on whether to have site reports - some want them today, others don't

RMS2 - 2 minute summary of each site

FGB - Follow agenda for awhile and see how it goes

RMS2 - Accidentally sent file describing what was going on - Use NLS as record information system to keep track of milestones in hardware-software system around the world in 10 locations (seismometer) - use Datacomputer at CCA. When data is finally generated at sites there will be a data base describing how to access data, processing techniques, to cut down on time spent finding data. There are users on east coast and universities on westcoast - They will be making files, making text files and then naive users can print- if knows NLS can get scenario on how to use them - just small aspect of lab

ESV - You provide instructions?

RMS2 - Yes just print branch and setting viewspecs - use process

branch that does setting of prompts etc. and gives a paragraph to tell how to do some things (print branch etc.) - This is not a finished product yet.

JCN - any test users?

RMS2 - No but should by the first of next year - problem is getting data from sites not NLS. We hope to have it together by spring.

We will have a report to be presented at a meeting of seismologists We will turn the system over to group that will maintain it

JCN - any manuals or descriptions on how to access it?

RMS2 - Yes, some and also have to deal with universities that don't have access to the ARPANET

LAC - Using for documentation efforts - 1000,000 pages of documentation - 80% change/year - 3 automatic typewriters and the rest electric - 66-1 maintenance manual done in conjunction with Pentagon. Every couple of weeks representatives of major commands and the design center redo a volume using NLS and output through a formatting system and through Proof system. Then through George Lithograph published through hardcopy - other is Directorate of Programs and Resources (PR) is doing a couple of manuals - lead directorate for place - put NLS into production environment - have a management data base STALOG - simple and small project milestones, schedule office of primary responsibility - used to manage 66-1 - maintain 24 hr a day 360 day field assistance branch - putting difficulty reports into NLS hopefully will distribute reports with NLS around the center forgetting answers - other little things

JCN - Are you working against a 2 year plan?

LAC - By 1 1/2 yrs. we hope to have all 100,000 data base into NLS and publish all via COM with Fiche output to eliminate mailing costs - Air Force in labor intensive - pen and ink things done

DAP - What kinds of things are you doing about assessing effectiveness?

LAC - Problem is people don't know how much secretaries cost them - especially since easy to get bodies - no feel for cost effect of bodies and would like any inputs on data others have

JCN - Do you have complete retypes of each volume?

LAC - Right. It is all done on manual typewriters. Microfilm has to be very high quality - entire page retyped for one or two words - obvious that that's expensive but not clear how to compare

DLS - Will you get a COBOL programmer to do source code in NLS?

LAC - Yes, we will be getting someone. The problem is that people react in extremes - either it won't work or they are wildly enthusiastic. We are trying to get cautious enthusiasm to avoid disasters.

ESV - Will you continue to do document preparation centrally or disperse it?

LAC - We will continue centrally. 135 air force groups get object code and documentation (system and user) sent on block release cycle monthly -

ESV - Access on line?

LAC - between me and you would like to see this eventually, but not yet. Will pass out document- site survey - describes NSW - software factory - release doc and source code by Autodin II - but several years away

SMT - lots of luck with A II

LAC - having trouble getting documentation on A ii

CKM - any trouble getting to use NLS without justifying it as a word processing center?

LAC - getting around it using NSW

CKM - I don't see how it how that can be justified just for doc production

LAC - I think it can be justified because of graphics and bulk - nice thing about online system is that it will handle large docs

CKM - No flexibility is there but difficult to justify

LAC - It is part of NSW so no need to justify separately - justify based on integration with rest of program

CKM - I was forgetting NSW

LAC other advantage is ability to communicate with Pentagon which they have to do

LAC - can't justify for less than 50 pages

JCN - people were pulled in from all over who reworked chapters redone by typists daily - speed of turn around was good with online system - no one has been able to even in a vague way estimate before after costs - tired of saying I don't know

DAP - Will be beginning a study of WP and looking at what is done at ETS looking at tools available - trying to match tools with activities - will be stabbing at getting answers - has pushed it and now is getting nervous

LAC - I don't like NLS for doing initial entry. I would like to see DEX work

RMS2 - I don't believe you need DEX. If they have TI with recorder can prepare documents up to 183,000 (?) characters - simple editing allowed put transmission rate at 10 ch per second go to sndmsg and transmit the message send to yourself and suck into

NLS with message program with CR LF between each line that can be deleted

LAC - This is not a valid alternative

LAC - It will hang elf job if goes fast

RMS2 can't transmit directly because 30 cps is too fast

DCE how is copying a file different than a message?

RMS2 no difference so long as you do 10 cps

LAC - too much chance for trouble. There should be some way for remote host to say when to transmit data

FGB - want to explore more later

CKM - time for coffee break

RLR - introduced himself - has incrementally funded project which isn't funded currently - Have a project with 2 phases - substantive activity looking at projections of country futures storage retrieval developed by substantive part of project for the purpose of record keeping and distributed access to interested parties and other DOD policy sites using TNLS and DNLS via leased line to Rutgers tip. We finally got clean line now that money is gone. Files are not large but are hierarchal so country profile can be read and expanded via an outline. Give users instant briefing and ability to browse rather than minimal use of the system. We have used linking and message sending. havn't used output processor. we have ideas on what we would like to do but will have to wait for money

JCN graphics will be useful

RLR - projections on Cartesian coordinates - map that has Iran with outlines alphanumeric<^N>#d.)JCN that's what coming

RLR - paced by funding not technology - trying to find common ground between Hudson and ARPA

RMS2 - lab is DOD contractor - don't have money to support coffee etc. would like to charge registration of a dollar or two to cover incidentals

FGB - what kind of donuts?

RMS2 - We just have coffee today. We would have liked to have luncheon at faculty club, but conditions were too stringent. We will get one together maybe at legal Seafoods

FGB - We work at NSRDC with 10 other labs hooking mainframes to ARPANET, using a Very Distant Host (VDH)to connect PDP-11. We're doing Host Frontend Protocal - NCP in mini

Jack Gillikin from NSA introduced who is doing same thing

FGB - Have taken NSA documentation and will use it relatively untouched have distributed community They'd like to see cooperation by using NLS through communicating - not much further along than 6 months ago - getting hardware for sites - located in Washington, San Diego, China Lake, New London, Panama City - want to get into the study of NLS and attempt to justify it - thought it was great when ETS was starting up the experiment - I would like to talk about documentation production later.

SMT - At the BRL use text editor for scientific users - problem is getting them started and running process on other network hosts to pull info in for writing a report - 2 are writing reports now jointly - don't see each other for weeks so find it effective - Efforts to get new computer system have been successful will relieve pressure from SMT to work on other things (NLS) - intend to put it on the network - have been involved in setting up the AMC community - are starting to involve members of the AMC Scientific and Computer Council for dialogue and messages and hope to involve AMC Scientific and Computer Council Steering Committee in the same way - includes director of BRL - began using word processing a long time ago with paper tape - have evolved to Wang and IBM mag tapes - 17 Wangs and 6 IBMs got before there was an army regulation - experience for production tasks represent 50-100% more output from each secretary since they'd rather not spend personnel spaces for a secretary -

SMT - had a DNLS terminal for awhile but can't get lineprinter to work use ANTS but will convert to ELF momentarily - 10 people some unfaithful use NLS - 4-6 faithful - want to use for program management files

IMM - Business Planning Group of Bell Canada does research in future communication services. In this group we use the system for communicating among each other and other organizations, document preparation and production (COM). Most of the fellows take a portable terminal on trips to keep in touch; these terminals are also used at home. I use sndmsg a great deal; besides sending messages myself the group sends me copies of messages sent to feedback ref: problems or whatever. We plan to make an analysis of the kinds of messages sent and received within our group.

IMM - Our reports, memos, papers are all done on-line by the author or a secretary. We have three secretaries trained also who can run Output Processor jobs, one can do COM. Everything must be done on-line therefore COM will always be the final output. We have had problems but also a lot of success. "that's the way to go" - will leave COM till later. We had started to build a data base from abstracts but due to lack of programming knowledge of L10, this had been put aside for now. Penny Napke, our programmer has written a calendar subsystem which will be used for inputting travel plans and whereabouts etc of the group and also our executives. This will be used for planning meetings etc, and will eliminate a lot of phone calls - will be used on trial shortly.

DAP - sounds like a MIS

IMM - sort of - will go on trial next week. Will be interesting to see it.

IMM - working on evaluation of NLS - designing questionnaire to send are asking for volunteers - long about 2 hours - want attitudes of people using NLS -

JCN - how long a study?

IMM - they've been working 4 months and it will be about a year before finished

JCN - will you tell more later? Is it evaluating what you see or does it look at other alternatives?

IMM - might come out of questions - are asked what other things you've used - haven't really read it thoroughly - 15 users - presently at Bell Canada

FGB - Will you have pre and post questionnaires?

IMM - No, just one in two parts - for users and nonusers - mainly for user attitudes

DAP - is it online - will get ETS users to do if data is shared

IMM - Questionnaire being input online and will be shared with all of you. It is an evaluation of the system, mainly NLS and our justification of having used it. We have made an audiovisual presentation of NLS, also a slide presentation which is usually followed by a live demo. JCN saw it at the ATT Long Lines Executive meeting, it is a hard sell on NLS - shows Bell's use of it.

FGB - taking lineprocessors apart...

IMM - made for Bell management to take around for demos and just on NLS - Use DNLS a lot, secretaries don't use TNLS for editing unless they have to. We are trying to use all aspects of the system.

JCN - does DEX work for you?

IMM I don't know - Martin called last week and wondered if it was working but the secretary didn't type in right with CR LF's but will try it again - couldn't check before coming because of line problems -

RLR - most of secretaries want to use DNLS? - had DNLS terminals in other building - used TNLS for raw input

IMM - oh we do too - DNLS mostly for editing - not used for input because of bad keyboard -

Jack - Our development has been different as we are bringing

ARPANET inside. We have a NIC equivalent which at present consists of three data systems analysts and a secretary. Mill Jernigan is a consultant for the Agency. She thinks that NLS could solve many of our data handling problems. We have many information management systems and NLS is one of those. There are about 20 people who use NLS off and on and about 10 who know it well. It seemed to have limitations for doing the things we wanted to do so we have started to write L10 sloppily but recently got a person trained. We will probably use it for generating, editing, and accessing data bases such as the Computer Resources Notebook. We will have a limited NLS as the KA10 we will use is from another project and is not a full implementation. It is anticipated that it will handle 5 slots and will be oversubscribed. We are not sure who will get to use it when it comes up. It will be for experimental use only. The use of NLS as a front-end to DBMS's has possibilities but will only be the beginning of the solution, not the full solution.

Jack - now want 6 10's - Congress wants to know what they are doing on ARPANET - think it has great promise - have gone out with a contract with Logitron - problem of many languages is recognized and looking forward to frontend backend concept

ESV - AMC geographically dispersed - 13 separate sites represent 21 directories - 3 of which are organization directories - those are divisions within headquarters - main use is business communications - hopefully will extend further than MSG which is predominate use of system - knows it will - have a big need for authorized record as could be done with the journal - most users are quite new so haven't gotten much into NLS - doesn't know extent now - talking about business environment - have to tread lightly on word processing - organizationally belongs to another organization - talking about unstructured business dialogue - includes short document and anything where managers have to talk to their managers

JCN - hard to stay out of WP with long documents

ESV - hoping to use ignorance of users - have had meetings with others and they have said they would like to communicate with other WP units - would like to do bigger documents - regulations in NLS? - think they will win the battle

SMT - policy paper for steering was creating on NLS

ESV - lot of overlap between AMC and BRL - he is more interested in typing processors together - our big interest is how does the augmentation fit into a real live office environment

ESV - very similar situation as at Gunter as far as organization goes

DCE - want to join NSW?

Stan - no mechanism for doing that

CKM - do you have R & D funds

ESV - no strictly operational - each user has financially commitment - at moment still experimental project and was justified

ESV - we're not operatng that way

CKM - they will find you

DAP - may have to find out something else to call it

CKM - won't go over details talked before - implementing all R&D things funded - don't have data processing support - use systems on ARPANET - have used communications stuff for 2 yrs now - all offices try to get contractors on line for communication - message stuff done at ISI - Office1 is primarily used for NLS - started 1 1/2 yrs ago and now have fairly sophisticated usage - 4 DNLS terminals one in Director's office - being used mainly for reports and sending them to contractors - used for internal reports - have learned to put letterhead into terminals - have learned that people can't be left alone with NLS - have several applications that have been set up to help people step through projects eg. MRAO (memorandum for Request of Arpa Order) - has examples that can be looked at later - proven to be helpful has probably become cost effective - done same thing with Arpa Order and are using Terminette for that - recently the ARPA director reviews the budget - programs submit proposed budget and it gets slashed etc. - put office submissions online written by NDM - system queries for questions - went through usual changes - learned that they need L10 support when applications come up whole thing went 100% faster than without the program

CKM - Also used for long reports - 75 pg in directors office - not using CDM - getting more cnfidence in system - designing technical information system online - NLS may be used for some part - were no classified data - will use with Data Management System too

DAP - does it involve calculating?

CKM - we use calculator - wanted to see several different ways - couldn't handle real well - used sort command and calculator mainly in DNLS - had 3 workstations

RH - used xtable for typing in tables - program written by RLL - sorted by a particular table

DAP - had trouble with it in TNLS?

RH - no trouble in DNLS

JCN - did you make your deadlines?

CKM - yes but is was artificial and had people working overtime - one worked 5-6 nights to get it out

JCN - how would you have done it otherwise

CKM - typed it - people can't read it though because don't use NLS

RH - did get them all to look alike

CKM - kept telling them it wasn't a very good application - people have a funny idea about systems

Rita - data was in another system that text couldn't be added to

Bob - have reservation - time to quit

uf

Monday Afternoon

Glen - 12 users - built user subsystem which contains 6 commands -prompts for data entry and does formatting - designed to type in marketing contacts - was a manual system - gave Glen an introduction to L10 and CML. All our users are involved in marketing. We have completed the interface to the B6700. We take our files to the B6700, work on them there and then take them back. There is a dial out port on the 6700. We give the phone number to the 6700, go to TENEX, go to the NLS file and hit the B6700 intercept character and do a Print File. We use Candyeditor on the 6700 on our NLS files.

Frank - Are the other text editors in competition with NLS?

Glen - Glen has stayed out of that while writing the subsystem and helping users - developed a small MIS system on the 6700 and wants to combine both of them using Lulu - will use Lulu for small volume things - evolving to having a systematic approach to SRI's marketing - centralizing it and it's premature to say they have a good system but are trying to get together the essential ingredients - has users guide for system - Cimros (?) - should be getting direct access to office-1 for DNLS - hoping to get more direct access later

Frank - People have access to other text editors?

Glen - the May system is a separate system on the PDP 11 that is in competition - Candy on Burroughs is not competitive - but it is cheaper and faster and has a DMS system -- One of the weak points is the inability to batch jobs at office-1 - also there is no room for massive storage - no limitation on file size - will transfer files 1200 and someday 9600 baud - same interfacy will work CDC 6400 - we're opening up options

Potter - Is there such a thing as full-time architect? SRI says 50% of the time should be spent architecting - didn't know it was something to do for a living... thought it was nice of ETS to let me have a hobby

Duane - Have used NLS for 3 1/2 yrs. - been bottom up struggle - over the hump

Potter- You're sliding down the hill?

Duane - Hoping to spend less time in salesmanship - have 15 hard core users - on every day - another 12 who send messages - at last meeting had just set up PSO - felt NLS use wouldn't get far without place to take work to be typed and and if manager's had to learn rules of form for documents etc. - surprised to see HS students learn it fast - general trend away from TNLS, can't keep DNLS away from secretaries - immediate feedback good - thinks nice feeling from feedback - they like it even initial text entry- not sure DEX will be as acceptable to users

Doug- There is a difference between what people like to do and what is more effective.

Frank- How do they work?

Duane - engineer types generally get it online and secretary cleans it up - alot of documentation for procurement - alot of inhouse technical reports, tend to be formal - nothing through COM yet but we use Selectric typewriters to type finished draft - still putting formal 800 page Jovial manual - keep changing it before it gets finished - hired a guy from U. of Belfast and worked on manual from over there - arranged for it in a couple of days - just got 5 1/2 new LP's - generated a lot of interest around Rome - mgt now is solidly behind it - are thinking of putting in service machine - last couple of weeks Duane has been moved to networking group will give more visibility internally There are a couple of subsystems under development. One Duane wrote to learn about L10 and CML - was surprised how easy I was called formatter to result in their format sets up to be printed on 2741 - introduced it in a session and it's starting to be used - always faced with the interface with the outside world - NDM's been working on a subsystem to help with the mgt of \$ and manpower - AF planning for projects is done under one system of accounting

Duane - tech guys don't talk to project managers - need to know how much money is left - pretty much finished, expect to demonstrate next week, have heard of 3 other people this morning who would be interested in this - Burroughs systems are typically 6 weeks later - applications programs remain to be done - had a system before using process branches and content patterns but too baroque

Doug - Does the Colonel think a full time architect could be justified

Duane - probably smetime soon - but not yet - maybe in 6 mos to a year

Dave - Passed out texts in microfiche and an updated version of the NLS application description

Jeane - is it online?

Dave - it's in my directory - main difference is that sample items are by the Journal also oriented for internal purposes - I came to my 1st architect's meeting in Feb. - was only user then - now have

11 dirs - 5--6 active - forgot to count how many have been trained, 11-12 secondary users - now has 3 vice presidents putting money in it - getting no money from ARPA so is also a corporate client - yellow book is product of one group - ETS represents expertise in test and measurement - has collections of tests - publish info about what is in that collection - first pass at doing it through NLS

IMM - done through COM?

DAP - done on Anderson Jacobson, hadn't expertise in COM at that time and were under time pressures. - have sent a documentation through COM since this - This was done by others than myself - This represents the first move away from pure documentation prod - represents - 118 items typed in NLS - online searchable data base - each had subject area codes on the end - author subject and title are generated automatically using L10 programs and process branches and combinations - entire documentation can be proceeded with small person investment - are ready to start next pass - estimates 50% savings in time - We have one guy on leave in Virginia who is writing a paper from there which will be reviewed by ERIC We also had a person from Berkeley type in some stuff at SRI - beginnings of geographical dispersion - We have made tremendous strides forward but not reaching potential - Our regional offices could be greatly augmented

Frank- How did you get columns without COM?

Dave- Print with narrow pages, cut and paste, and then reduce. I used this same procedure for a data base on teacher behaviors. It is described in the white paper I handed out to you.

JCN - I don't see you on the system any more? How is it at BBNB

Dave - When it's up it's good - can log in more than 2 users at a time - advantage over Office-1 - can handle up to 3 people even at peak loads

Glen - do you have a display?

Dave - no, scared of displays - everyone will want one and can't be afforded - am trying to control growth - If ETS management agrees that it should be supported then we will push for DNLS - I just managed to scrounge money for next year but I am raising the level of awareness - The VP's are putting overhead and project money into system - I have hopes the study will show NLS extremely valuable. - Now I can give testimonials from satisfied users but not good enough - Management only sees the \$40,000 price tag. Many people still go outside of ETS and we do own our own computer, a 360.

CKM- How did your money arrangement change when you moved to BBN?

JCN - costs the same

DAP - has Fortran compiler that can be used and Basic

CKM - Will you directly contract through BBN or through SRI in Jan?

DAP - SRI , havn't been able to do anything different - would like to change cost structure - if all of today's users were using system then it will be overloaded - We will need to be able to expand without adding \$40,000 slots

Larry - It's easier the second time

Doug - what happened to the CBI community?

Dave and CKM - the main ARPA guy isn't aware of potentials - The ETS guy isn't convinced it's better

BREAK

I thought it would be important for Jim to get a chance to talk about Applications tomorrow.

DCE - want 10 mins to characterize what I would like to see come out of the meeting. There is Organization x, y, z etc. - our goal is to try to make work more effective in an AKW. Org X has one version of that - people who have stakes in it include users, people concerned with internal evolution: architect, managers, system builders; executive level mgt are charged with whole orgs objectives, they have to be concerned with the payoff.. Interface between org and outside world; Community of organizations; evolutionary support (another group); Org XX charged with R & D with a mandate to improve Org X - separate from operational org; community of R & R sponsors - lots of stakeholders -If it grows large enough, we will need a group in evolutionary support doing development coordination and one doing service coordination. Other contractors in evolutionary support will be available for support services. The community of R and D sponsors would give money. ARC does the evolutionary support, and to make it come about service is necessary. Eventually we will have a community take over alot of responsibility by developing interface between evolutionary support and organization.

JCN- What if the model does not work that way?

DCE - missed it; NSW - changes with contractors, changes in time schedules Larry Crain and Jim Norton can give details. The frontend is more efficient and will run at a lower cost - working on stand along front ends on minis- 2 NSF and Editorial ... want to support that - GE wants a doc prod system that sounds like it was specified for us, NSA is giving a study contract to study support of their efforts, Cmr Hollister from ARPA is pushing a C3 project - next year have s to reach through NLS to a DBMS - showed sample of encryption

Duane - what happened to open shared system

JCN - that's the default

Dave - has a lot of users that are concerned about test security

JCN - is this supposed to be a summary - news stuff

Frank - yes bring up topics

JCN - Since our last meeting lots has happened but organization of Applications is about the same - BJP is new and responsible for service of system; now 6 people in user services, rare that we're all together, App. Dev. has worked hard at doc; Strategy is to get large enough user community to cut the cost of computer service with more information exchange; working hard at increasing size of user community - too new to be at this meeting; made investment last spring to hire people has caused much trouble with spending energy justifying budget- lots of distractions; satisfying that it looks like it's working, wants help on how to deal with what are the ways the service can be priced during this next round, how can we price it to provide flexibility

DCE - breaking up the product

JCN - load conditions and uptime, how that situation is now; how the pie slice game works, what you get for the \$40K, how different jobs are treated; for big users - when should we get our own machine, and what kind; easy to be defensive but don't feel that way because seems to be working from our standpoint, want to know different feelings; last meeting no one available for L10 training - now 1 1/2 mos) got a dev guy to work full time doing applications and a person to do training; have to close on pricing algorithm within next 4 weeks and it's tight - also how do we provide service - BBNB becoming Office-2: DMA, Wright Patterson, IBM, ETS, and RADC. KI-10 is possibility - need to know level of support

Dave - can't tell how much support without hearing pricing structure

JCN - \$10 K goes to ARC and half of that goes to JCH, the other half to feedback and training, other 30K goes to Tymshare, 10K of that is people power so half of that is equipment - until the front-end back-end split takes place there will be no change in equipment costs - we have allowed more than one person per slot with pie slicer and have changed scheduler - am not sure whether it's better to have more users - if more computer power is being delivered, then the price is driven down - price is related to load - if smaller units are desirable would like to talk more about it

Dave Stan - how do you get one more directory

Dave - would like to buy half a slot for 3 weeks to take care of big projects.

DCE - what about risk of time unused

Dave - look at usage data and it should be fairly even

DCE - still risky

Dave - what does Bowne do so they don't have unused time?

JCN - Tymsharing companies charge 2-3 times what we do.

Dave - looks about even

LAC - not using slot more than 9 hrs a day - batching would help,
DEX

JCN - are working on that - should be 4-6 weeks conservatively

Dave - If ARC had good lineprinter and support for mailing -
difficult to get users to come in

DCE - time is involved in making up a file not copying to file

Dave - right

IMM - Heavy stuff only affects one slice?

Bud - works pretty well shouldn't bother people

Dave - doesn't understand BBNB scheduler - good only in morning

IMM - worked 2 mos. nights and weekends to get outputting and
coming - can't keep that going

JCN - You can do a comtest in a batch.

IMM - no maybe for printouts but not com test

BUD- One of the changes they are considering using is to start
using the left over time from the group.

Dave - doesn't understand why inefficient user is rewarded

Ron - should be able to set the priorities for your users

Dave - would be nice - am interested in training users in more
efficient use habits, architects should get best response time

LAC - would like to divy up time among users

Dave - what happened to get operator status for architects.

JCN - you didn't like 1 person/slot? We ahve spent alot of time
getting it together to be per slot - at some point we will talk
more about nls-9 - graphics; have graphics terminal and some new
people who built graphics system with proof subsystem allowing one
to look at a page before sending it off; cost is 70-100 K for that
- will make COM process cheaper -

Duane - cost model is missing

Duane - would have to have that

DCE - most R&D sponsors are oriented towards one big project

Bob - could Architects get together for L10 training for a week?

JCN - yes after checking training needs for rest of year

IMM - would it be the architect?

Bob - different for different people - will work to find who is interested

Duane - Mario Grignetti is looking for users to try BBNB Scholar who don't know NLS - have 6 classes - should only be done early in the morning or late at night

DCE - got phone call and told about new 10 to be released by DEC which is about half the cost

JCN - another way to reduce costs is to get several machines together and save time on operators

Tuesday Morning

Frank - will follow agenda today

Ron - Presentation from Washington KWAC's meeting - would like presentation to be interactive, not monologue; came out of discussions with CKM and FGB; got together and included Jack, each had areas where they weren't completely satisfied, found feelings were pretty much same - spent whole day talking - want to check to see if what they think they're buying is what ARC thinks they're buying then want to talk about what they think they'd like to buy; doesn't represent all architects; may be talked about more in executive session.

Ron -

What We Like

Overall concept

Journal

Text Processing Features

Feedback Mechanism (Only place among BBN and isi that is good)

Ron - Beginning to understand that there is a conflict between being part of a research project and trying to do something operational. AMC pays for use out of operating funds not research funds. Impacts heavily - a show of hands showed that 7 clients pay out of research funds 2 out of operational - most couldn't get money out of operational funds

Bob - list above is based on what you know - may be more there

Ron - like concepts don't like operational things - we do know about these

What We Don't Like

Performance

Uptime

Ron - heard that Office-1 had 78% uptime contrasted with 2 other machines that run 90% up

JCN - That's wrong - up 97-98%

Bud - worst month was September when it was down for one day - about 3% down

Bud - July & August often ran with bank of memory out - last week ran without drum - degraded performance is probably 78%

DCE - Those statistics are because of scheduled downtime not taken into account when those statistics were collected

CKM - really 97%?

Bud - during prime time yes

CKM - thought sept was bad month

Rita - there were parts of 2 days that Office-1 was down

CKM - thought it was up and down all day for a week

LAC - was it the TIP

JCN - I have data we can look at for past 2 months - where did you get the 78% figure?

Uhlig - Steve Walker - If it is a misunderstanding it is leaving you at a disadvantage

Ron - what we need is some kind of agreement on what kind of performance we need

JCN - let's look at the statistics from Tymshare

Ron - that would be useful

Potter - you believed the statistic?

Ron - it agrees subjectively with my impressions - I use ISI when Office-1 is down - it's always up when office-1 is down

Potter - same with bbnb and office-1

CKM - statistics should be provided with reasons for downtime

JCN - I'd be glad to send them to you - about 1 page

Potter - would be nice if they noted when the host will be back

Ron - a lot of the problems are not big but left attended they become serious

JCN - who's leaving office-1

Ron - ARPA and a slot or two from amc

CKM - we're going because we own the machine and computer time will be half as cheap and all our contractors are there

Response

Ron - was surprised to see 41 users - response was not bad; last week we had a demo and SRI fixed office-1 so we had very good response - how often does that happen

JCN - once every 2 months for about a half hour

Bud - more than that - once or twice a week for a half hour - doesn't affect response

Ron - would be good if we knew there was some limit to that - my boss would like to hear things like that

Frank - how do you that?

JCN - set the % of the system she can get - set it 25% she probably used 5

Bud - we basically do it for demos not training sessions

Glen - sure nice for a demo

Ron - sure is

JCN - one thing that would help us is how you would like us to play the game

Ron - think as architect's we should act as board of

governors - say we want it this way then we can criticize when office-1 can't do it

Ron - would like subjective ideas about response time from all architects - will establish policy on giving % time during executive session. When I say response time I mean when I type nls and wait for a long time that's unacceptable - rarely use nls any more because it takes too long to get in - discussed with Ray Panko and got journal delivery changed because didn't read mail for 2 months

JCN - is it always slow - is it universal

DCE - maybe someone could look at startup

JCN - should look for subsystems attached that aren't needed

DCE - scheduler may not be set to get that going well - we should save status from prior jobs to make that initial setup shorter

JCN - we don't have good stats about response to the user - irritant to wait to get in but if faster?

RON - I find XED faster to get into and use - I compared 1 1/2 page jobs in NLS vs. XED; XED input faster; editing much faster in NLS because of power not response (TNLS) - system response about the same - not significant that inputting was slower

DCE - surprised thought it would be the other way around

RON - job went faster in NLS but response was better for XED

JCN - it would help us to know what you consider meaningful measures of response

RON - We have defined different queries and had someone collect statistics at different times of the day

JHB - any data on what response should be? There is some around

DCE - what you'd really like is a measure of your working effectiveness

(Beginning of subjective feelings about response)

Bob - Hard to say - I'm on and off for a small percentage of the day - 8 mos was really bad - network wide - load level not bad till 9 - not bad enough to get frustrating - don't use other editors - use elf and

do have some buffering problems - work in 2 hr sessions with output processing - had poor response 2 weeks ago - 30 mins for 40 page document

JCN - changes to scheduler should help that

BOB - has programmer that is working on a program to let us send files to magtape on a socket - DNLS screen refresh - no one is happy about that - when word or something is replaced sometimes screen is refreshed sometimes line - can't seem to duplicate the situation - why??

JCN - we should describe exactly how it works - we don't understand it well enough

DCE - I use viewspec v a lot from the bottom up - would like to specify several editing things on the screen and batch them on command

LAC - has noticed improvements recently - single major complaint is that secretaries can't type as fast as they want - sometimes TIP - doesn't keep up with them - TNLS on a CRT - sometimes a line and a half behind - doesn't happen all the time but doesn't have to - partially net problem

Ron - new TIP will only transmit on space or CR - will be interesting to see what happens to the commands in NLS - supposed to be 6 mos to a year

LAC - putting line from MITRE to GUNTER - should make things better - will knock out 2 nodes - isic seems better - tend to think it is a hop problem - because can do cassettes at 30 cps at isic but not to office-1

Ron - As of FY76 ARPA will pay for Tymshare TIP but not Tymshare IMP - will be paid for only if DOD contractors want it - if we pay for it we should have some input

BREAK

Ruddy - doesn't have much to add - screen refresh slow

Frank - Response time is time between completing command specification and execution - after 5 and early in the morning it's acceptable - otherwise too slow - will discourage novice user - response from 9-4 is not good for either TNLS or DNLS - Western users response acceptable in afternoon their problems are tip related - not upset with response

IMM - response after 9 bad - can't tell whether response is bad or whether we are just heavy users since output processor used heavily and programming going on - mainly TNLS - more than 1 logged in 90% of

time, usually 3-4 on if load isn't high

Bud - they get 6% of system instead of the 3 they've paid for

IMM - because of weekends and nights

Frank - Doesn't seem to make any difference how many people - if it's bad doesn't make any difference whether 1 or 3 people on

IMM - use BNR computer for some text editing

Jack - does all work early in morning - have 1 NLS expert and he uses terminal at home - seems like a typical system so doesn't appreciate problem - all timesharing is like that so is used to staying off - don't have to use system during peak hours - will make NLS work when it's in-house

Ed - Don't have people whose business it is to use the system - has a bunch of novice users - a pause to a novice user can be bad because it has a domino effect - novice implies he doesn't know what's coming next - doesn't know what to attribute the pause to - response is to logout

CKM - Try to work at night - recent project done at night - work around it - negative effect to expose new people to NLS with bad response - have a lot of trouble with spurious characters appearing - strange things happen that can't be recreated - Rita usually gets them out of it - Data Medias

Bob - problem with keyboard - press key not hard enough get another character - sometimes transmits ctrl characters

Ron - Beehive keyboard bad and especially bad because of humidity?

JCN - any difference over last 2 months

CKM - no havn't used much over that period - based mostly on comments from other people - so happy things improved since Feb that I don't think about it much

JCN - Important to know how you feel because of changes during last 2 weeks

Ron - have been able to use system during afternoon and that is unusual

Rita - work any time and don't find it all that bad - except when drum out - maybe I've been using it too long - took a guy 10 mins to load a file at isic

friday...

Duane - don't like to hear bad things with LP's since just got 5 - Imlac's crashed 3 times a day so am glad to have reset capability with LP - agrees with Jack about Timesharing systems - have only been a few instances of people walking away because of unbearable - those were programming types trying to do compiles and they are trying to shift their hours - good to talk about response times but in our case at RADC the organization is so committed to working this way that we are very comfortable with it - no important due dates have been missed - no strong negative reports - use it anytime of the day

Bud - RADC does have a 15% slot

Duane - I'm never the only one logged on usually 6-7 on - get 16 1/2% of system

Dave - at bbnb now (3 mos) have same problem there - good in morning - bad time is between 2 and 4 - no one has called me about being so frustrated as to quit working - we talk about service compared to what we think it COULD be - it does irritate sometimes - we need to talk about it compared to what the alternatives are - I can point to instances where we met deadlines that we wouldn't otherwise have met - new users have come in desperation saying can't make deadlines and have heard about and want to try using NLS - yellow handout from yesterday went out before deadline even with an L10 program written in the meantime - wouldn't consider abandoning unless better alternative - do use network at Rutgers for statistical computing -

Ron - also have done things couldn't have done ordinarily but could have done same at ISI with XED

DCE - how much do you pay at ISI?

RON -- nothing now - ARPA pays -

Glen - Introduces NLS to a lot of users but has to be careful to pick right users i.e. people with small data bases that don't need to use system much - doesn't like to tell people to wait till 3 p.m. - dex and batch scheduler would be big help

Ron - Have done comparison and as a result will be using BBN and OFFICE-1 beginning January

What we get for our 40K

OFFICE-1

slot - \$40K - 3000 pages and 3% of users time

BBN

Demand

Bulk - \$6000/yr - 600 pages and 1% of machine

Ron - will cut back on OFFICE-1 and buy 10% of BBN

JCN - prices seem to be the same as we look at it

DCE - at bbn if you buy 10% it shows up as 8

Ron - by next KWAC meeting we will have some stats - we will be using a machine without NLS

JCN - have to be sure you're getting what you've bought from the scheduler

Bev - would like some clarification - is response problem because of timesharing? -

Ron - we feel biggest problem is office-1

LAC CKM - Moves are suggested because costs are less

Ron - we have decided not to cut back totally from OFFICE-1 because we want to be part of the research

DAP - there is no system that can deal with peak workloads without being underutilized

Bud - Pie slicer slices CPU but doesn't affect other important things (disk,) - real pie slice has to allocate all resources - that ability doesn't exist - 15 people in a 3% slot will dramatically effect other users - during peaks lately there have been 30 users and it has been bad because unrationed resources have been clogging everything up - looks like you'd like to unbundle 40K slot

Ron - want more than raw machine support but not the training

Bud - Tymshare has timesharing resource units rate, depends on problem, whether you're editing or compiling

DAP - can't understand why a non-NLS user would want to be part of OFFICE-1

Ron - NLS is more than a text editor - want to have other things available

Interface with other machines (hosts)

(a) message systems

Ron - Major improvement was fix of message subsystem so

it's compatible with MSG - are supposed to be able to send messages to non-Tenex systems - problems are that cc: capability not in message subsystem and inability to address messages to sequential files

Duane - have trouble moving messages into NLS

Dce - would be good to have message standards about paragraphs

Ron - BBN is being funded to develop a message system - a version of msg will be the standard - all sites will be required to have xed and msg online - ISI is to maintain documentation.

(b) terminology

Ron - Terminology - problem has been "oh that's what it is why don't they call it that!" - some people feel we are hiding behind the augmented knowledge workshop terminology

CKM - we don't use that terminology at ARPA because it bothers people - aren't interested in the philosophy

DAP - You're buying a tool not a philosophy - I learned it's better not to give anything to people than the AKW paper and Coordinated Paper

LAC - Problem is in describing why we're paying 40K for a text editor

DAP - that's easy to explain - answer needs to be explained simply without calling it an AKW

Ron - will defer discussion till executive session

JCN - note terms you talk in

Tuesday Afternoon

LUNCH BREAK

Ron. More what architects don't like. Documentation. Hard for architect group to agree what everyone wants. Glossary a major step forward. Not all architects have received copies of the Glossary. (You can get them through Feedback, Jim B. pointed out.)

Bob Sheppard. Organizations other than SRI have put out documentation. Each organization should help others by making sure everyone knows about it. Would help to be able to get ahold of it.

Jack G. Mil Jernigan's doc. available. You can get it online. Covers basic use of NLS. Available from DDC - call number is AD-A013 228 A Consultant Co. Montecito, Calif. NLS Instruction TNLS User's Guide, (U) Jun 75 M E Jernigan ACC-28. -very thick.

Jim N. A good chance that some of the non-Arc doc. may not be accurate. Has any thought been given to quality control?

Frank, Bob Sh. Architects can browse through doc., use what they want, choose things.

Doug. Would you like Arc to check this (non-Arc documentation) out for accuracy?

Several responses--no, you shouldn't have to be responsible, etc.

Frank. We have a small, 50 page doc. Based on short, application-oriented scenarios. How to do small tasks. Application scenarios, and longer. ...I'd like to see some kind of program instruction manual.

Jim B. Susan and I looked over Mil's document. It was too long for a real careful look, but we did find some errors that made it such that we didn't feel we could use it in training. We've been working on documentation, especially on reference doc. I'd like to introduce as a future discussion topic a proposal for a user manual-type document.

[Reference made to Frank B.'s new document]

Susan. As part of new documentation effort you are proposing Jim, we should try to coordinate more with what architects are writing. For instance, the Secretarial Functions Guide seems very similar to Frank's new document.

.....

Ron. Picture of what we get: Nls factory; factory manuals...and "retail services"...which are not applicable to all users. SRI shouldn't worry about each individual application-documentation. You (SRI) should be more responsible for "factory manual" type stuff.

Jim N. Some question as to what that "factory type" manual is.

Ron. (I don't mean to be insulting by using these terms factory, retail... We use them commonly when talking about our facilities.) ... Help. Particularly bad problem is time it takes to use Help. This comes back to responsiveness issue. I say this carefully because it is the way I learned to use the system... so I know it works.

Susan. One problem is that people don't know about using the uparrow and backarrow. This eliminates a lot of repetition...

Jim N. Forgetting the responsiveness of the system for a minute, do you have other objections about the Help system?

Rita. The Glossary is fine if you can guarantee people will carry it around with them.

Jim N. We have to face whether Help is really worth keeping,

developing. It is very expensive to keep up.

Doug. Help seems to be valuable for new users, but more sophisticated users can probably use hardcopy more effectively.

Ron I think more money would probably be better spent on an online feedback person.

Dave P. I use that kind of assistance all the time--just link to someone online.

.....

Ron. I'm going to skip last subject ...Systems Performance...

Bud. I think you're chickening out.

Ron. We really don't have time now. What I think we should talk about now is what we're indifferent about. I assume that the first item, Journal, would have caught your attention. You noticed Journal under this category--what we're indifferent about. We're talking about the operational journal rather than its concept. It really isn't useful. I am not using it as a means of communication... We aren't...the group in Wash.

Frank. I'd have to dispute that some... We use it...(missed the rest).

Ron. We use MSG for communication normally. First you have to take an extra step to go to nls. Also delivery is not as frequent. And some less sophisticated users are scared away. It looks too complicated.

Larry. What bothers me the most is the time it takes to get there (i.e., delivery time).

Doug. I have very accurate records on how long it takes... This has bothered us too, but most of the software was implemented in 1969-70.

Ron. I can argue the other side of this too. I participate in the message group--a conference of about 50 people. An interesting thing has happened...sometimes we send out very long messages--50 pp.--so we now maintain large messages in a file at Isic. But no one is going and getting them now. Just ignoring the citations, not reading them. So our conclusion is that you must have a relatively transparent method of going to retrieve these messages...like the Journal.

Doug. The design we have to deal with a Journal at many hosts--a multifile Journal--is sitting there. (more...couldn't hear it)

Bud. Two observations about the Journal. Sendmessage runs in the user mode. Same structure not in Journal. We have mechanism for speeding up delivery, but performance has been relatively poor on system, so we're reluctant to use resources to go in and send

Journal more often.

Ron. Let's go to another issue. Training. The problem we have found is that it is not specialized enough for our environment. Our solution is to do our own training. Ultimately we will have to train 500-1500 people in the future--mostly in message, generating messages.

Doug. Our initial concept was that it would be great when subscribers could do their own training.

Connie. We are probably going to sub-contract with SRI for some L-10 training, and other training. We pretty much need a full-time person. Part of training problem is that trainer has to be act as system-designer. Methodology and approach important. We really need help for that. We are not typical in that. We need someone more or less trained in the ARPA environment. Very applications oriented.

Dave P. I tell my users never to assume that there is something the system can't do...

Ron. Another problem is that there is a big mix of people in the training sessions--some who are very sophisticated, some very new.

Doug. The service we ...(can't hear him)

Ron. We have two inhouse training agencies. Responsible for training throughout our command. We'd look to you for training them.

.....

Jim N. I guess I'm not sure what you meant by indifferent...(about training).

Ron. I guess I mean we're not sure we want training.

Jim N. There is some period where your trainers get trained.

Ron. Right, but you're not training trainers now.

Doug. We always assumed that when someone was ready to buy on a large scale they would do their own training. ...One plan early in Nic was to have someone available online all the time.

Dave P. We've used the Tenex Advise command fairly effectively.

Inez. The only problem in using that is that you have to go in and out of Advise to stay connected to it.

Dave. No, this is a different way of using it. I don't really do it for them. I do it, then they do it.

Frank. There is a need for some training from SRI. I'd like to negotiate that separately.

Jim N. We've put a lot of effort into training at Gunter. ...What do you think of it Larry?

Larry. (Couldn't hear very well. Gist of what he said: I see a need for something like Scholar.)

Jim B. Very expensive to work.

Larry. Like to have BASIC available sometimes...so they can play games to keep them interested. I still see need for training...especially for training trainers. I am sure that it would pay to support our own expert in something like L-10. I find the ...(can't hear) (Gist of what he said: easier to help people over phone than with linking. Must have phone there by terminal so people can use it to call for help.)

Jim B. Still two phones at Home for every terminal?

Duane. Yes, basically. Our problem is an antiquated switchboard.

Duane. I was thinking about xeroxing a blurb on Scholar, but we could put it on board. How to use it, site number...etc.

Ron. Let's now talk about what we think we should get for our 40K.

I'm not going to talk about all of these subjects. Connie and Frank have things to say, too. But I'm taking the first one. One of the things discussed yesterday is that we really want to unbundle services. Time to broaden definition of product. Some probably want it the way it is now, some architects would like to have it other ways. Let me comment about message services. (An aside on international use of the ARPANET. Ron said that Japan doesn't like people using the ARPANET in Japan. Bob Sh. That's true. We find only a couple of countries that don't mind. Ron. It's because phone and postal services are tied together.)

Jim N. Are you thinking about what you should get or would like to get?

Ron. Areas where we might contribute is in messages. (??Not sure about that first sentence--transcription not clear.) We have 28 directories, 30 by the end of the year. New people want to use message services more than text-editing, etc. (Speaking for AMC). We're going to develop an internal message system for AMC. Implement on 5-6 minicomputers. PDP-11 distribution system or Pluribus. Separate out message function. Ability to link to NLS for more sophisticated service. Not sure how many people that will be. We need spectrum of message services, from very simple thru fairly complicated messages. We want something that will look very much to the user like combination of message/OED. Doug suggested using something like message and NLS. I would like to check for performance, response.

Doug. The thing that bothered me is that if you want to start evolving your own kinds of commands, the CML is very good way of

doing it. Other possibilities of making MSG/XED combination compatible with NLS. Lots of potential for making much better interface. (Transcription incomplete--hard to hear.)

Ron. Interface between the too awkward now. I'd like a way to invoke NLS --have sequential file taken care of automatically. ...What we need to discuss is what we're getting for our \$40K. Consulting... What services can we buy?

Doug. One reason we haven't been able to offer wider services is the scale we have to operate on. Not sure how big a scale we'd have to operate on to provide wider services. Our scale has a lot to do with how flexible we can be. Also, exploratory applications...(Transcription incomplete--can't hear.) Our main target is the support we can give while going thru this evolutionary stage. How big we have to get in our applications, sales, is a question. All the struggles we're going thru is what you will have to go through eventually. So there will be a time when we can transfer our knowledge to you. During the transition period you can't expect to be operating with the same kind of pay-offs. I'd like you to think about this when you're kicking around ideas.

Wednesday

DCE describes the NLS service, parts of ARC, staff, the money loops, etc.

DCE describes what he needs as far as commitments and relationships among the parts of the organization. Effects of reconfigurations of service and investments impinge on these money relationships and staff considerations.

DCE - Do these points help to clarify some of yesterday's points?

RPU thinks it's a good place to start but needs more specifics.

JCN lists:

- resources
 - computer
 - people
 - materials
- services
- allocation
- pricing

JCN - How these elements fit together: 22 people in Applications. 15 different roles. people are resources. 2 service computers. They all cost money. You are all consuming those things.

JCN - contracting basis from 2 yrs ago. here is a picture of how we started pricing. Why is it 40K. How many users could live with the K we had or could afford. had to buy more capacity. first six months the users didn't use too much capacity. Just stayed ahead of the demand for first year. 23 slots. Add more memory. Couldn't handle it if all users demanded what they could get. 2nd year added drum, sold two more slots, not enough capacity. users started to demand more by the kinds of things they were doing. Can't get more memory. Add third drum. pie-slice scheduler.

JCN - Office-1 can support 25 users in reasonable fashion. Options: add more slots, get more money, etc. Costs: \$250K to ARC people, and \$ 750 K for Tymshare, travel and materials = 1000K. Staff 6-7 people.

JCN - Second year - 25 slots. Service at bbnb. Now 22 people in APP, less three = 19 people. What we're getting supports only 9 people. 50-55 percent sold. need higher sold.

JCN - SRI expects 75 percent sold. We run at low sold rate. We bargain with SRI to get fired up this year with enough people, then get more users when people are experienced. We are hiring to get ready.

RPU - Those 22 people--only Applications, doesn't include Watson's group? JCN's answer - Yes, Applications only.

RPU asks how he gets 9 people total.

JCN explains details. RPU asks if 25 percent is going to people, 75 percent to service?

JCN - The rest of the 22 people, other than the nine, are charging overhead, except for 3 who are charging NIC, another project.

JCN describes SRI's charging system, for overhead, project, administration, etc. 75% sold time is expected. He explains how everything adds up to total overhead, excluding labor, travel, equipment, etc.

JCN explains how SRI cuts down overhead. They average out sold time. Groups have good years and bad years. Other projects at SRI are subsidizing ARC Applications this year.

DCE - JCN used to be on SRI Administration dealing with overhead, etc.

JCN - The main point is that the Institute is paying for Applications labor to a great extent this year--next year we have to have higher sold rate. Which people is SRI subsidizing? Overhead projects are charged with the new training people, training the trainers, their experience in field, computer services for them. After paying what it costs to run the service, there isn't money left over for training. Most training costs are paid by overhead. Client projects are charged only when trainers are

actually at site training, except for their first time for experience.

JCN - The service system manager is Bud Pine. Dave Hopper, systems programmer, fixes bugs; Karolyn Martin is now starting L10 training. Jeff Peters is TENEX programmer and operator. Feedback--Sandy. Martin Hardy & Rodney for hardware. Jim Bair - Applications development, documentation. ...more people...Rob Lieberman, Ray Panko. A secretary and a half. This gets to eat up funding. Susan Roetter and training staff. If everything was running according to costs, the 40K wouldn't do it. Pressures driving prices up. The utility was first priced 2 yrs ago...inflation.

JCN - This is the context for thinking about pricing.

JCN - clients to go to 32.

DCE - What target number to sell for 40 K each to come out right--45 or 50 slots a year and a half later. How to get ready for that. It's a little loose. Get tightened up. We can't keep up if everyone is starting up new users at the same time. We need our clients to do some of the lower level starting up, we give you higher level training.

JCN - Now, computer service. Are you doing editing or DP output processing or what--different kinds of service. Service backed up by Tymshare and core group of Applications people. You're getting training and advising service. COM service - DDSI, George Lithograph - they bill directly to users. How about some different basis for the \$40 K "slot"? What resources does it take to do all this?

JCN - allocation of computer resources. Pricing, what you get for the amount of dollars, has to do with how you get it - login control, pie slice scheduler determining how you get your service. One job login per slot til last spring. How do you keep track of disk space use? Everyone started to get uneasy. Wanted to have two jobs per slot...then we went to the pie slice scheduler. It wasn't really solving the problem so we fixed it so it would really do the job. How is the pie slice game set up? That next.

Coffee break.

JCN - Two new elements to consider this morning - starting 2 new contracts - one to keep NLS current and to keep it running at ISI where ARPA will be using NLS - that helps support the core people. Other contract is to help NSA set up and tune their Tenex - will help make budget and will extend into next year - same arrangement could be set up with other organization if they wanted to have own machine and get updated versions of NLS.

FGB - how much?

JCN - \$40K - we're not talking about adding graphics or other new things like minis.

DCE - Want to comment on top view - there are a lot of fixed costs not related to the number of subscribers, others related to characteristics of subscribers; if scale of subscriber service increases 3 or 4 times will make whole activity more efficient and will help cut costs. We have to estimate costs 1 1/2 yrs ahead of time - need to budget for next year - each 6 mos have to go through year ahead projection so President can watch and see how things are going - different than getting allocation from above - we're aware of that system since that's where we get our revenue - so now you get to see our picture - are also now in the process of replacing temporary buildings at SRI - or would like to be. There are 6 other labs our size in a division and each lab has to produce a budget with no. of people and costs for next year - that goes to division then divisions get together with a vice president - lots of negotiation.

DCE - President getting much tougher than before - because of the times ways of operating that were safe in the past are no longer safe - money doesn't come in when it needs to etc. - in our group Larry Roberts wasn't able to come up with dollars for NIC so people were let go and our budget was over-run; will have trouble with auditors if pricing becomes too flexible; are committed to getting operations up to a certain size - guessing it will take 70-100 slots to achieve a steady and efficient operation.

DCE - Institute let us produce less this year in the form of a loan - pressure was put on RWW to keep his sold rate up to balance ARC's sold rate; till July Applications was saturated with NSW work so had to expand to meet their needs and help us too.

RPU - As we get into the situation where more people are using NLS outside of Office-1, for example on ISIC and NSA it seems that by necessity steering the development of NLS is separated from the issues of running the utility - what happens then to the Architect's group which has a strong interest - AMC will want to run it on own machines and will want to be part of the development and will put money into it but I think the issues are separate - maybe architect's need to worry about it in two separate sessions

DCE - one thing needed will be differentiation between issues that the subscriber needs to work on with us - features of NLS, economy of NLS, transfer of NLS - lots of issues that have some independence - you're right. If you draw a graph that has how widely I am going to apply the system and the degree of sophistication of the application - one scenario is low level of sophistication and lots of people with hope of upgrading service; another scenario: small group and very sophisticated then expand no. of users; third scenario: small group sophisticated and larger group with lots little service and smooth out the curve. Assume most organizations will follow third scenario - have been waiting for small highly sophisticated groups - part of our strategy is based on how we think you will evolve which we assume will be the third case.

BJP - Will be going through things fast because have a lot to

cover. Would like to show what it would cost to use Tymshare - charge \$10/hr and have resource units - \$13 per hr for CPU resource units or \$23/hr with 3% slot = \$4048/month - disc space - 300 pages is .50/month/1000 characters for the first 2 million = \$2400/month for 3000 pages or \$77,000 per year. The above is based on 176 hours/month - they charge for CPU time, IO access to the disc and memory occupancy and is approximately = to 1 sec of processor time. These are based on typical NLS hour with one user.

RPU - we don't use it 8 hrs a day

BJP - Bell is up to 2 or 3 times that per slot

RPU - It depends on the usage

DCE - \$77,000 is equivalent to core cost - doesn't include training = \$30,000 plus a little more of office-1 - comparisons could be made about utilization and price

JCN - ARPA is underutilizing it - ETS RADC BELL etc are overutilizing it

RPU - if you overutilize you come out ahead

JCN - if you underutilize it by a half then you still come out even

JCN - Tymshare charges double what we do

BJP - Office-1 configuration is a KA 10, 256K words core, drum controller and 3 drums and a disc controller and 4 drives, magnetic tape unit and 2 tape units, lineprinter, paper tape reader, local line scanner and 6? lines, BBN pager and a TIP - maximum configuration KA - quality of service - down 16 unscheduled hrs in August - scheduled down 4 hrs/day = 97% uptime - one of those days was 8 hrs

BJP - 90% up in prime time that month (this is PDT). That one day we lost the files and rather than bring up 3 day old file system we decided that customers would prefer we take time to get files back--and TENEX is not easy for this. That was worst month; in September we were down an hour unscheduled. One problem with these statistics is that they record when whole system is down (processor or disc); this doesn't account for losing a box of core - don't have adequate statistics to describe that - with that included we ran with degraded performance for sizable amounts of time in August and September.

CKM - when was the power shortage?

RH - that was the 8th and it was down 3-5 hrs.

JCN - It says here that on 9/8 the power was down due to "interruption in uninterruptable power source".

CKM - same thing happened last spring.

JCN - started 8:07 PDT

LAC - does that count TIP time?

BJP - doesn't include TIP downtime. We at ARC don't connect directly either--we use the TIP also.

DCE - those are Tymshare's figures covering what they are responsible for - doesn't include TIP and that's not our responsibility either.

JCN - I would (would, wouldn't ?) be surprised if it happens a lot.

RMS2 - If you throw in scheduled maintenance do you get 78% downtime?

BJP - scheduled down between 3:30 and 6:30 EDT. Individuals can see performance and during periods of 30-32 jobs or more logged in the interference is directly a result of policy of allowing more than 1 job per slot.

JMB - one set of users can effect users of other slots?

BJP - yes

IMM - only 25 allowed?

BJP - No, 50

RPU - Have you ever looked at how that works on other TENEXs? - I don't see that much trouble at ISI with 50 users logged on.

BJP - depends on what they do

RPU - could NLS be better modularized so it isn't so slow?

FGB - who is responsible for net problems?

BJP - DCA is responsible with maintenance - starts with Martinez

DCE - Number of hops along network also has a big effect - especially for DNLS.

RPU - Office-1 users can go to DCA and ask for different configuration of network.

BJP - Graph of % load vs. waiting time; graph 2 - 3% of machine = 1.8 sec or 1800 ms (milliseconds) or 18 100-ms chunks (called pie slice) but divides out 100-ms chunks - ratio of response time to work to be done in ms., i.e. with 3% slot one person 100% full machine takes 33 times the CPU needed to do a job.

RPU - Create File seems to take a long time - any estimate on time?

BJP - don't have that data - would like to give more than 33% given to a job depending on its nature but can't. Processes are IO bound

and can't allocate more than 25% to any one job. BBN uses a 1 minute average to say what % you're getting with a 30 sec. half life - changes are made if % is different than 3%. Atrocious delays are sometimes caused by "thrashing" - throwing pages around in and out of core to make room for more.

BJP - there are 3 queues: 0 - interactive; 1 behind allocation; 2 ahead allocation. The quantum (= 100 ms) is used to execute in one of these queues - start at 0 and then moves to another - you are ahead if utilization divided by share times no. of active processes = ?. With 4 people in 3% slot the no. of active processes is usually 1 so it gets 3%. It may appear that they all get 3% all the time - in fact they do; We have started measuring via job users instead of fork utilization.

[Questions on any of this should go to BJP because not many details are adequately recorded here.]

BJP - we are now working with 63 queues - queue 20 says you are getting twice your share; most people in queue 5 or 6 will be getting ahead of person with higher utilization; person in OP gets dregs.

JCN - when did you make that change?

BJP - about 3 weeks ago - doesn't have solution to busy disk channel - only 20 pages/sec

JCN - how can users tell it works the way you say?

BJP - One problem is the faster we make the system the faster the user can go so the slower the system is.

RPU - have used the system more over last few weeks because response time has improved dramatically - only serious degradation has been 5-6 people in 3 AMC slots - last Friday 6 people on and using system between 2 and 4 EDT and it was useable - problem is getting turned off users to come back and try it - I personally think there's dramatic improvement - I agree that to get better service buy more slots - we want definition of algorithm to define exactly what we're buying.

LAC - any way to get BBN to make these changes?

JCN - we're beginning to talk with BBN to see what can be done

BJP - we're not quite done anyway - sounds like everyone likes to be able to dial in as many users as they want

DAP - can have 1 user per slot if we want

BJP - will get nicked if you do - load average never meant anything anyway - just tells you how many people are in queue

JCN - would like to take CTRL-T's load average number away and put something meaningful there

BJP - appropriate stats would be number of people on and utilization of processor

FGB - easy figure to get at?

BJP - yes they're all there

DCE - how about load just among my guys

BJP - ISI's experiences with 512K core have been dramatic - is expensive and lengthy to implement. Batch should help and will allow you to be away from terminal - won't tie up terminals. Windfall - took it away a couple of weeks ago for a while just for a look - ARC is down to one slot but needs to use more - this seems reasonable for documentation etc. I am pushing for ARC only to use windfall; there was no response to my taking windfall away; Presently half of windfall (slots with no users logged in, not spare cycles) ... - windfall is sort of like offquota.

JMB - who gets windfall?

BJP - half goes to slot with lowest cost-effectiveness and with users presently logged in. It never seems to be BELL or ETS--usually ARPA, MIT and a few others, if logged in, get their bought $\frac{1}{2}$ plus half of anyone else's - effect is they can't use that much; they bounce between queues 1 and 2.

JCN - We can't tell by looking at records who is getting more during peak hrs - need to be able to do that

BJP - what does cost effectiveness mean - overall look at what that user got - loosely translates to how you're utilizing what you're paying for

DAP - I keep thinking we are using the system in a cost-effective manner

BJP - For fast response you want the number to be .7 or so

RPU - didn't realize that stuff was saved from one day to the next. With this other system in St. Louis we lose any we had after 24 hrs

FGB - we will do pricing tomorrow morning

BJP - I'm nervous about lots of people doing L10 and compiles - 3% of a KA and core and disk may not be right for that type usage - would like definition of service that eliminates constraints that keep us from buying more core.

JEG - we're on a budget cycle; if you might get more at the end of the year is it going to cost more?

DCE - graph of dollars put into system against users in the system - hard to estimate when it doesn't help to add add more users - BJP would like freedom to explore and see if more users can be added.

JEG - if you say we need more money we don't have it.

DCE - we're saying rather than giving more money get less of the machine

JEG - would rather pay more if already saturated service

DAP - doesn't want to pay more to keep service from degrading

JCN - would only add users if end result (buying more core) would be better response for all (though same cost per client and less share of machine)

ESV - any way of measuring it without trying it?

DCE - ask everybody we know

BJP - yes you can look at statistics of machine and make estimates

JCN - somewhat intuitive thing

ESV - you'd be offering a smaller percentage of a bigger machine.

DCE - BJP is saying if we sell you 3% then we can't do that. If you are sold units instead, then that gives us freedom to make changes over the year.

JCN - will not be easy to talk Tymshare into buying more memory on faith

JEG - why not get your own machine instead of using Tymshare?

DCE - We started that way but later felt in the long run we'd be better off not running our own machine. We need to learn to be the broker.

Thursday

Frank. Several architects won't be here tomorrow, so it is suggested that we cut this meeting short by a day, and have another two-day Architect's meeting in a few weeks. One day would be architects alone, the other the architects with at least Jim and Doug.

Connie. We could have it in Wash., at ARPA.

Frank. This certainly affects what we would want to cover today. (...)

Frank. There are a lot of issues that both the architects and Arc need to get away and think about a while. In my view staying here another day wouldn't be that productive. Also SRI has to clarify its position on some issues such as pricing.

Connie. The product of the meeting will be a paper listing those things that... --the direction we want to go in.

Jim N. If architects can't be here tomorrow I certainly won't push for it. But on the other hand there are some issues we do need to discuss, such as documentation.

Frank. If you look at the agenda you'll see that those things are on here--and we can skip some of the other things such as evolution...

Doug. There should be some discussion about the role of the architects.

Frank. I agree, but we can discuss that today.

Larry. What I really wanted to do tomorrow was talk about applications.

Larry (cont.) ...I'd like to talk about this informally rather than formally. Sort of a workshop.

Doug. Frankly I'm disappointed that there isn't more of this at these meetings. I think this is really important.

(Discussion followed about issue of exchanging information among architects. Point was made that this can be done thru Journal.)

Jim N. I thought there were going to be a lot of executive sessions where you guys got together and discussed some issues, and presented your views.

Frank. Well we now all have to go home and do our homework. We're a diverse group, and need some time to go over some of these points.

(Part of discussion missed here. Mostly just continuation of discussion about if the meeting will continue thru Friday, when applications are to be discussed, whether or not people are saturated.)

(Decision was made to meet half day on Friday to discuss applications.)

Jim N. When you have a meeting there are several things you could do to help us. It is hard for us to tell what you want.

Bob S. We're going to try to have it down in black and white. We don't really know what we want either.

(General discussion about how architects can present what they want, so that ARC can respond.)

Frank. The first thing we should discuss now is pricing.

Jim N. OK. We've had ideas of our own formulating about pricing structures. Some of those are like those we've discussed here. But I really don't want to draw a picture because that implies we know what it will be like, and we don't. There will be the element

of some kind of minimum commitment that everyone will will have to buy. But we don't want to talk about slots anymore. We want to talk about service units. You should plan that the minimum will be somewhere around \$40K as it is now. All gov't contracts thru RADC--those are funded incrementally. I don't imagine changing the way you sell your managements.

Jim N. (cont.) Some of things we have been discussing this a.m. are kinds of things you get for the minimum: computer facility, user services (training, etc.), applications development. There's something else we have to deal with--our sold time. There has to be some kind of minimum amount of user services--I think. We can talk about it more. Another element that already looks like a consensus is that instead of optional increments we'll have service units, user services, applications development. You're very interested in what minimum user services, app. dev. we build into minimum price.

Doug. We couldn't go below a certain level of minimum user services--for answering phones, KWAC meetings, etc.

Jim N. There's a question of how we could have optional units that are not year long. You are also interested in buying minimum user services and applications development, but more service units. There's also the option for you to pay more--say \$80K--and limit it to 15 users, for very fast response.

Stan. Is there some way to spend our money faster (i.e., use up big bulks of computer time for a peak problem, then not using it later)?

(Discussion of ways of providing options for users--not selling some resources, but taking chance of selling it on an hourly basis, in smaller units. Also whether or not people want to buy extra, limit of resources, etc.)

Ed. Right now you're giving away windfall. It makes sense for you to sell it.

Stan. The basic thing is whether or not the architects, with SRI, want to underwrite this joint service.

Connie. You're just talking about Office-1, aren't you.

Jim N. No, in my mind we can talk to BBN about this. Nobody's going to be sure til it's up and running, but it could be done.

(Discussion about sale of windfall, whether it would hurt users, scheduler, if it could be done at BBN, keeping back resources for windfall, etc.)

Jim N. It would be better for all of us if we could flatten out our busy hour curves.

Glenn. Batch. You run it on non-peak hours.

Jim N. Well, does this have implications for pricing?

Ed. But the implication is that of off-hours sold elsewhere.

(More discussion of off-hours time, giving away windfall, working at non-peak hours.)

(System crash. Some discussion missed here.)

DLS - How about if I buy 100K for doubling the core - would I get the additional service units?

JEG - Would be interested in when that would change.

DLS - We wouldn't be able to double our user community anyway.

DLS - There are pressures to bring the cost down and more core seems the only way to do it in a reasonable time period.

DAP - Was there a consensus about adding more core?

JCN - Wasn't sure but thought consensus was there.

DAP - I think that so long as we get what we pay for we'll be happy.

JCN - What do you need to know after you have bought service to be sure you're getting what you bought? It would be good for you to talk about that some.

ESV - The percentage of downtime may not be meaningful when it's down long enough to turn a person away from the system.

DCE - There should be a way to calculate negative service units.

DAP - What protection do we have if we don't get what we bought? I've been checking with our people.

JCN - reiterated question about what you think you need in the way of statistics - would like a feeling by next architect's meeting.

SMT - Does the system have the capacity to keep such records - right now we get it in a consolidated form?

JCN - What you get with Tenex is unreliable and crude - with more money we could do a better accounting job - also we are just now starting to believe that groupstat is believable.

JEG - We've placed limited emphasis on accounting tools as we found that "funny money" game devoured unnecessary programming time and money.

JCN - I could send each of you a signed letter each month saying you got what you bought...(It's called a bill)

ESV - As an architect I would like to know who isn't using the system very much.

JCN - There should be a tool for architects to check on their own user community.

DAP - It's probably too late by the time you get them.

DLS - It would be ok if we could get them earlier, but you're always 3 months behind.

BJP - I would like to see the Architects specify what kind and what frequency they'd like to see data - whatever data you'd like to see to help you manage your users.

CKM - There's another accounting system at ISI.

FGB - When will you have a definition of a unit in various categories?

JCN - 2 weeks.

Terminal maintenance and delivery has been pushed under the rug in the past - needs to be looked at.

FGB - How about leasing equipment?

DLS - Our Procurement really balked about leasing, what with different starting times for years, etc.

DCE - We could start being a broker for the user community; if rates are high enough to cover getting nicked by leasing, then we could add that to our service - potential benefit to everybody.

DAP - Would you get lower prices for the quantity of equipment leased because of bulk?

DCE - Yes - might even be less for you.

DLS - Is leasing brokerage included in the minimum service you're proposing?

JCN - No

FGB - Time frame is a problem in our world; it takes so long to get a terminal if it's for ADP.

DLS - It shouldn't be that long.

FGB - like 6-9 mos.

IMM - In 3 weeks you're going to try giving us costs?

JCN - Yes

SMT - We could maintain our own lineprocessors if we could buy equipment.

LAC - It'll cost more than just buying them.

JCN - We could work something out. I want to know if there are any other key ideas and where you are now.

FGB - It looks like a good direction - We will just wait for details.

DAP - It will be tremendously helpful if I can get the breakdown from you - by next year I would have to do this even if I had to make up figures.

ESV - I would like breakout of other areas - like documentation and user services - in documentation we're interested in the factory manual - not so much in training manuals, that is, in an individual thing that gets tailored to the organization - would like prices for different kinds of documentation.

JCN - I don't know if we can do that.

ESV - factory manual isn't available; want to pick up initial user training

LAC - I would like to see having additional disk broken out.

BJP - That would be part of it.

JCN - when we stopped this morning ESV had just introduced the question of user services - I said there would be some minimum level with minimum service. I wanted to make sure that got answered.

ESV - I can't remember.

JEG - User Services and Applications Development are rather nebulous - how much are we entitled to?

JCN - I don't want to mix past arrangement with future - it will be much more clear in the future.

JEG - Will they be discrete units - so training is different from APP DEV?

JCN - My objective is to make clear what is in basic package - at beginning of year - want to make optional things clear and have some idea what you think you want in the way of optional things - was fuzzy in past because of funniness of who was paying for what.

DCE - Having no venture capital and small market results in not the kind of business conditions we'd all like to have - unknown market and service conditions add to that - no denying those things should be there in well-marketed thing - when scale is bigger we'll do better - no way we could have done much better over last 2 years.

JCN - I think we will bill COM services the way we do now - bill for what is used directly to customer - that's about it for me - anything else?

JMB - What about seminars?

JCN - In order to gain interest and potential clients we bring potential architects in for a week - held one about 1 1/2 months ago - 2 people: one from Herman Miller and one from CIA - we have a brochure we put together - if you run into people that would be interested you should steer them towards us - in one of FGB's groups there might be someone, for example.

RMS2 - Why should he do that when as part of his slot he's entitled to training?

FGB - What he's talking about is in my best interest - gives me ability to get more slots sold and more interested users.

DLS - We did sell a slot to DMA and IBM.

FGB - Should provide some incentive for that kind of grass-roots activity.

FGB - What is cost?

FGB - It's down from 1000 to 700?

JCN nods.

DCE - Not far off from what others charge for conferences.

RMS2 - How is that different from a sales pitch?

JCN - Some need a lot of exposure to be convinced.

DAP - I think it's good if people will pay for it.

JCN - We'll know at the next meeting how it works the next time.

RMS2 - At least if an organization pays \$1000 they will expect a report and so there may be some action.

FGB - When is next one?

JCN - Nov. 17-24

DAP - What about having someone do Proof as a service?

JCN - We don't have an organized way to do that but will at some point - it isn't that hard to do yourself.

DCE - I would think most places wouldn't want to be experts at typography - this is an example of the scale thing.

DAP - Documentation Production through COM is not a big enough part of your service.

BJP - Clarify what you wanted.

DAP - Just to have you look at it and see if it looks right

JCN - It's not that hard to learn COMtest - Inez did in a day and a half - also Ann Weinberg who does all that work for Larry.

DAP - Can you run Proof with DNLS?

DCE - probably with some work

JHB - Does everyone have the 2-page handout on Documentation? - Larry noticed that it started with 3 and ended with 2 - branch 1 is a discussion of the issues - not clear enough to print up now - things like online vs. offline documentation - training vs. documentation - look at 2g - this is where we are - what we have now - additions are L10 Guide which will be done shortly, Brief Guide to User Programs, which reflects programs available that are Class I and supported in Help; tutorial docs and courses are pretty well done.

ESV - On user programs - should process branches be included there? - seem to serve same purpose

JCN - It would be nice to have them organized somewhere - although it does cost something.

ESV - What do you mean?

JCN - Collecting them and organizing them - thinking of the future

JHB - They need to be documented.

DCE - The journal is very handy for that - people can keep own collections that way - maybe have a directory just for architects that can be used for storing collections of user programs and process branches.

JHB - They could be in <userguides> - CKM has a directory that she calls macros and there's another one at Gunter. Another scenario is on letter production - haven't had feedback except from Duane - his comment was basically that the Letter isn't very useful to most people.

DAP - You should see Duane's process branch that does it all automatically.

JHB - The other thing is the L10 course given by Karolyn Martin for the first time at ARC - won't be any more courses - seems you don't want them - seems higher levels can be covered by documentation on other page and sample sessions that can be pulled together by trainer for each particular site - would also be stand-alone documents - also lot of people want to do own courses.

DAP - What about Secretarial Functions Guide?

JHB - We've decided to modularize them - you received one set that

accompanies the second course - the Primer covers the first 2 and there will be another set for the 3rd course - Application descriptions are also part of the plan for documentation in the future - have heard that reference docs are factory type docs and those listed here represent all of them that are up to date - all except DEX which will be done shortly. Is that what you meant by factory doc, Ed?

ESV - Yes

JHB - That's the extent of present doc - There's a course coming out of the last seminar but oriented to non-users - This list of proposed doc is what comes to mind when I hear your inputs and this is the outcome. Four application tutorials - designed to be very complete. I think about 6 man mos. of 3 people will do it - that's a rough guess because it also depends on computer resources.

DCE - 6 mos. from each of 3 people?

JHB - yes

JEG - Can you associate a probability that you can do this?

JCN - Other factors are that some pieces should be done anyway and others are special requests by you - we shouldn't do what you don't want - we should know how much depth you want.

JHB - The Letter Tutorial is example of the depth that would be encompassed.

JCN - I think we should have your inputs before going ahead so we don't end up with stuff you don't want.

JEG - Each architect could say what they'd like out of that list.

JEG - Maybe we should say what we'd like given \$10,000 to spend and look at priorities.

JCN - Seems like something good to look at during your next meeting.

DCE - It has to do with how we cut up our products in sub-bundles and how we do our planning and commitments.

JHB - Another category is to replace advanced courses with the list of Procedural Tutorials. These and Text Book on NLS are not included in 6 mos. estimate.

DAP - I would like to see the seminar stuff for use with non-users.

JHB - Investments in Tomorrow can also be reprinted.

DAP - That's the best single thing we have.

JHB - We have also a collection of articles about us published in journals - I sent a msg to KWAC listing these.

DAP - Are they online?

JHB - Xeroxed

JMB - 3b ("List of Procedural Tutorials") wasn't included in the 6 mos estimate?

JHB - It should be a fall out of previous things.

ESV - Fallout from 3c ("Text Book on Using NLS")?

JHB - No, 3a ("Application Tutorials")

JHB - Application tutorials are big ones that can be divided up.

JCN - Is there anything obviously missing in this thing?

DAP - Architect's manual on how to get money

DCE - valid thing that could be used I'm sure

JCN - We sometimes hear pleas for a complete reference guide - I don't see one on this list - should it be added?

FGB - How about textbook?

JHB - There's an effort in that direction - but it's a ways away.

JCN - If that's the most important thing missing we need to know it.

FGB - The architects look at this and prioritize.

JHB - I am unsure about reference documentation coming from Development for new software, graphics, etc.

JHB - How do you keep this updated - keeping them small and modular to help in updating of site notebooks.

JCN - We have an NLS applications programmer that is available - for next 3 mos. At the last meeting there were lots of suggestions about things...

FGB - Hope Bob will include that in his paper.

JCN - The period will be one-third over by then so we will use him as we deem best.

SGR - I have a few things to say about training but I want to hear what you all have to say about it.

SGR - First, a memo was recently sent to KWAC. We are at the point where we can do a few more things. Less formal training, more applications assistance. Mainly, keeping in touch with various clients - included is the possibility of having some on-line

sessions. Use this not only for problems but also what is new and going on.

FGB - Tell us about the trainers.

SGR - We have 5 trainers. Names, etc.

SGR - We have going by the assumption that 2 1/2 days a month of training were allotted.

JCN - JCN's assumption, that there's never been an extra charge.

SGR - I have precise records of training given.

DAP - I would be interested in seeing them.

LAC - I'd like the boss to see them.

JCN - (Re Susan's proposal for additional assistance) We are moving in that direction anyway.

SGR - Our role should be one of information gathering, and making sure the information goes to the right person.

DAP - Send one Architect's request around to all of KWAC since more than one organization might be interested in the same special applications.

SGR - Splitting up the trainer among the various sites. Focus on particular clients.

DAP - One person who would be your main contact.

SGR - That person though would not necessarily be the one who might come and give courses.

FGB - Just course, couldn't hear.

SGR - We would help in special applications. Mail handling etc.

FGB -- How do you train trainers?

SGR - Learning NLS very well first of all.

FGB - How do you pick trainers?.

SGR - We hired Pam and Priscilla 5 or 6 months ago. Trained them and gave them typical users tasks to do. Given them more problem-solving things to do and train new people at ARC and SRI. Trainers would sit in on these sessions and advise and watch. Also a trainer accompanied them on their first training trip. Took us (& JCN speaking) 6 months in our own environment. It's hard to guess how long it would take.

DCE - Tell us about that Word-Processing conference and what you learned.

SGR - Spent time talking to people who were trainers in different systems. Gave and allowed very short time for training. 1/2 day for their whole systems. We say you can get thru the Basic Course in half a day.

FBG - Simple systems are different.

DCE - Didn't they say that it took 6 months to stabilize.

SGR - Yes.

BEV - Missed

JMB - There was a more complex system. They gave an intensive course for 3 days 9 hours a day.

SGR - There were other intensive and long courses. I think we picked up a few things from this.

FBG - Did you notice if many of these W-P systems have communications gear?

SGR - A few of them did. Word One was the only one I noted.

SMT - There are only a couple but they don't all have communications capabilities.

SGR - Questions?

DCE - You mentioned the time for some tools to stabilize. This is an evolutionary stage. And our service really helps while this stabilizing process is going on. A process has to evolve.

DLS - Some places struggle and take them out because they didn't serve.

FBG - W-P stays in a central place where NLS goes out of a particular office.

BJP - How long did it take for you to get to the point of proficiency and stabilizing?

IMM - Doug asked us to participate in this experiment. Once we did that we all had to do it. It wasn't to replace anything, and in the beginning it was hard. Took us a year to get over the humps. We had problems not only with NLS but we had equipment problems also.

ESV - How many managers do you have?

IMM - Twelve. We have 3 secretaries using it full time.

JCN - Not everyone uses it but that is the final result of their work, (one VP for example.) Still have different users in different modes. Larry Day all the time. Other is pencil and

paper mode.

IMM - I use it 90% of the time. I'm pretty much in COM but one of the secretaries will be able to take that over. We want to know all the capabilities and use them.

DAP - Do you have to reclassify the secretaries?

IMM - This person is a temporary, Takes off the summer.

CKM - With the other director, people were forced to use the system but now with a new director it is more natural. We have new people who are recently expanding into systems. It is much better without all the overall commitment. If you want to do it, if not don't. This problem with secretaries - We have looked at it with Civil Service. There is not a category for it. People think this will help them. I put what they know in job-descriptions but so far it hasn't done any good. We have a big turnover problem.

JCN - We happened to hit the offices with turnover. People leave when it's time for their re-classifying.

DCE - Do you consider it an increase or decrease in status?

CKM - IMM - Increase in status.

CKM - It is drudgery in one sense but they like it.

ESV - Everyone who is using the system is doing it differently, different depths. Some are enthusiastic...some not. One instance is someone writes things out for the secretary. Resent putting something in the system when he could hand-write and walk it down the hall.

SMT - Ron first asked his secretary to put a document out and she didn't like it so he dictated it to her complete with commands and she had no problems.

Missed comments here with Elf problems.

JCN - Got into things we wanted to get into but hadn't really planned. We weren't surprised with anything you all said. Lack of understanding due to a lack of communications. There is a difference between dealing with problems, policy issues, documents, pricing, etc. Another thing is a technical standpoint... what we all do. It was on the agenda to combine all these things and spread them out over the week. Get the Architects to focus on talking. I'm disappointed that we didn't get into the part about sharing. One way to get into things is to have an applications description like ETS has.

DAP - I will try to keep that up-to-date.

JCN - At any rate I'm disappointed that we didn't get that far. It turned into more of a business meeting. Another thing that bothered me, I don't mean to be negative, but I wanted to get a

better feeling of what you Architects feel. It is obvious that there is a day and a half here where we could have done this. It may be that going for 5 days isn't practical. The next meeting will be on how we share the system. How do you want to work it, March, 3 days?

FGB - From the last two meetings we are obviously doing something wrong.

JCN - You should consider that in March. There will be new Architects. Did you have a feeling that compared to the last 2 meetings that it went differently?

FGB - We were more direct and less loose.

RMS2 - I disagree. We have gone through the steps but we will have to see what will happen. We didn't succeed because we are going through the same things this time as last. KWAC was not understanding the position of ARC and ARC is not understanding the problems we face with the system like DEX and response time. We have expressed our feelings before, Documentation, on-line help. We still have these same problems. Some of our help assistance on-line is tedious.

JCN - You are saying that ARC is not responsive to your needs.

RMS2 - We are sitting back, trying to pull things together from the minutes. Trying to draw to the service the problems we want to address and circulate it among ourselves and give it to you to respond to our requests and feelings.

JCN - That is how we want to go about it. It leaves me with the feeling, first you have problems with DEX, the documentation has not been responsive.

Somebody - Wait a minute, how can you say?

RMS2 - That is true, the documentation and training have been good. However for training on L10 you have not been responsive.

JCN - As a matter of fact this recent activity is our response.

DAP - Help is not that bad. You have to keep something like it. To keep the Glossary going you want to keep HELP going, and that's a good way to do it.

RMS2 - You said yourself it was tedious.

BJP - A few comments, it is very easy to criticize. It is very easy to say I want something and you are not giving it to me. The desires and criticisms aren't complete. You want us to fix DEX without saying what it is you want it to do.

Everyone - That's not so.

RMS2 - We have to work closer than we have in the past.

BJP - Get it specific.

RMS2 - That is difficult, we don't know the whole system, we don't know how things work so how can we be specific about things we don't know. Your presentation the other day was very enlightening.

DCE - It took 3 man-months to do it and we had to hire him. So we have been responsive. I don't mind showing you that we don't have enough resources, but I don't like what you say that we haven't been responsive.

IMM - What Bob is trying to say is that you haven't told us that you have done these things. We suddenly find out that you have these things but we don't know it.

JCN - But we have just started in some of these things. RADC L10.

RMS2 - Show us an article that you announced an L10 person available for training.

DAP - I think it would have helped if we had seen a response to these things. Now we know you have done these things but the discontent does not go away.

RMS2 - We have to take it slower. Another KWAC meeting in 6 weeks would be helpful and help us to keep a hand on things.

DCE - We have given you things and areas we have made progress on. How can you say that this meeting is like the last one?

RMS2 - We are in more detail than before. When you have a diversified community using tools you have to get the users together to discuss things.

JCN - What you need is interim reports on what is going on. We will change that.

ESV - When there are requests for one user to develop something the opportunity should be given for all to share if possible.

JCN - It is a very fair trade for us to tell you what we do and for you to say what you think.

BJP - Give us your priorities.

RMS2 - We will try to do that.

Friday

GAS2 - The last KWAC meeting was my first. I work with the Office of Computer Planning at SRI and have programming background. My professional objective has been the creative use of computers - doing more with less. Was ripe for NLS - have been having a ball. It has been frustrating but it's getting better. There is plenty

of diversity among users at SRI. I don't have trouble finding users - I have to be careful because the original design was a little different. There is the capability of being a full blown working medium. There were a lot of users back in March. SRI had slot for 6 months, but not much was happening. I figured I had to show some payoff. Most were casual users. There haven't been provisions to make it easy or simple to learn subsystems. It takes a long time to be comfortable using NLS - I think 6 months.

JHB - I'd like to differ with that time

GAS2 - I just wanted to teach them a small subset. I see my job as architect as being the interface between NLS and people. We want to build specialized systems. We are doing a familiar job in a new way - developed CIMROS. Do you all have copies? It isn't completed, a pilot study. In User Development (UD) documentation I outlined my method of approach. There are 3 things that I think might be of interest to other users - CIMROS, Retrieve - a general retrieval that uses content and structured filter. There is some documentation. We need to get together on needs and requirements. I'm in a unique position at SRI. I have good contacts with system programmers. For example, Jack is interested in Burroughs NLS interface and there are people looking at that and I've done some looking at that.

GAS2 - If I know your needs sent via AID or KWAC - also ARC needs to tell us of new developments - as soon as that ident is updated I'm sending my UD paper to that ident - I will be sending stuff on UD, retrieve, CIMROS and B6700/NLS. The intent in writing CIMROS was for me to write my own system - has worked pretty well. RWW went out of his way to give me a hand - was surprised - won't be journalized till finished. There are more commands I'd like to add.

RMS2 - How many users are on that?

GAS2 - It was designed for one user at a time. The primary objective was to manage the information flow within the institute about contracts - currently a manual system. They can't keep up - lost one secretary who is handling the RO's (Research Opportunities). This group is a commercial complement of the Commercial development group. ORO (Office of Research Operations) is the parent group. CIM and PDG groups are under that. CIM group had RO data base that was stand alone thing. CIMROS provides controlled formatted entry, editing, retrieval, - have action codes from 0-8. Have never had data in computer to come up with marketing strategies - want to give them some additional aids

RMS2 - You have an RO in one division - can you put them together with RO's from another division?

JHB - What kind of flexibility is there for data entry?

GAS2 - We were used to typing it in a rigid way - don't need much flexibility. Thought about giving them options only 2 people use the system - operator plus backup. Were used to typing RO's this

way. Not a flexible system.

JHB - So it will barf if you type the wrong thing?

GAS2 - No, it will just let you type it in.

DCE - Does she recognize that later searches depend on accuracy of input?

GAS2 - I'd like to see them catch up on '75 backup and get ahead. Some work coming up pulling these together - isn't a contact file - more of a log - more it's used better they like it. Was such a mess that it's easy to do trivial things that make a big difference - easy to generate reports - have Diablo printer. I would like some VP's using it, but they are a little intimidated. CIMROS gal's desk is right in front of VP's offices

RH - Does case matter?

GAS2 - Yes - don't check case - it's just known and used that way

RH - What if VP's mess up because can't type?

GAS2 - I'm not going to teach the VP - his secretary will

RH - We had trouble with Multics because weren't flexible

DCE - Would run more slowly if any case was ok

SMT - Isn't it natural to type names in upper and lower?

RH - If they've used other systems

DCE - Havn't seen any other systems

RMS2 - When you say show and a researcher's name - how do you implement it?

GAS2 - Show command has two levels -

Show

RO

DIV

ALL

WITH

DUE

GAS2 - Any text can go after with - eg RO

RMS2 - You set up a content pattern?

GAS2 - You do a slicker thing using lookup procedure

RMS2 - That's in L10?

GAS2 - Yes

DCE - L10 has a zillion procedures that you can call - like a huge vocabulary

DAP - Are those things in Xprocedures?

GAS2 - That's some of them - the rest are in sysgd, not kept up

DCE - Will have to maintained

Much conversation back and forth...

Stuff about sysgd and other documentation about procedures

JHB - Comparing structure of journal indexes with your thing, sounds like a lot of work is done instead of looking at string positions.

GAS2 - I start lookup at the right place

GAS2 - It is meant to be a simple thing

JHB - You want it to grow

GAS2 - I want other people in ORD to be able to do what was described earlier - this was simple enough I could do

DAP - You regard this as simple?

GAS2 - Relatively yes

DCE - He had a lot of work to learn conventions

JHB - You can't build systems that are obsolete when the file gets bigger than 300 pages. It would be wasting time because there are mgt info systems that can do the job.

GAS2 - Only upward compatible in limited extent - will do for SRI needs. Other developments require something a lot foxier - at least got this far

DCE - Wouldn't it be easier to do in DMS on Burroughs?

GAS2 - Could have done it in 2 days on Lulu. The slot was paid for.

DCE - You can say Print Branch NLS,sysge,lookup.1 <CA> and that will take you to the source code - or Jump Name External lookup; file xprocs is an attempt to try to isolate procedures that make good interface on frontend. It is categorized with procedures on second level - can get through locator. We stopped maintaining

that but want to get it started up again for users doing user programming. When something in xprocs points to a procedure it points to files in directories with limited access. Haven't opened them up because NLS privacy is so vulnerable - so don't try to break it... When they recompile and load a lot depends on how procedures are organized - can't be messed up. It's hard to explain why it takes a long time to change and fix things. We have remodularized often.

DAP - Is TENEX and NLS protection independent of each other - so can I limit files?

DThere iscussion about protection and copying NLS files in TENEX - copying worked - ssgf - too many conversations going on to get

GAS2 - How about a directory to keep up interactions like that?

RMS2 - Couldn't get a newsletter going.

GAS2 - We could have a simple index to filenames. I have a bunch of loose things that might be handy. Could share info there - not only what is developed but also what is needed.

RMS2 - Have process branches there with a paragraph description

DAP - My process branches wouldn't be useful to anyone else - firmly attached to files

RMS2 - Like Duane's letter - I'd like to know how to get a loop in a process commands branch.

DCE - We'll get you a directory. There needs to be some control.

DAP - Have idents validated for that directory

DCE - Jim runs utility and I don't tell him what to do

SMT - We need to do the same thing as CIMROS

GAS2 - JHB mentioned something important - I know how big the file will get - it will probably not get bigger than 78 pages. With high volume you'd want to do some steamlining.

RMS2 - Would like to talk to trainer about how do get started - come to East Coast to help Architects

RH - I have 3 terminals that could be used for that

RMS2 - Could we get a trainer in a couple of months?

DCE - Talk to Jim about that.

DAP - Would like to be able to write L10 programs - would like a 3 day class

RMS2 - I can't get help from Help on writing Content Patterns -

square brackets are not mentioned in there.

DAP - It was really difficult to learn from Help

RMS2 - I tried to get help on content analyzers from Help and didn't make it.

3 conversations going - JHB and JEG on documentaton - Glen, Stan, Doug, Bob, Dave, and Duane on misc.

DLS - What's the policy of turning over use to ARC to maintain?

DCE - Help always treats users the same

DLS - My observation is that novices don't use it, apprentices do

DAP - You have to know enough to ask questions - NCSS

DCE - I'd like to propose that the Help that we are responsible for maintaining is a subset to help novices and put the rest in a form to printed out

DAP - I moved from Help to using Locator. I am nervous about Help being made smaller

DCE - There's lots of energy to maintain parallel documentaion -

DAP - I just think it's a tremendously useful thing

DCE - We need to know that kind of thing

DAP - I use Help more than Format - can you tell me where and why you use help

DAP - With the Glossary probably don't need Help

DLS - I would like to have 40 copies

DAP - The advantage of Help is you can keep it up to date

DCE - Also doesn't have journal numbers or statements numbers - bowled me over

DCE - You can't tell how to refer to it

DAP - NCSS has a set of user sophistication cmmands. It gives more depth as the user expands. Would be nice if it were in useroptions.

DCE - Do we want to continue with separate discussions?

RMS2 - How about you talking DLS

DLS -

JEG - I feel this morning was the best part. I hope this kind of

thing will be higher on the priorities.

JHB - Jack and I were discussing Mil's document. We agreed that it was not useful in it's present form.

DLS - I just roamed around in <FMS> and there are some design docs that are useful - Finances, in the government there is problem with funds being allocated on a yearly basis and have to come out even by the end of the year. Contracts etc. run across fiscal years. Problem for a manager with several projects and several million dollars. An administrative assistant keeps records which have standard output.

DCE - Provided by Larry?

DLS - I'm not sure. There is PMS (Procurement Mgt System) CMS (takes it after it's on contract); comes out of 3500 and data is captured from forms submitted by engineers and accounting people - month old by the time comes back to local manager. This is fine at the beginning of the fiscal year but as it nears the end that data is not good. FMS tries to provide more up-to-date records. We had manual FMS using special file structure and content analyzer patterns but got too baroque. No one new could come in and use it. Last spring Joe Cavano sat down with DLS and others and talked about what was needed to know about L10. Some L10 manuals were being produced - final design was done about 3-4 months ago. NDM was principal coder because our people were still learning. The intent is for NDM to fade out and our guys to fade in - cost one of the programmers - should talk to Joe about details - system is designed to work without knowledge of NLS - administrators will update data base - ignores a lot of NLS things - same words used to describe other functions - a lot of effort was put into making it hard to mess up.

DLS - File structure reflects the way technical efforts are managed - TPO (Technical Planning Objective) under that 6 tech areas under them job order #'s - basic no. used for time charges - mostly contractual but also in-house - can do queries - effort has been to build data entry subsystem and file protections - outputs are straightforward - is 90% coded - can't get someone back there to demonstrate and inout hasn't really started - intend to have graphics - can do projections on monthly basis - tabular data available now - eventually want to have elementary graphics or plotting capability - doesn't have to be very sophisticated

JHB - will this continue to live comfortably in NLS? Will files get too big?

DLS - No, not for our size organization with the number of projects we have. It'll be large and it's hard to say there is a delete command that can be used to get room. There is a ledger system that backs this up. It was done because one guy keeps asking how did we get here?. Now can go back in time. There is another NLS file online - entries look like main file - most of the basic data is done during planning cycle - will soon be working 77 budget - get prioritized list of things a person wants to do

GAS2 - Has JCN talked about generalizing your system?

DLS - Yes - discussed procurement cycle; will know next spring if this system will pay off

JHB - How many forms are in the procurement cycle?

DLS - Has shown a lot of inconsistencies and errors in the current system

DLS - Yes - has been build with view of making generalizable

DLS - There has been talk of showing this to the commander to see if there would be interest in having one of these in every division around the center. Then we would want to think if it would be better to have the backend. It all fits in with NSW.

DCE - when is it useful to have the capabilities of NLS?

DLS - Front end ability is very important

GAS2 - ability to it very transparent with tailored commands is neat

GAS2 - Beautiful executive that things can be hung under

DLS - One of the fields would be link field off to a more text description of what this whole thing meant - have tried to get Effort Writeups going but is standard document description of purpose of effort, objectives, background, requirements

SMT - You don't do that now?

DLS - We do it in many different ways

SMT - There is a standard DOD format for that and we do that now

DLS - I was saying we are trying to get an online process going - we have the paper process going

SMT - They are incompatible now

DLS - wrote format subsystem for generating memos

DCE - want a lot of options set

RMS2 - Would be nice to write directives like user programs

RMS2 - Next meeting should be 2 days on policies and 2 days on applications -can't have 4 days on policies - I wanted to get into OP directives - would like 2 columns on a page

DAP - Me too. DVN sent out a paper with a bunch of suggestions in it

DCE - no way you could generate a list of things that we have

RMS2 - Is OP one pass?

DCE - Yes and line at a time - want it to be a page compiler - no better would be a document compiler - but better would be a whole volume compiler -

DAP - could do footnoting if were a page compiler?

DCE - Yes but document compiler is what is really needed.

RMS2 - TDC program doesn't come back looking very well - seems it should be easy to substitute page numbers.

DCE - Yes but takes compiler - talked about outputting - content filter is optionally in the path before anything gets to the output processor - the program in content analyzer can allow you to add directives - I wrote one where I made a list of SID's and added directives at those points - could have another file with program that initializes stuff in content analyzer - can go further too

GAS2 - I got the impression that the OP code is ancient - doing what you're suggesting is going to be slower - can OP be rebuilt easier?

DCE - Right now this will work.

GAS2 - This is the way CIMROS stuff can be done.

DCE - It bothers me that the journal looks like it does - could be done this way too

RMS2 - You would have 2 files - one with text and one with print control stuff. How would people know to access the right print file?

DCE - There could be a link in the origin statement. Print control could also be stuck at the end of the file.

DLS - Is anyone out there intensively interested in this?

DCE - The last guy to really work on this left 2 years ago - Elizabeth, Harvey, and Bob E. have been working it; talked about Basic some, Potter panted.

SGR - I got tired of minutes and so let some of the last dribblings of conversation pass into the void...

DAP 1-DEC-75 08:31 27053

response to <33979>

a suggested addition to the excellent list in <33979>.

response to <33979>

this is a set of basically good ideas which i would love to see implemented. it is, however, a list based on the assumption that the user is a resident of sri -- at least by implication. for those of us beyond the boundaries of menlo park (and new jersey is definitely beyon), the output journal commands are useless, useless!! so, in addition to the suggestions in <33979>, i'd like to see something done for us in the boonies (trenches? civilization?). like maybe an option to paginate between items... which would be taken care of by a command like output journal (to) terminal, for example.

either that, or send me a lineprinter that will respond to the quickprint routine.

1

DAP 1-DEC-75 08:31 27053

response to <33979>

(J27053) 1-DEC-75 08:31;;; Title: Author(s): David A. Potter/DAP;
Distribution: /RA3Y([ACTION]) FEEDBACK([INFO-ONLY]) TELECON([INFO-ONLY]) ; Sub=Collections: NIC FEEDBACK TELECON; Clerk: DAP;

27053 Distribution

Raymond R. Panko, Special Jhb Feedback, Stavros M. Macrakis, James H. Bair, Michael T. Bedford, Frank G. Brignoli, Elizabeth J. Feinler, Roger W. Hough, Robert N. Lieberman, Inez M. Mattiuz, Connie K. McLindon, Raymond R. Panko, Michael A. Placko, David A. Potter, Rudy L. Ruggles, Robert M. Sheppard, Glenn A. Sherwood, Duane L. Stone, Stanley M. (Stan) Taylor, Ronald P. Uhlig,

Visitlog: Barry Boehm and Norman Peterson, TRW Systems Group, 25
November 1975

Visitors: 1
Barry Boehm and Norman Peterson 1a

Organization: 2
TRW Systems Group, Redondo Beach, California 2a

Date of Visit: 3
25 November 1975 3a

ARC Contacts: 4
In discussion and demonstrations: DCE, HGL, KEV, RLB2. 4a
At lunch: joined by JBP and Jack Goldberg. 4b
At Seminar given by Dr. Boehm: ARC programming staff. 4c

Notes: 5
Barry Boehm and Norman Peterson of TRW visited at ARC on 25
November. They were here to get an initial introduction to NLS
and some of the support tools we use in our software development.
There is a possibility of their using NLS and other ARC tools in a
software development project (initially with a sub-team of 6
programmers, possibly growing to a larger set) working on a system
to be written in JOVIAL. The system will be developed under a
subcontract from GE for the Air Force. RADC is considering
funding the experimental use of ARC tools. 5a

After an initial discussion with DOUG, Barry and NORM were taken
to the conference room where Ken, Bob, and I gave demonstrations
of NLS and presented overviews of the system architecture. Larry
Robinson and Peter Neumann of Jack Goldberg's group at SRI also
attended the early part of these presentations. 5b

They brought with them a copy of an ISI document called NLS
(with an ISI letterhead on the first page!) which was a single
paper containing copies of several reasonably current ARC
documents. While it was nice to see them bound together, it
was disconcerting to realize that we didn't have a similar
package. In fact no one here knew about it! They did ask for
whatever other current documentation we had. 5b1

The first demonstrations of NLS as a tool in system building
(presenting the editor and languages with some discussion of

Visitlog: Barry Boehm and Norman Peterson, TRW Systems Group, 25
November 1975

general system architecture as well as online help available) went well at ISIC with reasonable response. Ken then presented a blackboard presentation of the debugger, but by then ISIC was experiencing network trouble and his online demonstration had to be delayed. (ISIC was down until late in the afternoon.)

5c

In a brilliant save, Bob presented a demonstration of the Graphocs system at BBNB using a version of the system which was not as current as the one at ISIC and without the benefit of the many diagrams available there. After lunch, Ken demonstrated the debugger at BBNB.

5d

We should have current demonstratable systems on all our machines when demonstrations are to be presented. While systems were available at BBNB, Jon was the only one of us who knew about them (he had used them in the NSW Alabama demo the week before.) Perhaps some general rule could be made about this.

5d1

We went to lunch at the I-building and were joined by Jack Goldberg who discussed some items of interest with Barry Boehm. After lunch, Ken demonstrated the debugger.

5e

Dr. Boehm then gave a presentation to an ARC seminar based on some Viewgraphs called "Seven Fundamental Principles of Software Development". They were made for a briefing for DDR&E in January 1975. He plans to expand them into a paper. Copies have been XDOC'd as (33577,). There was also a general discussion of the system development environment at TRW.

5f

Doug ended the visit with a discussion of possible next steps in our collaboration.

5g

Literature:

6

Presented: AKW brochure.

6a

Promised: up to date documentation.

6b

Reference:

7

For further information concerning the possible interaction of ARC with TRW and the possible provision of Software Engineering tools in general, see (33831,) and (33833,) in which Doug outlines his original conversations with Barry and RADC.

7a

The original announcement of the proposed schedule for the visit is in (26981,).

7b

Visitlog: Barry Boehm and Norman Peterson, TRW Systems Group, 25
November 1975

Further action required:

Send copies of current documentation.

RLL should contact TRW about a possible software oriented AKW seminar.

Doug will contact Barry and appropriate people at RADC concerning an initial experiment.

8

8a

8b

8c

HGL 1-DEC-75 10:03 27054

Visitlog: Barry Boehm and Norman Peterson, TRW Systems Group, 25
November 1975

(J27054) 1-DEC-75 10:03;;; Title: Author(s): Harvey G. Lehtman/HGL;
Distribution: /DCE([ACTION]) RWW([ACTION]) SRI-ARC([INFO-ONLY
]) JLM([INFO-ONLY]) MAW([INFO-ONLY]) DLS([INFO-ONLY]) ;
Sub-Collections: SRI-ARC; Clerk: HGL; Origin: < LEHTMAN,
VISITLOG,NLS;1, >, 26-NOV-75 12:14 HGL ;;;;####;

27054 Distribution

Elizabeth J. Feinler, Kirk E. Kelley, N. Dean Meyer, James E. (Jim) White, Douglas C. Engelbart, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, James C. Norton, Jeffrey C. Peters, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor, Richard W. Watson, Don I. Andrews, John L. McNamara, Mike A. Wingfield, Duane L. Stone, Douglas C. Engelbart, Richard W. Watson, Sandra Lee Miranda, Bonny Penny Mosher, Israel A. Torres, Jan H. Kremers, Susan K. Ocken, Raphael Rom, David C. Smith, Buddie J. Pine, Andy Poggio, David L. Retz, Laura J. Metzger, Karolyn J. Martin, Jan A. Cornish, Larry L. Garlick, Priscilla A. Wold, Pamela K. Allen, Delorse M. Brooks, Beverly Boli, Rita Hysmith, Log Augmentation, Raymond R. Panko, Susan Gail Roetter, Robert Louis Belleville, Ann Weinberg, Adrian C. McGinnis, Robert S. Ratner, David S. Maynard, Robert N. Lieberman, James H. Bair, Jeanne M. Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Marcia L. Keeney, Elizabeth K. Michael, Jonathan B. Postel

The standard form and procedures for writing documentation

People outside the ARC documentation group are beginning to write userguides for 8.5 and 9 tools. In particular, Raphael Rom and Ken Victor have written documents for the new Userprofile and Debugger tools and they would like them to be accessible via Help. This is far out.####;

The standard form and procedures for writing documentation

The choice to write documentation in a standard form which will be easily accessible online (via help) and offline using hardcopy is yours. The standard form and procedures for doing this are maintained in the Help Development document <BBNB, xhelp, helpd, converting>. These sketchy standards and procedures are being revised as new techniques and capabilities are being discovered or planned. If the existing standards and procedures are unacceptable to you, this implies you think that they should be changed somehow. Let me know what changes you would like to make and I will go about incorporating them by getting agreement from others concerned, maintaining the Helpd file, etc.

1

I do not think it will be a waste of time to go ahead before a consensus is reached and write according to the way you think the standards and procedures should be. On the contrary, I think we need experimentation in this area at this time and I encourage people to do what they think will work best both online and offline. At the same time, let me know where you plan to deviate from the current standards and procedures so I can see if there will be any problems incorporating your work and so I can go about changing the standards where necessary.

2

Reference: <bbnb, xhelp, helpd,>

3

The standard form and procedures for writing documentation

(J27056) 1-DEC-75 11:30;;; Title: Author(s): Kirk E, Kelley/KIRK;
Distribution: /DMB([ACTION] dpcsnotebok please) KIRK([INFO-ONLY]
rejournalized for dpcs subcollection) &DPCS([INFO-ONLY]) ; Clerk:
DVN; Origin: < KJOURNAL, 33984,NLS;1, >, 27-NOV-75 17:34 XXX
;;; Title: Author(s): Kirk E, Kelley/KIRK; Distribution:
/SRI-ARC([INFO-ONLY]) ; Sub-Collectjions: SRI-ARC DPCS; Clerk:
KIRK;

27056 Distribution

Delorse M. Brooks, Kirk E. Kelley, Documentation Production and
Control System Interest Group ,

useful to the human user, and if not, substitute a more meaningful one for it.

STANDARDIZING COMMAND LANGUAGES

DPS standardizes command languages in much the same sense that, for example, the FTP protocol does. But what we're talking about are machine-to-machine command languages, or protocols, not the command languages employed by human users. What I was trying to say was that we're providing simple command languages for use by programs, IN ADDITION to the command languages used already by people.

The NSW Frontend Command Language Interpreter (CLI) provides a good example of the difference between the two types. The CLI offers a very flexible and human-engineered command language to the user. When the user types the final command accept, the CLI translates his command to the much less flexible, machine-engineered command language understood by the distant tool. Thus the existence of the fixed machine-to-machine command language is precisely what allows the user's command language to be separated from the body of the tool, experimented with, and tailored to suit the user. It's also what will allow competing Frontends to be constructed, used, and evaluated by users within the NSW environment.

STATE VARIABLES

By "state variables", we mean any pieces of data that one process must maintain and make accessible to other processes during the course of their interaction. In NSW, for example, the name of the logged in user might be maintained as a state variable by the Frontend, allowing the SENDMAIL tool, for example, to employ a standard DPS primitive to remotely read its value (for insertion in the "Clerk:" field).

State variables, in the sense in which we use the term here, are not related to files or file transfer. DPS does seem to be impacting network file transfer in another respect, however. A descendent of the PCP88 data structure transmission format upon which PCP is based is being employed as the foundation for the message transmission protocol being devised by ARPA's Message Services Committee. This format is being employed both to represent the messages themselves, and to format commands and replies exchanged by message processes. DPS-like data types provide a convenient means for modelling structured messages (e.g. NLS files), as well as the many additional parameters that accompany a message (e.g. author, distribution list, subject).

REIMPLEMENTING EXISTING PACKAGES FOR DPS

Simply transliterating an existing FTP server process, for example, into its DPS equivalent would be a very simple task, in my estimation. The task gets larger, of course, if one decides to, in effect, "redo" the protocol at the same time. And this is, in fact what ARC proposed that we do for NSW. In particular, we proposed to model files (for purposes of inter-host transmission) as DPS data objects, just as the Message Services Committee is now doing with messages.

I don't recall ever hearing the necessity of reimplementing FTP and RJE raised as an objection to DPS, but I suppose it have been an unspoken one, in some cases.

ARC'S RELATIONSHIP TO NSA

The extent to which we will become involved in development of NSW's internal network is somewhat unclear at present. It looks like our initial arrangement with them will provide for a few months of

