The Middle End
An L1011 / Protocol Interface

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The Middle End provides an environment in which processes written in L1011 for a PDP-10 can easily take advantage of two newly defined network protocols, DSP and MSG, providing interhost and interprocess communication at the procedure call level.

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The Middle End: A Protocol Interface

This 30 page document describes a set of procedures which can facilitate the installation of an L10 tool into the NSW environment. A later document will cover the specific case of the NLS-9 tool.

The Middle End: A Protocol Interface

1

INTRODUCTION 2

A body of code has been written which can serve as an interface between a tool written in L1011 for the PDP-10 and the DPS protocol or the MSG protocol. This body of code was originally designed to interface the NLS-9 Back End to the CLI through the DPS protocol. It has since been generalized to support the interaction between DPS or MSG and an arbitrary L1011 process-End. For the special (but common) case of an L1011 tool communicating with the Command Language Interpreter (CLI) a third protocol called Shared Page or simply SHARED is also supported. It is hoped that this code will make it easier to install L1011 tools which interact with the CLI and possibly with other NSW processes, such as the Works Manager. 2a

It is assumed that the reader is familiar with the DPS protocol, the MSG protocol, and the L1011 programming language. References to the appropiate documents are contained in the Bibliography. 2b

OVERVIEW

3

The primary function of the middle-end is to isolate a tool written in L1011 from the protocol used for interprocess communication. Total isolation from the protocol is impossible because the various protocols support different functional capabilities. The basic function which is common to all three protocols is that of a procedure call, either from a remote process to a procedure in the L1011 tool, or vice versa. This call may have arguments, and may return results. The middle-end succesfully isolates the tool from the protocol for this basic function. The middle-end also supplies a set of protocol dependent routines which allow the tool to take advantage of the additional functional capabilities of the particular protocol being used. These protocol dependent routines will be documented in a later note.

3a

The middle-end is a set of object files which one link loads with an L1011 tool. This makes available to the tool a set of procedures which can be used to communicate with other processes via the DPS, MSG or SHARED protocol. The tool itself when first started performs its own initialization and then makes calls on procedures within the middle-end providing information about the tool, such as the protocol desired, and the names and address of those procedure within the tool which are capable of being called from another process. These procedures are called externally callable procedures and must obey the conventions described in the next section.

3b

The middle-end acts as a dispatcher, receiving procedure call requests from external processes and performing the calls on the local procedures. The middle-end handles the implementation details necessary to comminicate with the process providing the protocol, and conversion of arguments from the protocol format to its own internal L1011 format. A handle is also provided if the tool wants to perform additional transformations on its arguments. The local procedure may also make calls on remote procedures through the middle-end. In this case the local procedure generates an L1011 LIST containing the arguments to be passed to the external procedure. The middle-end converts this to the appropiate protocol format and invokes the protocol to make the call. If this call returns results the middle-end converts these to L1011 format and returns them to the local calling procedure. Again a handle is provided if the tool wishes to perform additional transformations on all results returned from external procedures.

3c

CONVENTIONS FOR EXTERNALLY CALLABLE PROCEDURES 4

All of the protocols supported by the middle-end use the PCPB36 encoding for arguments and results of procedures. Data elements are fully typed in PCPB36. This represented a problem in the L1011 environment in which data elements are not fully typed. This problem was solved by making use of the extensions to L1011 providing typed lists, and list handling primitives. Thus an L1011 LIST provides a convenient way to store both the type and value of a data element. 4a

When the middle-end receives a request for the execution of a local procedure it is given a PCPB36 LIST of arguments. It converts this list to an L1011 LIST, and passes each element of the list to the procedure as an argument. In addition the middle-end passes one extra argument to each externally callable procedure. This is the address of an L1011 LIST into which the procedure stores its results. The middle-end then translates this list into a PCPB36 LIST which it returns as the result of the procedure call. The procedure should RETURN[TRUE] if it succeeds and RETURN[FALSE] if it fails. 4b

ARGUMENT CONVERSION 5

The following table defines the default transformation between PCPB36 and L1011 list types. Note the L1011 list types mentioned below include the user settable bits in the List element descriptor, see (KJOURNAL, 25692, 1:w). The procedure lreadb(listaddress, i) returns the type of the i'th element of the list. The lower case identifiers used below beginning with the letter u are external constants defined within the middle-end. 5a

PCPB36	L1011 LIST type	value passed as argument (value of ELEM #list#[i])	
			5a3
EMPTY	unull	0	5a4
BOOLEAN	uboole	1 or 0 for True or False	5a5
INDEX	uindex	value (>0 & < 2**15)	5a6
INTEGER	uinteg	value	5a7
BITSTR	ubitst	address of a block whose first	5a8
		word contains a bit count	5a9
CHARSTR	ustrin	address of an L1011 string	5a10
LIST	ulist	address of an L1011 list	5a11

TOOL DEPENDENT ARGUMENT CONVERSION 6

The middle-end provides a handle in case a tool wishes to perform additional transformations on the arguments passed to its internal procedures which are called remotely. The handle is the address of a tool supplied procedure which is called to process each argument before being passed to the remotely callable procedure. This tool supplied procedure must take the following formal arguments: 6a

rawarglist 6a1

The address of the L1011 LIST produced by the middle-end via the default transformation nf the PCPB36 argument list from the remote process to the procedure to be called. 6a1a

convertedarglist 6a2

The address of an L1011 list which is used to store the converted arguments. 6a2a

listindex 6a3

The index of the list element to be converted. 6a3a

errstring 6a4

The address of an 110 string into which any error messages should be stored. 6a4a

The tool dependent argument converter should have the following semantics: 6b

This procedure will be called once for each argument. It should compute a transformed argument from #rawarglist#[listindex] and store it in #convertedarglist#[listindex]. It should RETURN[TRUE] if it succeeds and RETURN[FALSE] otherwise in which case it should store an error diagnostic in errstring. 6b1

In addition to converting arguments from a remote call to a local procedure a handle is also provided to convert results returned from a call of a remote procedure. This handle is also the address of a tool supplied procedure. This procedure takes the same arguments as the argument conversion procedure and should have the same semantics. A later document will describe the tool specific argument conversions currently being used by the NLS-9 tool. 6c

USING THE MIDDLE-END 7

A tool process is started at location specified by the first location of its entry vector. The tool should provide its own entry procedure, and initialize the L1011 environment. It should then perform any tool specific initialization tasks. The tool should then call the following procedures in the middle-end: 7a

(initmiddle) PROCEDURE %initialize tool parameters% 7a1

FORMALS 7a1a

processname, 7a1a1

the address of an L1011 string containg the process name for this process. 7a1a1a

argconverter, 7a1a2

the address of a procedure which will perform tool dependent conversion of arguments passed to remotely called local procedures, or 0 implying no tool dependent argument conversion. 7a1a2a

toolcleanup, 7a1a3

the address of a procedure supplied by the tool which will be invoked by the middle-end after each externally called procedure returns to the middle-end, or 0 implying none. The toolcleanup procedure takes no arguments. 7a1a3a

resultconverter, 7a1a4

the address of a procedure which will perform tool dependent conversion of results returned from calls to remote procedures, or 0 implying no tool dependent results conversion. 7a1a4a

errorroutine 7a1a5

The address of a procedure which the middle-end will call if an abort signal generated by the local tool makes its way up to the middle-end, or 0 implying none. The arguments passed are an error code and the address of an error string. This procedure may display and/or modify the error message. The procedure should return TRUE or FALSE indicating whether the call

currently being processed should return success or failure, i.e. whether the error is non-fatal or fatal to the command being processed. The middle-end then sets the appropiate return code, and returns the error string as the result of the call. If no errorroutine is specified all ABORTS trapped by the middle-end are treated as fatal errors. 7a1a5a

(crtlpkg) PROCEDURE %specify externally callable procedures% 7a2

FORMALS 7a2a

pkgname, 7a2a1

the address of an L1011 string containing the name of the group of procedures being defind in this call to crtlpkg. Note:crtlpkg may be called several times to define different packages within the tool. 7a2a1a

packagedescriptor, 7a2a2

the address of a block containg a package descriptor. The package descriptor consists of two words for each procedure which is externally callable. The first word is the address of an L1011 string containing the name (upper case) by which the procedure is known externally, the second word contains the address of the procedure. The block must be terminated by two zero words. 7a2a2a

hashtableaddress, 7a2a3

The address of a data block which will be used by the middle-end as a hash table for the procedure names. If 0 (or if the middle-end decides the table specified is not large enough) a hash table will be allocated by the middle-end. 7a2a3a

hashtablesize 7a2a4

The size of the hash table in words whose address was passed in hashtableaddress. Not used if hashtableaddress = 0. 7a2a4a

```
(execmiddle) PROCEDURE % Dispatches Remote calls to Local
procedures%                                                    7a3

   FORMALS                                                     7a3a

      howpcp,                                                  7a3a1

         = 1 implies SHARED                                    7a3a1a

         = 2 implies DPS                                       7a3a1b

         = 3 implies MSG                                       7a3a1c

      priority                                                 7a3a2

         DPS: (howpcp = 2), Specifies the interupt level at
         which externally called procedures execute, Legal
         values are 1, 2 or 3, The lower the priority number,
         the higher the priority of the interrupt, Used to
         allow externally called procedures to trap interupts
         which occur at a higher priotity level than the one
         passed,                                               7a3a2a

         For example if a tool wanted to trap write psuedo
         interupts which occur at priority level 2 , a 3 must
         be passed as priority to execmiddle (otherwise the
         externally callable procedure will run as a priority
         level 2 (or 1) interrupt and would therefore not see a
         priority level 2 interrupt such as a write psuedo
         interrupt)                                            7a3a2b

         MSG: (howpcp=3)                                       7a3a2c

            0 => A passive tool, i.e., this tool is driven by
            procedure requests from external processes, In this
            case the procedure execmiddle never return to its
            caller, Instead it loops, waiting for a procedure
            call to come in, processing the call and returning
            results to the caller,                             7a3a2c1

            1, 2, 3 => An Active tool, The middle-end will
            setup an interrupt at the prioity specified, MSG
            will generate a interrupt whenever it has a
            procedure call request for the tool, The interrupt
            code (provided by the middle-end) will process the
            call, return results, inform MSG that he is ready
            for another call (go into "Running and Ready"
            State) and then debrk to what ever the tool was
```

doing when the call came in. In this case the call to execmiddle returns to its caller after having set-up the appropiate interrupt. 7a3a2c2

CALLING EXTERNAL PROCEDURES 8

The following procedure can be used to call procedures in other processes, 8a

```
(extcall) PROCEDURE %Calls External Procedure MSG, SHARED or
PCP protocol%                                                    8a1

    ( dmail, %MSG: destination mailbox PCP: process handle%      8a1a

    pname REF,  %addr of string containing procedure name%       8a1b

    callmode,  %MSG:=1 no acknow.%
               %MSG:=2 in-line w/ ack%
               %PCP: package handle%                             8a1c

    argl REF,  %address of argument list%                        8a1d

    result REF  %address of result list%);                       8a1e

                                                                 8a1f

                                                                 8a1g
```

This procedure will return one result, a boolean indicating whether or not the call was successful. The middle-end will encode the argument list into PCPB36 format . This transformation is the inverse of the default argument conversion described above. This implies that the type of each argument in the argument list should correspond to the type expected by the remote procedure for this argument. There are procedures available in the middle-end for constructing the proper list elements. These are described in the following section. 8b

The middle-end then calls the external procedure using the appropiate protocol. If the external procedure returns results the middle-end will decode the PCPB36 data structure returned into an L1011 LIST. The elements of this LIST are inserted in the "result" LIST whose address was passed as an argument to extcall. If the tool has specified a result converter the returned results are passed through the converter before being inserted into the "result" LIST. Note that calls made specifing no acknowledgment always succeed, and never return results in the "result" LIST. 8c

USEFUL PROCEDURES AND GLOBALS 9

This section describes some globals maintained by the middle-end, and procedures provided by the middle-end, which might be of interest to the tool builder. 9a

GLOBALS 9b

mdebug: 9b1

A trace facility is included in the middle-end to facilitate debugging. The global variable "mdebug" is used to control the trace, according to the following table: 9b1a

= 0 : No tracing (default value) 9b1a1

= 1 : Raw arguments to local procedures are traced 9b1a2

= 2 : Converted arguments to local procedures are traced 9b1a3

= 4 : Results returned by local procedures are traced 9b1a4

= 8 : Arguments to remote procedures are traced 9b1a5

=16 : Converted results returned by remote procedures are traced 9b1a6

=32 : Raw results returned by remote procedures are traced 9b1a7

Any combination of the above traces may be turned on by turning on the appropiate combination of bits in "mdebug". 9b1b

chntab: and levtab: 9b2

The middle-end defines the forks psuedo-interrupt table. This table is called chntab. The associated level table is called levtab. Channels 4 and 5 are used by the middle-end. The tool is free to use other channels. 9b2a

mmbox: my mail box. The mailbox name of the tool. For DPS it is a process handle. 9b3

smbox: source mail box. The mailbox name of the process on behalf of which the tool is currently processing a procedure request. For DPS it is a process handle. 9b4

toolacnv: address of the tool supplied argument conversion procedure. 9b5

toolrcnv: address of the tool supplied result conversion procedure. 9b6

toolcleanup: address of the tool supplied cleanup procedure. 9b7

errorproc: address of the tool supplied error procedure. 9b8

PROCEDURES 9c

lreadb(listaddress, i) 9c1

Returns the type of the i'th element of the addressed list, This will be equal to one of the following constants defined in the middle-end: 9c1a

uinteg = % 2 INTEGER % 9c1a1

uindex = % 10 INDEX% 9c1a2

uboole = % 18 BOOLEAN% 9c1a3

ustrin = % 3 STRING% 9c1a4

ubitst = % 9 BITSTRING% 9c1a5

utpsbl = % 17 block containg two text pointers and a string% 9c1a6

utpblo = % 25 block containg two text pointers% 9c1a7

ublock = % 1 BLOCK% 9c1a8

unull = % 0 NULL% 9c1a9

ulist = % 4 LIST% 9c1a10

aloblk (size) 9c2

allocates a block of at least "size" words in the free-storage zone managed by the L1011 List Runtime Package. Returns the address of the first useable word in the block. Generates an ABORT signal if it is unable to allocate the block. Note that any user allocated blocks which are "owned" by a LIST ELEMENT must be obtained via this procedure. The

LIST Runtime Package frees the block whenever the owning element is deleted or replaced. 9c2a

makedesc(type, valueoraddress, aloflag) 9c3

Used to create a list element of type other than uinteg, unull, ustrin, or ulist which can be created by using the proper L1011 syntax. 9c3a

type - LIST element type 9c3b

valueoraddress - value or address of the element depending on type. 9c3c

aloflg - true if the data stucture is allocated in the list zone, i.e. obtained via aloblk. 9c3d

Returns a valid L1011 LIST element descriptor. The procedure is normally used as follows: 9c3e

```
#list#[i] _ USE  makedesc( type, valueoraddress, aloflg);
```
9c3e1

rtnstring(addressofastring) 9c4

Returns a LIST descriptor for an element which is of type string. It makes a copy of the string based on its current length rather than its maximum length. This is useful in returning strings to a remote caller. Example: Suppose we have a string called buffer which is declared to 2000 characters long. An externally callable procedure in the tool always returns this string as a result. The actual length of the string, i.e., buffer.L, varies. The statement 9c4a

```
#returnlist#[1] _ *buffer*;
```
9c4a1

makes an exact copy of the string a pointer to which is stored in the list element. Note that this copy also has a maximum length of 2000. This is wastefull of space because the procedure knows the string will not be appended to and simply wants to return a copy of it. The following statement copies the string based on its current length 9c4b

```
#returnlist#[1] _ USE ( rtnstring($buffer) );
```
9c4b1

MSG PROTOCOL PRIMITIVES 10

The MSG Protocol is implemented as a fork which manages communication among a set of subforks. The protocol supports two calls to the MSG fork itself. The following procedures make these primitives available to a tool using the middle-end. 10a

```
(msgnufork) PROCEDURE                                          10a1

    %Calls msg primitive nufork This causes a new fork to be
    created, loaded with the file, given the mailbox name, then
    started at offset zero of its entry vector.%               10a1a

    ( mailbox, %mailbox for new fork%                          10a1b

      % one word containing 5 ASCII characters%                10a1b1

    filename REF %filename for sav file%);                     10a1c

(msghalt) PROCEDURE ; %inform MSG fork is halting%             10a2

    LOCAL msgarea REF, pgno;                                   10a2a

      pgno _ gtmpage( pagelen, TRUE: &msgarea);                10a2a1

      msgsyscall(pgno, 2 %stopme MSG primitive%);              10a2a2

      frmpage(pgno);                                           10a2a3

      RETURN;                                                  10a2a4

    END,                                                       10a2b

(msgnufork) PROCEDURE                                          10a3
```

APPENDIX I - PCPB36 11

The protocols used the middle-end make use of the PCPB36 encoding for passing arguments and results, PCPB36 provides a method of encoding typed data strucyures sequitially into 36 bit words, Each PCPB36 data element has a header which contains among others the fileds pcptype and pcplen, The pcptype filed gives the type of the element, the meaning of the pcplen field depends upon the data type, The following table gives the PCP types and describes their encoding. 11a

1 (EMPTY) 11b

PCPLEN: 0 11b1

Successive words: none 11b1a

2 (BOOLEAN) 11c

PCPLEN: 1 or 0 (TRUE or FALSE) 11c1

Successive words: none 11c1a

3 (INDEX) 11d

PCPLEN: 1 (Value of index: in the range [1 to 2**15-1]) 11d1

Successive words: none 11d1a

4 (INTEGER) 11e

PCPLEN: 0 11e1

Successive words: value (1 full word two's complement) 11e1a

5 (BITSTR) 11f

PCPLEN: n (bit count) 11f1

Successive words: (n+35)/36 words containing bit string (padded to right word boundary with zero's) 11f1a

6 (CHARSTR) 11g

PCPLEN: n (character count) 11g1

Successive words: (n+4)/56 words containing ASCII string (padded to right word boundary with zero's) 11g1a

7 (LIST)	11h
PCPLEN: n (element count)	11h1
Successive words: n PCPB36 elements	11h1a

APPENDIX II - FILES 12

The following files must be loaded to use the middle-end, Object files are specified, In addition for those data files which contain data blocks whose size is optional I have also specified the source file, The tool builder may edit the source file to specify the desired size of these data blocks and compile the files to his own object file which should then be loaded with the others, All files are maintained at ISIC. 12a

<rel-nls>1101rp,rel - list run time package 12a1

<nsw-sources>festgmgt,rel - dynamic storage allocator 12a2

<relnine>middle,rel - middle-end code 12a3

<relnine>mconst,rel - middle-end constants 12a4

<relnine>mdataf,rel - middle-end data 12a5

(nine,mdataf,nls,) the array fsblist is used as a freestorage area for all list elements, Default size is 10000 octal 12a5a

<relnine>mshared,rel - protocol data area 12a6

(nine,mshared,nls,) the array dpsresults is used as a data area for the protocols, Default size is 10000 octal, 12a6a

Note: This file must be loaded on a page boundary for the MSG protocol, For howpcp=1 i,e, SHARED protocol this file must be loaded at location 300000 octal (shares pages with CLI), 12a6b

APPENDIX III - REFERENCES 13

L1011: 13a

<1> Andrews , Don I, "Extensions to the L1011 Programming Language for the DEC PDP-10 and DEC PDP-11" (25308,) 13a1

<2> Andrews , Don I, "L1011 List Documentation" (KJOURNAL,25692,1:w) 13a2

<3> Andrews , Don I, "L1011 Documentation fragments" (MJOURNAL, 25864, 1:w) 13a3

<4> Andrews , Don I, "More L1011 Documentation fragments" (GJOURNAL, 25896, 1:w) 13a4

DPS: 13b

<5> White , James E, "DPS-10 Version 2,5 programmers Guide" 13b1

(LJOURNAL,26271,1:w); 13b2

MSG: 13c

The following is a collection of some sndmsg's concerning the MSG program, an interfork communication program for the NSW, 13c1

Table of contents: 13c2

Messages: 13c3

11-AUG-75 0848-EDT SCHAFFNER at BBN-TENEXB: New MSG documentation
Distribution: MAYNARD, GARLICK, POSTEL, WHITE, IRBY AT ISIC, schantz at bbn, thomas at bbn, schaffner
Received at: 11-AUG-75 08:58:47-PDT 13c3a

MSG version 1 13c3a1

MSG is a TENEX fork which controls and allocates subforks,
It controls the following resources: 13c3a2

I. Forks
At any time there are some number, nfork, of subforks: 1,2,...,nfork.
nfork is a compile-time constant of MSG. A fork is always in one of
six states:
1. undefined
2. inactive
3. waiting to receive (and ready to receive)
4. waiting to send (and not ready to receive)
5. running and ready (to receive)
6. running and not ready (to receive) 13c3a3

An "undefined" fork has no fork handle, and is nothing more than a placeholder in MSG's internal tables. An "inactive" fork has a fork handle, an SSAVE file, and a mailbox name, but is not running. Generally, MSG then starts the fork using offset zero of its entry vector, gives the fork a unique clan number, and puts it in state "running and not ready". When the fork wishes to communicate with other forks, it issues one of the primitives Watsnd, watrcv, or Runrcv. 13c3a4

II. Mailbox names
A mailbox name is a string of exactly 5 7-bit ASCII characters.
Basic MSG functions will accept any characters, but any debugging facilities might have trouble with control characters.
A fork which is in any state but "undefined" has associated with it exactly one mailbox name. For now, mailbox names should be unique. 13c3a5

III. Messages

A message consists of a page. A page is 512 consecutive words of memory, with the address of the first word divisible by 512. Page n consists of words 512*n through 512*n+511. The first 8 words of a message have a structure defined by MSG. The rest are arbitrary, that is, they will be transmitted without modification. The first 8 words are used as follows:

word	use
0	reserved
1	dbox
2	sbox
3-7	reserved

13c3a6

Words marked "reserved" are for now transmitted without modification, but may be used later. Word zero will probably become a message length when messages longer or shorter than 1 page are considered. dbox tells MSG where to send the message. sbox will be set by MSG to the source mailbox. By popular demand, MSG now guarantees that after a message has been sent the contents of the source page are unchanged.

13c3a7

IV. Clans

Every fork which is not either undefined or inactive has a nonnegative integer clan number. A fork that has clan number 0 is said to be "unattached". The set of all forks with clan number n, where n is nonzero, is called a "clan". No two forks may at the same time have the same mailbox name and be in the same clan. When a fork is first started it is given a unique clan number. It may then halt and request that it be removed from the clan, or it may communicate with unattached forks. In the first case it itself becomes unattached. In the second case it remains an independent center of activity.

13c3a8

A fork in a clan, when communicating with an unattached fork, includes that fork in its clan. It also has the option, when communicating with a fork in its clan, of removing itself from the clan. Thus, clan membership may change over time, with unattached forks joining the clan and old members leaving the clan and becoming unattached.

13c3a9

V. Primitives

A fork communicates with MSG by setting up its AC registers and doing a HALTF. MSG will perform its operations, alter the fork's registers, then restart the fork at the location following the HALTF. Note that any

HALTF will be taken as a primitive. If this gets in anybody's way, it can be changed.
Register 1 defines the primitive. Registers 2-7 are reserved for arguments. On return, register 1 will contain 0 for success, and an error code for failure. For now, the
set of error codes is empty, so this is of little use, but be forewarned.

1. Watrcv(pgno,qrelease)
   Accepts in
   R1: 1 for qrelease true
       2 for qrelease false
   R2: pgno

13c3a10

This can only be issued by a fork in state "running and not ready" It causes the fork to enter state "waiting to receive". The fork will be halted until a message is received, using pgno to hold any data page. If boolean qrelease is true, then as the fork is halted its clan number is set to zero.

13c3a11

2. Watsnd(qclan,pgno)
   Accepts in
   R1: 3 for qclan true
       4 for qclan false
   R2: pgno

This also can only be issued by a fork that is in state "running and not ready". It causes the fork to enter state
"waiting to send". The fork will be halted in this state until the message can be sent, after which it is restarted in state "running and not ready". If qclan is true, the destination fork will be the fork with the designated mailbox and the same clan number. If qclan is false, the destination fork will be an unattached fork, and that fork will be added to the clan. In either case, if there is no such fork, the sender will wait until there is one.

13c3a12

3. Runrcv(pgno,interrupt channel)
   Accepts in
   R1: 6
   R2: pgno
   R3: PSI channel number

This is legal only in state "running and not ready", and causes the fork to enter state "running and ready". The fork has in this way agreed to accept a message by

handling an MSG-generated interrupt
on the designated channel. 13c3a13

4. Syscall(callno,pgno)
Accepts in
R1: 7
R2: pgno
R3: callno
this is essentially a Watsnd of a message to MSG, with an
extra parameter, callno. The message is a request to perform some MSG system function, and callno tells MSG how to interpret the message. Currently there is only one call, Nufrk (callno = 1). The message page contains the usual 8 word header (ignored) and a PCPB36 LIST of 2 CHARSTRs. The first, which must be exactly 5 characters long, is a mailbox name. The second is a TENEX file name. This will cause a new fork to be created, loaded with the file, given the mailbox name, then started at offset zero of its entry vector.

13c3a14

12-AUG-75 0932-PDT IRBY: Updated CLI conventions for MSG use,
Distribution: SCHANTZ AT BBNA, SCHAFFNER AT BBNB, MAYNARD
Received at: 12-AUG-75 09:32:53-PDT 13c3b

The following are the conventions used by the CLI when interacting with
any other process via MSG. 13c3b1

The words of the message page will be denoted (starting with word
zero) as LENGTH, DBOX, SBOX, RESERVED1, RESERVED2, RESERVED3,
RESERVED4, RESERVED5, P1 through P504. LENGTH is the total length
in words of the message, LENGTH may be set to 512 initially for the
intra-host case. P1 is used to hold a type-of-message code, P2
through P504 are used differently based on the value in P1. 13c3b2

invoke-function: invoke the specified function/action 13c3b3

P1 = 1 13c3b4

P2 = displacement to begining of argument list, a PCP836 LIST,
where each element of the list is an argument, or -1 meaning
none. 13c3b5

P3 = integer (> 0 => acknowledgement required, interger is to
be used as a transaction identifer (TID) in the
acknowledgement; 0 => acknowledgement not expected) 13c3b6

p4 = begining of an ASCIZ string specifying the action to be
performed (the procedure to call). 13c3b7

acknowledge: a previously requested function/action that required
acknowledgement has been processed; p2 indicates

whether the
action was successfully performed or not, 13c3b8

P1 = 2 13c3b9

P2 = integer errorcode (0 => succeeded, NOT= 0
=> failed) 13c3b10

a word of zero will be FALSE, anything else
will be TRUE, 13c3b11

P3 = Transaction IDentifier (TID) specified in
the
invoke-function request, 13c3b12

P4 = begining of results PCPB36 LIST, or -1
meaning none, 13c3b13

In the case of a failure to process the
request, the first
result, if results are present, should be a
diagnostic
message, 13c3b14

-- Charles, 13c3b15

29-AUG-75 1230-EDT SCHAFFNER at BBN-TENEXB: Proposed MSG version 2.0
Distribution: IRBY AT ISIC, MAYNARD AT ISIC, SCHANTZ AT BBN,, BTHOMAS AT BBN, BOLDUC, SATTLEY, BEARISTO, schaffner
Received at: 29-AUG-75 09:29:45-PDT 13c3c

The document to follow is a proposal for a new version of MSG. It is substantially different from version 1 in appearance, and should be significantly more powerful, especially as the number of elements of NSW grows. I think you will find, however, that the new version of MSG will support interactions legal in version 1 with very little change to subfork code. This is only a proposal; if you don't like anything, tell me why and tell me what you want in its place. Important changes are:

1. The documentation contains different words for some elements, even though the elements haven't changed. For clan, I substituted context. For unattached, I substituted unbound. For mailbox name I substituted generic name.
2. The old state "undefined", which was never used, has been removed.
3. A new state wsr (waiting to send and ready to receive) has been added. This allows forks to call Watsnd while in state rr (running and ready to receive). I will soon provide a System call to do the equivalent of Watrcv from state rr.
4. Forks bound to a context have a new name that uniquely identifies them to other members of their context, namely the context-relative handle. Two of the formerly reserved words in a message header have been appropriated for source and destination context-relative handles. A fork sending a message specifies both a generic name and a context-relative handle for the destination. Certain special values of each stand for classes of names;

for
instance, a value of -1 for the destination
context-relative
handle will match any unbound fork.
For now, MSG will allow simulation of the old
destination-naming discipline through use of
destination
context-relative handle of -3. As soon as possible,
however,
people should switch to some other destination-naming 13c3c1

discipline. If MSG is ever distributed across
machines, case
-3 will require much handshaking between MSGs.
5. Watsnd now has two options, specified by the value of
qwait. The case qwait = true is the old
case; if the message cannot be sent immediately the
fork will be halted until the message can be sent.
The
case qwait = false, however, will return with an
error
code of 1 in R1 if the message cannot be sent at that
time.
I am assuming that nobody is still specifying qclan
for
Watsnd, or that they will be willing to alter any
such calls. If not, I will change the way Watsnd is
called.
6. There is a new System call, Stopme (callno = 2). It
allows a fork to commit suicide and go to state u.
7. I am thinking of adding a System call, Rescind, which
would change a fork's state from rr to rnr by
rescinding
permission to have a message sent to it. I am
afraid that execution of this System call would
require
much handshaking by distributed MSGs. Does anybody
really
need Rescind? If so, why? 13c3c2

MSG version 2.0 13c3c3

MSG is a TENEX fork which controls and allocates
subforks.
It controls the following resources: 13c3c4

I. Forks
At any time there are some number, nfork, of subforks:

1,2,...,nfork.
nfork is a compile-time constant of MSG. A fork is always in one of
six states:
1. u - undefined
2. wrr - waiting and ready to receive
3. wsr - waiting to send and ready to receive
4. wsnr - waiting to send and not ready to receive
5. rr - running and ready to receive
6. rnr - running and not ready to receive
A fork in state u is nothing more than a placeholder in MSG's tables. A fork in any state but u has associated with it
a TENEX fork which has been loaded with a TENEX ssave file.
A fork in one of states wrr, wsr, and wsnr is in a trap freeze state. It is not running; interrupts for it will not be
processed but will be remembered for future processing after the fork is unfrozen. A fork in state rr or rnr is running,
i.e. TENEX is giving it a share of the available CPU time. 13c3c5

II. Generic names
A generic name is a string of exactly 5 7-bit ASCII characters,
none of which may be null. Basic MSG functions will accept any
characters but nulls, but any debugging facilities might have
trouble with control characters.
A fork which is in any state but u has associated with it
exactly one generic name. 13c3c6

III. Contexts
Every fork not in state u has a nonnegative integer context number. A fork having context number 0 is said to be
"unbound". The set of all forks having context number n, where n is nonzero, is called "context n". When a fork is first
started it is given a unique context number. If a fork in a context
sends a message to an unbound fork, the act of communication
binds the destination fork to the context of the source

fork,
that is, the context number of the destination fork is set to
the context number of the source fork. A bound fork may, when
entering state wrr, elect to become unbound. Thus, membership
in a context may change over time, with unbound forks joining
the context and bound forks leaving the context to become
unbound. 13c3c7

IV. Context-relative handles
Any fork bound to a context has a context-relative handle. This is
a positive integer which is guaranteed by MSG to be different from
the context-relative handle of any other fork in the same
context. 13c3c8

IV. Messages
A message consists of a page. A page is 512 consecutive
words of memory, with the address of the first word divisible
by 512. Page n consists of words 512*n through 512*n+511.
A message is divided into two parts, an 8 word header
followed by a 504 word data area. The header is defined as
follows:

word	use	meaning
0	reserved	may be used later for message length
1	dgnam	destination generic name
2	sgnam	source generic name
3	dcrh	destination context-relative handle
4	scrh	source context-relative handle
5-7	reserved	

Words marked above as reserved will be transmitted without
modification, but may be used by future versions of MSG. In the
process of transmitting a message, MSG will first modify the
header portion of the message in the source page, copy the
message from the source to the destination page, then
signal the destination that the message has arrived, either by
sending an interrupt to the destination fork or by

```
restarting
that fork.
 In sending a message, MSG sets sgnam and scrh to the
source
generic name and source context-relative handle,
respectively.
It uses the values of dgnam and dcrh to select a
particular
destination fork and then sets dgnam and dcrh to the
generic
name and context-relative handle that will be appropriate
for
the destination fork just after the message is sent. MSG
will
select as a destination a fork from the set of all forks
which:
 1. are not the source fork
 2. have generic names matching dgnam
 3. have context-relative handles matching dcrh
Values of dcrh will match forks as follows:
  value of dcrh          forks matched
   n, where n>0          a fork in the same context with
context-
                         relative handle n
   0                     any unbound fork or any fork in
                         the same context                13c3c9

  -1                     any unbound fork
  -2                     any fork in the same context
  -3                     any fork in the same context, or
if
                         none in the same context match
dgnam
                         then any unbound fork
Values of dgnam will match forks as follows:
  value of dgnam         forks matched
   c, where c            any fork in the same context
with generic
      contains no null   name c or any unbound fork with
generic name c
      characters
   0 (all nulls)         any fork in the same context or
                         any unbound fork               13c3c10

VI. Primitives
  A fork communicates with MSG by setting up its AC
registers
and doing a HALTF. MSG will perform its operations, alter
```

the
fork's registers, then restart the fork at the
location following the HALTF. Note that any HALTF will be
taken
as a primitive. If this gets in anybody's way, it can be
changed.
  Register 1 defines the primitive. Registers 2-7 are
reserved for arguments. On return, register 1 will
contain 0
for success, and an error code for failure.
1. watrcv(pgno,qrelease)
     Accepts in
      R1: 1 for qrelease true
          2 for qrelease false
      R2: pgno
  This can only be issued by a fork in state rnr.
It causes the fork to enter state wrr. The fork will be
halted until a message is received. If boolean qrelease
is true,
then as the fork is halted its context number is set to
zero.
2. watsnd(pgno,qwait)
     Accepts in
      R1: 3 for qwait true
          4 for qwait false
      R2: pgno
pgno defines a message to be sent. If MSG can find a
destination fork for the message and if that fork is
ready
to receive then the message will be sent immediately and
the
source fork will not change state. If this is not true
and qwait is false, control will return to the sender
with
the value 1 in R1. If the message cannot be sent
immediately
but qwait is true then the fork will wait in state wsr or
wsnr, for forks originally in states rr and rnr
respectively,
until the message can be sent. If a fork is in state wsnr
and the message is sent the fork will be restarted in
state rnr.
If the fork is in state wsr then it will enter state wsnr
if a message is received, or be restarted in state rr if
the
message is sent. A fork in state wsnr will wait until MSG
sends the message, at which time MSG will restart the
fork

in state rnr,
3, Runrcv(pgno,interrupt channel)
Accepts in
R1: 6
R2: pgno
R3: PSI channel number 13c3c11

This is legal only in state rnr, and causes the fork to enter
state rr. The fork has in this way agreed to accept a message
in page pgno, Msg will signal arrival of the message by generating
an interrupt on the designated channel,
4, Syscall(callno,pgno)
Accepts in
R1: 7
R2: pgno
R3: callno
this is essentially a Watsnd of a message to MSG, with an
extra parameter, callno. The message is a request to perform
some MSG system function, and callno tells MSG how to
interpret the message, 13c3c12

VII. System calls
System calls are made by executing the primitive
Syscall(callno,pgno). The particular call being made is determined
by the value of callno, Any parameters to the call or results from
the call will be in memory page pgno,
1, Nufrk - callno = 1
page pgno must contain a message, the data portion of which
must be a PCPB36 LIST of 2 CHARSTRs, The first CHARSTR must
contain exactly 5 characters and will be taken as a generic name,
The second charstr must be a TENEX file name acceptable to
GETJFN, Before returning control to the caller MSG will change
the state of a fork from u to rnr, load the fork with
the designated file, and start the fork at offset
zero of the fork's entry vector, The fork will also be
given the

```
designated generic name and a new unique context number,
If any step
in this process is impossible the fork will be returned
to
state u and an error code will be returned in R1,
2. Stopme - callno = 2
  The message page will be ignored, Control will never
return to
the fork, which will be returned to state u.                13c3c13
```

DSM 17-OCT-75 12:28 26694

The Middle End: A Protocol Interface

(J26694) 17-OCT-75 12:28;;;; Title: Author(s): David S. Maynard/DSM;
Distribution: /NPG([INFO-ONLY]) RWW([INFO-ONLY]) ;
Sub-Collections: SRI-ARC NPG; Clerk: DSM;

DAV 17-OCT-75 18:14 26695

A conversation between Chuang Tzu and Hui Tzu

Chuang Tzu and Hui Tzu were strolling along the dam of the Hao River when Chuang Tzu said, "See how the minnows come out and dart around where they please! That's what fish really enjoy!" 1

Hui Tzu said, "You're not a fish -- how do you know what they enjoy?" 2

Chuang Tzu said, "You're not I, so how do you know I don't know what fish enjoy?" 3

Hui Tzu said, "I'm not you, so I certainly don't know what you enjoy. On the other hand, you're certainly not a fish -- so that still proves you don't know what fish enjoy!" 4

Chuang Tzu said, "Let's go back to your original question please. You asked me HOW I know what fish enjoy -- so you already knew I knew it when you asked the question. I know it by standing here beside the Hao." ... The Last Whole Earth Catalogue 5

Moral: Tzu's company, but be careful what you say to him. 6

DAV 17-OCT-75 18:14 26695

A conversation between Chuang Tzu and Hui Tzu

(J26695) 17-OCT-75 18:14;;;; Title: Author(s): David C. Smith/DAV;
Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC;
Clerk: DAV;

26695 Distribution

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, 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, Sandy L. Johnson, 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, N. Dean Meyer, James E. (Jim) White

JHB 19-OCT-75 21:05 26698

Proposed User-system Documentation as presented to the KWAC Conference

Tjis is a short discussion and list of the proposed documentation that would by produced by Applications Development to fill the current void of complete user manuals. It is proposed merely to suggest the kind of effort that would satisfy users requirements in the near-term future.

JHB 19-OCT-75 21:05 26698

Proposed User-system Documentation as presented to the KWAC Conference

Outline of the proposed documentation: (6 mo, projection, dependant upon personpower -- 3 persons?, and computer power) 1

Three kinds of user-system documentation are proposed: 1a

Application Tutorials: 1a1

These would be similar to the Letter production Tutorial that was released recently: a complete, step-by-step description of what is necessary to produce an application product or system, The necessary commands and system knowledge would be repeated in each document to provide a stand-alone workbook, 1a1a

Partial List of Procedural Tutorials that will serve as advanced courses (in various collections): 1a2

As an alternative to designing more courses, short tutorials are proposed that can serve as the basis of advanced courses and can stand alone as referencs, They will permit the customizing of courses by the selection of those appropriate to a client's application for a particular session or handout, Since they represent a subset of the Application Tutorials, they can be produced in parallel in most cases, 1a2a

Text Book on Using NLS: 1a3

This long range effort would fall naturally out of the foregoing writing, and be similar to a college text with exercises, theory and practicum, and tests, It is too early, however, to make a commitment to such an effort, especially in light of the new releases of NLS and the difficulty of keeping the details of the text up to date, 1a3a

Application Tutorials: 1b

I, Document Preparation and Production through NLS 1b1

Composition and text capture 1b1a

Editing and Proofing the text of the Document 1b1b

Formating and Printing 1b1c

COM for Publication Quality Printing (eventually) 1b1d

II, Message Handling through NLS 1b2

Basic Output Processor formatting 1c10

Introduction to Output Processor directives and their interaction 1c11

Text Book on Using NLS 1d

The writing of a text book to be used by beginnning through intermediate level users is a longer range task, beginning 6 mos to a year out. It would generally follow the present course outlines, where each course would become a chapter. Presentational techniques would draw upon the work of Brignoli, Jernigan, Gould, and others who have worked at similar approaches. 1d1

JHB 19-OCT-75 21:05 26698

Proposed User-system Documentation as presented to the KWAC Conference

(J26698) 19-OCT-75 21:05;;;; Title: Author(s): James H. Bair/JHB; Distribution: /DIRT([INFO-ONLY]) ARC-APP([INFO-ONLY]) BEV([INFO-ONLY]) KWAC([INFO-ONLY]) ; Sub-Collections: SRI-ARC DIRT ARC-APP KWAC; Clerk: JHB;

26698 Distribution

Inez M. Mattiuz, Connie K. McLindon, Susan Gail Roetter, Raymond R. Panko, Adrian C. McGinnis, James C. Norton, J. D. Hopper, Elizabeth J. Feinler, James H. Bair, Robert N. Lieberman, N. Dean Meyer, Sandy L. Johnson, Martin E. Hardy, Beverly Boli, Joseph L. Ehardt, Marilynne A. Sims, Elizabeth F. Finney, Lawrence A. Crain, E. S. VonGehren, Glenn A. Sherwood, Kathey L. Mabrey, Jeanne M. Beck, David A. Potter, Robert N. Lieberman, Terry H. Proch, Ronald P. Uhlig, Susan Gail Roetter, Michael A. Placko, Stanley M. (Stan) Taylor, Elizabeth J. Feinler, Rudy L. Ruggles, Frank G. Brignoli, Robert M. Sheppard, Richard W. Watson, Douglas C. Engelbart, James C. Norton, James H. Bair, Duane L. Stone David C. Smith, Jonathan B. Postel, Priscilla A. Wold, Rita Hysmith, Pamela K. Allen, Delorse M. Brooks, Elizabeth F. Finney, Beverly Boli, Lawrence A. Crain, Kirk Sattley, Susan Gail Roetter, Robert N. Lieberman, Ann Weinberg, Kenneth E. (Ken) Victor, Douglas C. Engelbart, James H. Bair, Elizabeth K. Michael, Richard W. Watson, Elizabeth J. Feinler, Harvey G. Lehtman, Kirk E. Kelley, Laura E. Gould, Jeanne M. Beck, Dirk H. Van Nouhuys, James C. Norton, Israel A. Torres, Buddie J. Pine, Laura J. Metzger, Priscilla A. Wold, Pamela K. Allen, Jeffrey C. Peters, Marcia L. Keeney, Jeanne M. Beck, Rodney A. Bondurant, Douglas C. Engelbart, Jeanne M. Leavitt

Documentation Report for weeks ending the 10th and the 19th

Week ending 10/19/75 1

Bev 1a

Attended the KWAC meeting in Boston. 1a1

Helped with edits on GE Nuclear proposal. 1a2

Kirk 1b

done 1b1

Proofed Base tool file. 1b1a

Worked on the Core AKW file. Fixed most of the bugs Bev found. A list of those done is in <xhelp,helpd,kirk's!done>. 1b1b

Do 1b2

Finish cleaning up core. 1b2a

I will be at arc Sunday and Monday the 26th and 27th. 1b2b

Week ending 10/10/75 2

Bev 2a

This Week 2a1

Did some more finishing work on XHelp, Base and began building the Lexicon for it. 2a1a

Helped Dirk with some writing for the GE Nuclear proposal. 2a1b

No work done on either Final Report. Waiting for proofs and materials from NSW people. 2a1c

Next Week 2a2

Attend KWAC meeting. 2a2a

Get proofs of '74 Final report revieWed. 2a2b

Kirk 2b

On Vacation 2b1

BEV KIRK 20-OCT-75 01:13 26699

Documentation Report for weeks ending the 10th and the 19th

(J26699) 20-OCT-75 01:13;;;; Title: Author(s): Beverly Boli, Kirk E. Kelley/BEV KIRK; Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: KIRK;

26699 Distribution

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, 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, Sandy L. Johnson, 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, N. Dean Meyer, James E. (Jim) White

KIRK 20-OCT-75 01:19 26700

BEVnote

I moved the things from hellnotes that I fixed to <xhelp,helpd,done>.
I hope I can get more done next week when I won't have to use tnls
via a noisy line. I'm looking forward to seeing you then. 1

KIRK 20-OCT-75 01:19 26700

BEVnote

(J26700) 20-OCT-75 01:19;;;; Title: Author(s): Kirk E. Kelley/KIRK; Distribution: /BEV([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: KIRK;

26700 Distribution
Beverly Boli,

DAP 20-OCT-75 09:13 26701

Additional Support for Dirk's Wishlist (33683,)

The title says it. Just wante to go on the record as concurring fully with the suggestions in <33683,> -- I'd love to see them implemented. 1

DAP 20-OCT-75 09:13 26701

Additional Support for Dirk's Wishlist (33683,)

(J26701) 20-OCT-75 09:13;;;; Title: Author(s): David A. Potter/DAP; Distribution: /JHB([ACTION]) DVN([ACTION]) DPCS([INFO-ONLY]) ; Sub-Collections: NIC DPCS; Clerk: DAP;

26701 Distribution

James H. Bair, Dirk H. Van Nouhuys, David A. Potter, Marilynne A. Sims, Delorse M. Brooks, Elizabeth F. Finney, Beverly Boli, Joseph L. Ehardt, James H. Bair, Robert N. Lieberman, Pat Whiting O'Keefe, James H. Bair, Robert Louis Belleville, Ann Weinberg, Thomas L. Humphrey, Jeanne M. Leavitt, Kirk E. Kelley, Duane L. Stone, Elizabeth J. Feinler, N. Dean Meyer, Dirk H. Van Nouhuys, Douglas C. Engelbart, James C. Norton, Richard W. Watson, Charles H. Irby,

DVN 20-OCT-75 09:03 26702

Should Norm Nielsen Call On You?

Norm Nielsen is the leader of the Information Sciences Group at SRI. That is where I work now, where Pat Whiting-O'keefe works, where the Editiorial Processing Center will be if and when the peoposal is finally signed off at NSF, and where most of the analytical work in the area of text processing goes on at SRI. He gets to Educom about once a month on other business. Would it be useful for him to call on you with respect to ETS' analysis of its text procesing needs? 1

DVN 20-OCT-75 09:03 26702

Should Norm Nielsen Call On You?

(J26702) 20-OCT-75 09:03;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /DAP([ACTION]) KLM([ACTION] DOCPLAN NOTEBOOK PLEASE) DOCPLAN([INFO-ONLY]) ; Sub-Collections: SRI-ARC DOCPLAN; Clerk: DVN;

26702 Distribution
David A. Potter, Kathey L. Mabrey, Joseph L. Ehardt, Raymond R. Panko, James H. Bair, David R. Brown, Glenn A. Sherwood, N. Dean Meyer, Kathey L. Mabrey, Norman R. Nielsen, Thomas L. Humphrey, Robert Louis Belleville, Elizabeth K. Michael, Richard W. Watson, James C. Norton, Robert N. Lieberman, Pat Whiting O'Keefe, Douglas C. Engelbart, Dirk H. Van Nouhuys,

CHI 20-OCT-75 09:36 26703

The five to ten most important NLS features

I have accepted a position with Xerox's Office Information Systems group to help design and build Xerox's office system. I would, of course, like to transfer as much from NLS as possible. It would be of great help to me if some of you would take a few minutes to send me (via Journal or SNDMSG) a list of what you consider to be the five to ten most significant user or system features of NLS. No justification is needed, although it would help. -- Charles. 1

CHI 20-OCT-75 09:36 26703

The five to ten most important NLS features

(J26703) 20-OCT-75 09:36;;;; Title: Author(s): Charles H. Irby/CHI;
Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC;
Clerk: CHI;

26703 Distribution

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, 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, Sandy L. Johnson, 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, N. Dean Meyer, James E. (Jim) White

DAV 20-OCT-75 10:03 26704

NLS 8,5 bug

The "y" viewspec is very shaky in NLS 8,5 at ISIC. several operations such as move branch, delete branch, etc. that cause only part of the screen to be updated cause the display routines to either leave garbage on the screen (between the lines, where thare should be blank lines) or to cause a transmission error in the line processor. 1

DAV 20-OCT-75 10:03 26704

NLS 8,5 bug

(J26704) 20-OCT-75 10:03;;;; Title: Author(s): David C. Smith/DAV;
Distribution: /FEEDBACK([ACTION]) ; Sub-Collections: SRI-ARC
FEEDBACK; Clerk: DAV;

26704 Distribution
Special Jhb Feedback,

INTRODUCTION

This note gives a brief overview of some of the major applications of NLS at the Air Force Data Systems Design Center, Gunter AFS, Ala. In the future, we hope to produce a much more detailed description of the various applications, but feel that, in the interim, it would be useful to the various Architects to have an idea of the kinds of things that are going on at Gunter. This note also includes 2 attachments: the first is is an overview of what AFDSDC's mission, organization, responsibilities and resources are; the second is a flying tour of the NSW Project.

CURRENT NLS APPLICATIONS

In anticipation of the implementation of NSW, AFDSDC is currently making use of several ARPANET systems, NLS is the most heavily used of these, with users at both Office-1 and ISIC. Applications include two major system documentation efforts, a project management system, a difficulty report control system, experimental and evaluatory use of new NLS features developed for NSW, and a number of other smaller applications. 1

AFM 66-1 1a

AFDSDC's Directorate of Logistics systems is cooperating with Headquarters USAF and the Major Commands in a rewrite of Air Force Manual 66-1, a large (>1000 pages) manual specifying procedures for operating and managing maintenance activities within the Air Force. The Manual, which is in several volumes, has been entered into NLS files. It is being reviewed and rewritten, a volume at a time, by Headquarters and Major Command representatives in sessions hosted by the Center. 1a1

The updated files are then passed through a special formatting system developed by SRI as part of the NSW project, proofed on the Graphics NLS station, and published via COM-prepared photo offset masters by the AF Directorate of Administration in Washington D.C. 1a2

AFDSDC/PR DOCUMENTATION 1b

AFDSDC's Directorate of Programs and Resources is preparing to publish a set of updated manuals for one of its major computer systems via NLS. PR is also serving as the Lead Directorate in AFDSDC's effort to convert its entire documentation workload into a computer-aided environment under NSW, with a primary distribution medium of Computer-output Microfiche. Proceeding 6-12 months in advance of the rest of the Center, PR is thus helping identify and correct problems and deficiencies in the total Documentation system before it is implemented on a Center-wide basis. 1b1

STALOG MANAGEMENT 1c

AFDSDC/LG's STALOG (Systems To Automate LOGistics) project is using NLS and particularly the Contents Analyzer and Retreval subsystems to maintain and enquire against a project management database. The database, which contains over 400 separate project events, includes event descriptions, schedules, dependancies and concurrencies, and responsibilities. There are proposals also being considered to eventually add or interface the facility to a PERT-style system. 1c1

DIREPs/SANs 1d

As part of its responsibility to maintain a central point of contact for the reporting and providing assistance in problems in USAF standard systems, AFDSDC/SC maintains a (manual) file of all DIficulty REPorts and System Advisory Notices on each system in the field. We have converted a portion of this workload into a series of NLS files to allow us to evaluate NLS as a tool to allow better management of these files. Further, since a large portion of the AFDSDC system maintenance workload is generated in direct response to such DIREPs, we are exploring the use of NSL/Journal as a means of distributing, in a controled, documented fashon, DIREPS to the various OPRs for action and reply. 1d1

NSW EVALUATION AND MANAGEMENT 1e

NSW is an effort involving over a dozen agencies and contractors from every corner of the AFPANET. NLS is being used as one means of preparing and distributing design documents, plans, reports, memos and the like for the Project. In addition, selected AFDSDC personnel are being given access to NLS 8,5 for their applications, as a means of evaluating and helping guide the evolution of the next release of NLS so that it will be of maximum value to production users of NLS and NSW. 1e1

MISCELLANEOUS 1f

In addition to these major applications, there are numerous smaller applications of NLS underway or planned within the center. Most involve fairly straightforward documentation preparation and publication tasks. 1f1

Attachment 1: THE AFDSDC ENVIRONMENT 2

AFDSDC Mission 2a

The Mission of the Data Systems Design Center is to analyze, design, develop, test, implement and maintain standard automated data systems. Standard systems are those that are common to more than one command. 2a1

Excluded from the Center mission are the specialized systems involving intelligence, research and development, and those command unique systems which are designed and maintained by the command themselves to accommodate unique mission requirements. 2a1a

The Center is charged with exploiting opportunities for

integration and for improving interface across the board. Integration is defined as the controlled development and organization of data systems so that separate systems use common data records and information, thus enhancing the efficient use of computer resources and avoiding duplicate processing of data. In the area of interface, AFDSDC wants to assure that output from one system is usable as input to other systems. The Center is also responsible for developing and maintaining non-functional utility software and the technical standards for the standard computers employed by the Air Force. 2a2

Since December 1971, the Center has been the designated ADPS manager for standard Air Force computers -- UNIVAC 1050-II; Burroughs B3500, B4700, and B263 base level machines; and the Honeywell H800/200 machine employed at the MAJCOM level. In 1974, this responsibility was extended to include the MAJCOM ADP Program operating Honeywell 6000 series machines (replacing the H800/200). The basic thrust of ADPS managership is the evaluation and coordination of impending software/hardware changes with the Commands in order to exercise configuration management. Impending software changes are assessed through the use of the Workload Anlysis Model and specific hardware impact determined through our Configuraton Analysis and Projection Section. This information is projected nine quarters in advance and disseminated to the MAJCOMs for planning and budgeting purposes. 2a3

Organization 2b

The Data Systems Design Center is composed of two types of directorates, those directly associated with a specific functional area, and those which provide general technical support to the mission of the Center. The Center organization also includes special detatchments from the USAF Comunications Service, and the AF Audit Agency. 2b1

To insure responsiveness to functional customers, and to facilitate identity of efforts and close working relationships with Air Staff functional managers, the functonal directorates were created as a mirror to the Air Staff. The Directorate and Divisions in the Center correspond to the Deputy Chiefs of Staff and Directorates on the Air Staff. Each Center Director is, in fact, a functional expert. Included within his activity are the required automation experts. Responsiveness to the functional customer in the field is paramount, but responsiveness to the Air Staff functional manager also is essential because the design of a new data system invariably impinges profoundly on policy. To insure retention of

current policy during system design, the designers must work hand in glove with their Air Staff counterparts. 2b1a

The technical directorates are those of ADPS Management, Systems Control, and Systems Development. The Directorate of Systems Development supports retrieval systems and data communications control systems, the WWMCCS and MAJCOM Update programs, and Data Management systems. The Directorate of Systems Control operates the Center computers, handles quality control and release control, maintains a 24-hr-a-day Field Assistance Center, and supports the non-functional software (such as the operating system and utility programs). The Directorate of ADPS Management, in addition to those functions already discussed, maintains USAF/DOD standard Data Elements and supports the AFDSDC Technical Library. 2b1b

A relatively large Auditor staff is co-located with the Center to assure adequacy of audit trails and management during system development. 2b1c

A Communications detachment from the Air Force Communications Service is also co-located with the Center to provide ongoing communications expertise. 2b1d

Responsibilities, Resources, and Workload 2c

The Center currently supports approximately 200 automated systems on 350 computers at 130 bases and sites worldwide. It is also responsible for 163 Air Force Manuals containing over 100,000 total pages with a change rate of over 80% anually. Every month, AFDSDC sends out a block release containing a tape of the object code for new or updated systems, and system and user documentation to each of the 130 USAF sites around the world. In addition to these monthly releases, emergency patches are sent out as required. 2c1

The Center has seven major computers (an H6060, a B4700, two B3500s, two U1050s, and a B263) as well as numerous minicomputers including two FourPhase systems, an H700, a Nova 800, three RJET systems, an IMP and a PDP-11/35 ARPANET Access System. Manpower currently assigned is approximately 235 officers, 660 enlisted personnel, and 435 civilians. 2c2

The Design Center receives its functional policy guidance from the functional deputates and special staffs, and its overall automation policy guidance from the Director of Data Automation, who is also the commander of the Data Automation Agency. 2c3

The sources of Center workload, however, are many and varied. Obviously there is a continuing system maintenance workload associated with field reports of system deficiencies, official suggestions, etc. System modifications can be triggered by new laws, changes to OSD/Air Staff policy, or as a result of GAO/Auditor/IG recommendations. 2c4

While many of these requirements are levied upon the Center via letters, all major tasks take the form of a Data Automation Requirement (DAR) and subsequently a Data Project Directive (DPD). Many are preceeded by requests for economic or feasibility studies, or other types of detailed analysis. 2c5

All major tasking documents flow through the Directorate of ADPS Management where they are reviewed and passed to the appropriate directorate(s) for more detailed analysis. The specific workload and resource impact upon all directorates is brought before the Requirements Review Board for consolidation and further evaluation. The Board's recommendations are passed to the Commander for decision. If approved, the task is entered into the Center Program and Resource Management System through which development progress is continually monitored. Projects are scheduled for formalized System Status Reviews and System Design Reviews at key stages of development. 2c6

Attachment 2: NATIONAL SOFTWARE WORKS OVERVIEW 3

AFDSDC is currently participating (with ARPA, RADC, and the AF Data Services Center) in a project to develop an integrated "software factory" to be known as the National Software Works. This system, which will be demonstrated in a skelatal form in late 1975, will be composed of a Framework, a FrontEnd, Tools, and Target Hosts, all running on and linked by the ARPANET. 3a

The Framework, being developed by Massachusetts Computer Associates, will act somewhat like an operating system, managing user accounting and billing, file access and movement, and providing help, batch job scheduling, and similiar services. 3a1

Users will access the system via FrontEnds running on either a TENEX or their local PDP-11. The FrontEnd will provide a consistent user interface to all tools, as well as allowing a reduction in remote host charges and network traffic, and simplifying the construction of user interfaces for NSW tools. (This concept is the CML/SUBSYS split in NLS, extended into a multisite distributed system.) 3a2

Through NSW, the user will have access to various software

development aides, refered to as Tools. NLS will be one such Tool, as will be compilers, programing editors, program instrumentation tools, emulator systems, and project management tools. 3a3

The final components of the system are Target Hosts, copies of the hardware on which the software being developed will run. These Target Hosts may be actual hardware (such as the AFDSDC B4700, an IBM 360, a TENEX, or a Multics) or it may be an emulator system (such as USC-ISI's PRIM system or any number of minicomputer emulator/software development packages currently available in the marketplace.) The Target hosts will be used for final program debugging and testing. 3a4

The NSW is being developed so as to make it relatively easy and inexpensive to add an (essentially) unlimited number of new Tools, Target Hosts, and users. The Initial system will serve only AFDSDC, AFDSC, and RADC. This will help the system development problem at these sites, but is only a first step towards the real goal of the project. 3b

The hope is that success in this initial demonstration will provide the impetus for an expansion of the system to eventuallu support all DOD agencies and contractors developing systems. The end result could thus be massive savings in DOD's $3 BILLION software bill, allowing us to make the most effective use of our most scarce and expensive resource- tallented people. 3c

IDENTIFIED NATIONAL SOFTWARE WORKS APPLICATIONS

There are currently identified four major areas of application of the NSW system to the AFDSDC mission: Software development, testing, and maintenance; Documentation entry, editing, update, publication, and control; AFDSDC Office Automation including intra- and inter- organization communications; and Miscellaneous ARPANET Usage. 3d

B3500/4700 Software Production (Subproject A)

The NSW will be used to assist and control all phases of the system production process, from initial design to continuing maintenance. Programs will be interactively written, debugged and tested on-line. An integrated database on each system, including source and object code for each program, design documents, system and user manuals, DIREPS, and pointers to other systems sharing (production) files will be available on-line. 3d1

Documentation (Subproject B)

The NSW will be used to publish and maintain all documentation distributed by AFDSDC. This will include User and

System manuals, DPPs, Reports, etc. These documents will be entered via an off-line cassette tape, fed into the NSW file system, edited, and published in Microfiche and hardcopy formats. Updated versions will be prepared using the NSW text editors, greatly reducing work. Flow charts, diagrams, and similiar line drawings will be interactively generated at advanced CRT stations, and stored on-line as part of the document file. The on-line documents will form a rapidly available library, accessable by AFDAA and other AF and DoD users. 3d2

Office Automation (Subproject C)

The NSW will also provide an Office Automation system. Correspondence within AFDSDC, and between AFDSDC, AFDAA, and AFDSC will be prepared, coordiated, distributed, and filed using NSW tools. (Correspondence with other organizations will also be prepared and coordinated internally using the system, but will be then printed on a high-quality printer before being sent to the external organization). 3d3

Miscellaneous ARPANET Usage (Subproject D)

AFDSDC organizations will make use of facilities of the ARPA Network not available as NSW tools via a "TELNET-like" tool provided by NSW. Used in this mode, NSW will only provide a general Network access facility, a pseudo-TIP. User organizations will be required to negotiate individual accounts and payment procedures with the owners of the software and hardware to be used, exactly like today. 3d4

(J26705) 20-OCT-75 11:53;;;; Title: Author(s): Lawrence A. Crain/LAC; Distribution: /KPH([INFO-ONLY]) AAB([INFO-ONLY]) KWAC([INFO-ONLY]) ; Sub-Collections: NIC KWAC; Clerk: LAC;

26705 Distribution

Kenneth P. Hearn, Anthony A.L. Baggiano, Joseph L. Ehardt, Marilynne A. Sims, Elizabeth F. Finney, Lawrence A. Crain, E. S. VonGehren, Glenn A. Sherwood, Kathey L. Mabrey, Jeanne M. Beck, David A. Potter, Robert N. Lieberman, Terry H. Proch, Ronald P. Uhlig, Susan Gail Roetter, Michael A. Placko, Stanley M. (Stan) Taylor, Elizabeth J. Feinler, Rudy L. Ruggles, Frank G. Brignoli, Robert M. Sheppard, Richard W. Watson, Douglas C. Engelbart, James C. Norton, James H. Bair, Duane L. Stone, Inez M. Mattiuz, Connie K. McLindon,

DAV 20-OCT-75 12:09 26706

NLS design recommendation

NLS should have an "insert before" command, in addition to the default "insert after". This could be accomplished by making the before/after specification an OPTION, with the default remaining "after". 1

DAV 20-OCT-75 12:09 26706

NLS design recommendation

(J26706) 20-OCT-75 12:09;;;; Title: Author(s): David C. Smith/DAV; Distribution: /FEEDBACK([ACTION]) ; Sub-Collections: SRI-ARC FEEDBACK; Clerk: DAV;

26706 Distribution
Special Jhb Feedback,

RLL 20-OCT-75 14:55 26707

Comment on CML manual writing.

May I suggest the journal for the discussion?

RLL 20-OCT-75 14:55 26707

Comment on CML manual writing,

I strongly would urge time and efforts be spent in improving CML rather than writing a manual for the current one, I would welcome, perhaps, a discussion on possible ideas for a improving CML from the user programmer point of view, If I haave time this week I will jot down some noions Ihave, Thanks RObl

RLL 20-OCT-75 14:55 26707

Comment on CML manual writing.

(J26707) 20-OCT-75 14:55;;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /DAV([ACTION]) ARC-APP([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-APP; Clerk: RLL;

26707 Distribution

David C. Smith, Israel A. Torres, Buddie J. Pine, Laura J. Metzger, Priscilla A. Wold, Pamela K. Allen, Jeffrey C. Peters, Marcia L. Keeney, Jeanne M. Beck, Rodney A. Bondurant, Douglas C. Engelbart, Jeanne M. Leavitt, Susan Gail Roetter, Raymond R. Panko, Adrian C. McGinnis, James C. Norton, J. D. Hopper, Elizabeth J. Feinler, James H. Bair, Robert N. Lieberman, N. Dean Meyer, Sandy L. Johnson, Martin E. Hardy,

Kirknotes--Report on the KWAC Meeting, etc.

Mon., Oct. 20
hello--this continues Fri., Oct. 17, when I was cut off at 5:30 by a BBNB crash and decided to go home. 1

Got all of your messages today. Thanks. I will be away from Help for a while this week. The final report proofs are back and "reviewed", and since the font sizes are all going to be changed, I have to go thru the whole thing again because of the pagination changes it will create. Then there is the next final report. And lastly part of the "minutes" from the KWAC meeting. Yes, the classic "you girls take notes--you're so much better at it than us men (and besides we have more important things to do--and it's a pain in the ass to take notes)" game was played again at the KWAC meeting. On the Wed. before the issue was discussed, and it was "decided" that ALL arc people would take turns taking notes. Jim N. even said that he would. Sure he would. So of course when the time came guess who ended up "volunteering". I shouldn't really bitch--I knew better than to help with them. But I felt bad seeing poor Susan clacking away all the time--even some of the "girls" weren't too eager to step in. 1a

Don't mean to carry on about this--not really apropos of anything--but it is still one of the most obvious and infuriating forms of sexism that continues year after year, and when you're a female in this "business" world it can continue to irritate. Anyway, I learned one more reason why it gets perpetuated. Not all women will stand up and say go to hell, and when you see some other woman burdened by an unpleasant chore, it's hard to sit back and say, tough shit, she asked for it. ENOUGH 1b

There were a few other things I meant to tell you about concerning the KWAC meeting, but this morning they are elusive. I can look at the whole thing with a little better humor this morning; but in re-reading Friday's notes they don't seem too vitriolic. 1c

I guess the main point is that we probable won't get a whole lot of support from the KWAC community for documentation innovations. I can see a bit of a political battle looming at ARC over Help. Or really not just help--over doing things other than user's manuals in general. Dave Smith and I are getting together today. I think he's seeing the same thing. He is very supportive and would like for us to get somewhere with a better help. Dick too is behind the idea, but Doug questioned Help's usefulness at the KWAC meeting. I just wish there weren't so many weird personalitiy problems involved. Makes it messy. 1d

I did get to see Mario Grignetti at BBN (the Scholar guy). He told me how I can use Scholar online. Dave and I are going to talk about it today too--maybe even try it. Let me know if you

want to. I'll send the password, etc. Mario would like feedback on it too. He was very kind, interesting, and refreshing. 1e

I'll send this now and tell you what is discussed with Dave today. Talk to you later. Bev. 1f

Fri., Oct. 17
hi kirk 2

Well I'm back in Menlo Park--the architects meeting got cut short by one day and I was more than eager to get home anyway. Dirk just rushed off to GE with the proposal in his hand. He has to make it there by 4:30 p.m. We started printing out the final copies at about 2:30. He and Dick were both punch-drunk from working on it. Dirk said he put in about 70 hours in the last 6 days--they were here til 1:30 am this moring. Probably doesn't impress a night owl like you, but I think they started the dAy rather early too. Anyway, the proposal looked pretty good, especially for such a rush job. I helped a little with the writing last week and the editing today--it was really fun, trying to fit what we're doing into what they want. Pretty amazing how well nls would do the job. Estimates last week were that we have maybe a 30% chance for it. 2a

When people have asked me today what I thought of the KWAC meeting, I've replied: "Well, it was interesting." That's called diplomacy. I sincerely hope that one cannot judge the fruits of one's labors by the people that eat them! If so, my doubts about the value of further technicizing this world have been deepened. Which is to say, I was not particularly impressed by the Architects, which is probably not very fair, since I have not made any effort to separate out my subjective responses to them as people from my professional judgment of them as doers of whatever they are supposed to be doing. 2b

I haven't done much sorting out of impressions at all as a matter of fact, so I'll take this opportunity to set them down as a step in that direction. To begin with, this was my heaviest exposure to the "Applications" side of the ARC house. I went up to the airport with Jim N., and talked to him for quite a while at that time (during the course of which he assured me that one result of a possible future re-shuffling of Arc documentation would NOT be that I would work for Jim Bair. This is a continuation of other hints I've been getting from Doug and Dick that something is going to be done about the documentation problem.) I also got to talk more than I have before with Doug during the week. He certainly produces ambiguous feelings in me. I will leave to your imagination the degree to which I enjoyed sharing meals and free

time with certain other Applications people who went along. I have some more work to do to become a mellower, tolerant person... 2c

The architects range from Connie McClindon (sp?), the classic, frowning, nay-sayer, to Dave Potter, an nls fanatic who is very much in love with the system but has a hard time accepting limitations or imperfections in his beloved. In between are the military/civil servants who for one reason or another have gotten themselves entangled in this crazy enterprise, and now have to stay afloat. Duane Stone stands out as one of the more rational and mature, Ed Von Gehren as one of the more panicked. (And to descend to the lowest level of gossip: the guy from NSA wore a toupee. I'm glad he did, because he seemed like a nice country fellow, with a sense of humor and some common sense, but I of course wanted to find great fault with him. One should't forget the real lesson of Nazi Germany--they were all nice family men, hardworking, with consciences. If they were monsters the problem would not be difficult.) 2d

The first day was very "pleasant". Everyone gave a brief report of what they are doing with nls, how many usrs, etc. Doug was so happy to see everyone jabbering away at lunch about this technical detail and that, fortunately not discussing anything but nls, nls, nls. We all had dinner together too, and there was more talk. I sat next to Doug and talked about something other than Nls, which was very pleasant. It's the first time, and it helped me see him in rounder proportions. 2e

Tuesday the proverbial sh-- began to hit the ditto fan. Ron Uhlig, the Wash. D.C. group spokesman (I was going to say ringleader, but I suspect that is Connie) made his presentation about what the Architects like, dislike, and are indifferent to in nls. One comment was that the list of likes was a bit short because they had trouble thinking of things, but they had to put something there so it wouldn't look so bad. Anyway Ron held forth, and I have to say that he came off looking worse than Jim and Doug. He was too heavy-handed, especially in trying to enlist negative comments from non-Wash. architects. Jim and even Doug managed to not be too defensive, and introduced a good deal of pertinent information without creating an impression of "You guys are all wet. We're the experts. We'll set you straight." The next day Bud did a good job discussing the technical details of the pie-slicer, etc., and I think left the impression that Arc does know what it's doing and is working to better things. 2f

BY THE WAY...They LOVE the Glossary. I really could not quite believe it. It's the greatest thing since the Guiness Book of World Records. And even more depressing, what they would really like is a nice, big, fat, greasy (my adjective) USER'S MANUAL.

That would just be the cat's pajamas. Yish! I told Dick today, that this sent me scurrying back to the arms of Development as fast as my big feet will carry me. Jim Bair has a far more professional attitude. He presented a list of proposed documentation which included just that--under the euphemism "Nls textbook". I now see clearly the rationale for separating Dev. and App. documentation. Emminently sensible. Jim B. was right all along--I didn't know the "users"--now that I do, I will gracefully leave them up to him, and retreat to our pleasant world of theoretical users (who are smart like us). 2g

The only real criticism anyone could elicit about Help was that it is a pain to use because of the slow response time at Office-1. No other scathing diatribes about messy typos, missing links, or scanty information. In fact, none of their criticism of anything was very imaginative I'm afraid. 2h

By Thurs, it had become evident that everyone was getting saturated, or something. Anyway, the result was that it became clear that the Architects had to go do their homework, and get together on what they really do want. The biggest issue was unbundling the Utility pricing--this brought up all the other issues such as how much they want to spend on what kind of documentation, how much training, etc. (The training was a pretty big target for negative comment. No one seemed impressed with its usefulness.) So the decision was made to have another 2-day meeting in about 6 weeks, at which time the architects would decide just exactly what they want, and by which time ARC will know what it wants to provide. They even talked about getting it all down on paper! 2i

BEV 20-OCT-75 15:55 26708

Kirknotes--Report on the KWAC Meeting, etc.

(J26708) 20-OCT-75 15:55;;;; Title: Author(s): Beverly Boli/BEV; Distribution: /KIRK([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: BEV;

26708 Distribution
Kirk E. Kelley,

delete file bug

The following bug has been playing me. 1

I create a file using the core create file routine (ccrefil). I then delete the file by a BASE sub-system DELETE FILE and EXPUNGE DIRECTORY command. When I then try to create the file again (either a BASE sub-system CREATE FILE or call to the core routine), I get a "no such version" error message. 2

Going to TENEX and issuing an EXPUNGE and/or RESET command does not seem to clear up the problem. 3

SKO 20-OCT-75 14:31 26709

delete file bug

(J26709) 20-OCT-75 14:31;;;; Title: Author(s): Susan K. Ocken/SKO;
Distribution: /FEEDBACK([ACTION]) ; Sub-Collections: SRI-ARC
FEEDBACK; Clerk: SKO; Origin: < OCKEN, BUG,NLS;1, >, 20-OCT-75
14:17 SKO ;;;;####;

26709 Distribution
Special Jhb Feedback,

DMB 20-OCT-75 14:50 26710

ARC-Birthdays

January
24 Susan Roetter
30 Doug Engelbart 1

February
1 Ann Weinberg
14 Jim White
20 Karolyn Martin
22 Harvey Lehtman 2

March
2 Jake Feinler
8 Larry Garlick
15 David Maynard
16 Adrian McGinnis
29 Dave Smith 3

April
20 Susan Ocken 4

May
3 Charles Irby
4 Robert Lieberman
8 Don Andrews
16 Jeff Peters 5

June
10 Ken Victor
17 Priscilla Wold
18 Raphael Rom
18 Ed Van de Reit
20 Sandy Johnson
22 Dave Hopper
24 Dee Brooks
29 Jim Norton
29 Ray Panko 6

July
14 Bud Pine
15 Jan Cornish
18 Dave Retz 7

August
5 Kirk Kelley
6 Jon Postel
14 Dean Meyer
29 Pam Allen 8

September

ARC-Birthdays

7 Marcia Keeney
7 Andy Poggio
22 Elizabeth Michael 9

October
3 Bonny Mosher
13 Robert Belleville
16 Rodney Bondurant 10

November
8 Dirk van Nouhuys
8 Israel Torres
10 Dick Watson
20 Jeanne Beck
25 Martin Hardy
28 Beverly Boli 11

December
13 Laura Metzger
22 Jim Bair
23 Jeanne Leavitt 12

ARC-Birthdays

(J26710) 20-OCT-75 14:50;;;; Title: Author(s): Delorse M. Brooks/DMB; Distribution: /SLJ([INFO-ONLY]) JML([INFO-ONLY]) DMB([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: DMB; Origin: < DBROCKS, BIRTHDAYS.NLS;3, >, 20-OCT-75 14:31 DMB ;;;;####;

26710 Distribution
Sandy L. Johnson, Jeanne M. Leavitt, Delorse M. Brooks,

Weekly Report

20-October-75 1

Last Week 1a

nsw management 1a1

-Meeting Report 1a1a

Review of up coming deadlines, and discussion of problem areas, noted interface issues between NLS and FE programs. 1a1a1

nsw protocols 1a2

-Assigned an RFC number. 1a2a

arpa protocols 1a3

-Consulted at DCA 15-17 Oct. 1a3a

Next Week 1b

nsw management 1b1

-Work on the "shopping list" of ideas for next proposal round. 1b1a

-Update milestones. 1b1b

-Work on final report for 74-75 contract. 1b1c

-Collect the set of design documents, transmit the table of contents to COMPASS. 1b1d

-Prepare a note relating project account numbers to contract work statement tasks. 1b1e

-Review spending on current contract. 1b1f

-Reallocate the funds among the project account numbers. 1b1g

arpa protocols 1b2

-Read INWG notes 1b2a

-Write a chapter on protocols for the "arpa book" 1b2b

Weekly Report

(J26711) 20-OCT-75 17:43;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /ARC-DEV([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-DEV; Clerk: JBP;

26711 Distribution

Jan H. Kremers, Susan K. Ocken, Raphael Rom, David C. Smith, Andy Poggio, David L. Retz, Jan A. Cornish, Larry L. Garlick, Delorse M. Brooks, Beverly Boli, James E. (Jim) White, Ann Weinberg, Kenneth E. (Ken) Victor, Dirk H. Van Nouhuys, Jonathan B. Postel, Elizabeth K. Michael, David S. Maynard, Karolyn J. Martin, Harvey G. Lehtman, Kirk E. Kelley, Charles H. Irby, Robert Louis Belleville, Don I. Andrews, Richard W. Watson, Douglas C. Engelbart,

DIA 20-OCT-75 19:57 26712

Comment on 26670 (DAV's comments on L10)

I generally agree with your suggestions in 26670, Altho I'm not sure all that is necessary or desirable for NLS USER program language. 1

Some history to help you understand some of the things in L10: 2

It was designed to be implemented in a minimum of time, nice features taking a back seat. 2a

It was designed to run without a storage allocator and with a minimum runtime package, I think mostly because of efficiency worries (i.e. it would be expensive to make a fnacy system efficient). 2b

It was to run with the existing DEC loader and DDT. (Time considerations again). Tenldr was written later because two orders of magnitude in load time could be obtained. Using DEC stuff is the ONLY reason the six character limitation comes up. Any L10 symbol can be up to 128 char long but trouble comes if it is linked over files and not unique in the first six. 2c

Data structures were to be simple, obvious and untyped for easy interface to TENEX (which we knew virtually nothing about) and to allow programmer to break out into machine code when efficiency or funny operations made it look wise. 2d

And it was a long time ago (7 years?). L10 is old and grey but since nobody is husling for language-development money I think we'd better look around and talk it over. 3

NLS should exist in one source language (eventually for many machines). It seem right that the user programming language should be the same and lean on all the low level stuff in NLS itself. And that language should have good support. Better than L10 now has, I think. 4

DIA 20-OCT-75 19:57 26712

Comment on 26670 (DAV's comments on L10)

(J26712) 20-OCT-75 19:57;;;; Title: Author(s): Don I. Andrews/DIA;
Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC;
Clerk: DIA;

26712 Distribution

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, 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, Sandy L. Johnson, 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, N. Dean Meyer, James E. (Jim) White

DVN 20-OCT-75 20:04 26713

No Lambie, No Swink

Rob, Marge Lambie was not interested in the AKW seminar, figures she knows enough and does not think anyone else there has the time. But getting your note provoked her to call and ask about the status of the front end work. I am collecting some paper for her on that and took the occasion to tell her a little about the G E Proposal, which interested her. She is still expecting to get out an RFP, maybe early next year. The number of offices she wants to support has risen to 30,...It turns out I don't have all you need on Ruth Swink and the guy who does is gone for the day, I will send you another item tomorrow.

1

DVN 20-OCT-75 20:04 26713

No Lambie, No Swink

(J26713) 20-OCT-75 20:04;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /RLL([ACTION]) DOCPLAN([INFO-ONLY]) ; Sub-Collections: SRI-ARC DOCPLAN; Clerk: DVN;

26713 Distribution

Robert N. Lieberman, Joseph L. Ehardt, Raymond R. Panko, James H. Bair, David R. Brown, Glenn A. Sherwood, N. Dean Meyer, Kathey L. Mabrey, Norman R. Nielsen, Thomas L. Humphrey, Robert Louis Belleville, Elizabeth K. Michael, Richard W. Watson, James C. Norton, Robert N. Lieberman, Pat Whiting O'Keefe, Douglas C. Engelbart, Dirk H. Van Nouhuys,

revision of to00-20-5,

This will now ne the second statement, 1

enter the designation of the organization that is assigned the equipmenton whichthe cannibalization component or part is to be installed, 2

Priscilla Wold
SRI
Menlo Park,Ca,
94115 3

4

2 5

Lucile G, Happyv 6

enter the document number assigned by supply when the item was order 7

what is the supply pipeline and lateral support time factors for the item/ 8

that is the name of theindividula"requestint the part, 9

Enter the designation of the organization that is assigned the equipment on whichthe cannibalization component or part is to be installed, 10

What is the supply pepeline and lateral support time factors frm the item, 11

revision of to00-20-5.

(J26714) 21-OCT-75 08:58;;;; Title: Author(s): Lucille B.
Happy/LBH2; Distribution: /PAW2([ACTION]) RLF2([INFO-ONLY]) ;
Sub-Collections: NIC; Clerk: LBH2; Origin: < HAPPY, IMP,NLS;2,
>, 20-OCT-75 13:24 LBH2 ;;;;####;

26714 Distribution
Priscilla A. Wold, Robert L. Fishback,

DMB 21-OCT-75 08:39 26715

Party

After reading the Staff Activities input to subsidize year end Group Parties, I thought I'de approach you for suggestions.

The Staff Activities Committee will allocate $1.00 per employee. Presently, there are 44 members within ARC. Therefore, as you can see, we would receive $44.00 for a party.

However, we know that $44.00 could not sufficiently pay for a party. Therefore, I suggest that we use the money to pay for drinks and small things and that we have a "Pot Luck" X-mas party.

This is only a suggestion here. I'de like to receive your comments and/or suggestions on this and where it should be and the date most appropriate. In order to receive the money we need to submit a request before December 31. So don't delay your comments!!! 1

Party

(J26715) 21-OCT-75 08:39;;;; Title: Author(s): Delorse M. Brooks/DMB; Distribution: /SRI-ARC([ACTION]) DMB([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: DMB;

26715 Distribution

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, Delorse M. Brooks,
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, Sandy L. Johnson, 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, N. Dean Meyer, James E. (Jim) White

LAC 21-OCT-75 09:26 26716

An overview of the AKW utility (draft/AFDSDC view)

Jim,
This is to be part of the trip report on the KWAC trip i am preparing for my management, I also hope it will provide a handout on what NLS/Office-1/AKW is all about. It is hijacked in large portion from the three draft handouts you distributed before KWAC, hung together in a slightly different form and with some AFDSDC specific stuff added. Could you or someone there please scann over it for blatant mistakes or falshoods. If any of the stuff i have added is useful (in particular the cost comparison, appx 2), please feel free to snitch it. thanks

%Larry

An overview of the AKW utility (draft/AFDSDC view)

Introduction: The Augmented Knowlege Workshop and Services of the AKW Utility 1

For nearly 13 years the Augmentation Research Center (ARC) at Stanford Research Institute has had the objective of developing a computer augmented environment in which managers, researchers, programmers, and clerical personnel could perform their daily tasks. Because this goal is so vast and will have such a large impact on people and organizations, ARC has established a pragmatic strategy for its development and delivery. 1a

This work, which has been supported primarily by DOD funding from ARPA, RADC, and other agencies, has been directed towards developing techniques and tools for the basic or core activities of knowledge workers (a term for people who work with information and ideas- "Knowlege"). At the general level, these core activities are the reading, writing, and communicating of information. Specific applications include: 1b

collaborative dialogue among geographically distributed groups, 1b1

project and organizational coordination and control, 1b2

personal and organizational information management, 1b3

document development, control and production, 1b4

These tools and techniques are most successfully transferred to the users by their developing skills and techniques through active participation in the evolution of this environment. The ideas, suggestions, and needs of those who use these tools in their daily work are important contributions to the further development and delivery of this environment. 1c

This dialogue is best served by participation of interested organizations (government and non-government) in a community of "augmented" users. The diversity and size of such a community 1d

1. aids in the enhancement of the tools and techniques that the community uses, 1d1

2. accelerates the growth, introduction, and use of the workshop facilities and reduce the cost of them, 1d2

3. provides feedback on the ways a new technology can be transferred to ultimate users, 1d3

4. allows users to help others users. 1d4

The strategy of including "real" workers in a growing community of system users has led to implementing a "Utility" service for interested subscribers, which has now provided over 21 months of operationally stable and reliable service to many clients. A subscription to this utility provides both computer services and people services. 1e

The computer services includes the use of a large scale computer timesharing utility with all the Workshop computer systems currently available. 1e1

Basic to this computer service is the oN Line System (NLS) that provides facilities for reading, writing, and communicating information. 1e1a

The necessary online and offline storage facilites are also included as well as the usual timesharing support services (e.g., attending computer operator). 1e1b

The people services include training, on-site courses, documentation, application consulting, methodology consulting, use consulting, and software and hardware consulting. 1e2

The Utility system currently has available the following capabilities in an integrated environment serving several hundred people in many organizations. 1f

1. Computer capture of text from online typing, previously typed cassettes, computer-generated magnetic tapes, and computer communications networks (e.g. ARPANET), which include computer-to-computer transfer of data. 1f1

2. Text manipulation and editing with a flexible, powerful, and intuitive interactive editing system. 1f2

The NLS system works in two modes. Display mode is available on special terminals, and provides a powerful two-dimensional system which massively reduces the time required for major editing tasks. Typewriter mode, available on any hardcopy or CRT terminal, tends to be less expensive for tasks such as less complex editing and text entry, where the full power of DNLS is not required. A neW graphics subsystem in now being implemented which allows manipulation of mixed text and graphical material (line drawings, flow charts, etc) in the same manner as text within DNLS. 1f2a

3. Hardcopy output with extensive formatting controls (e.g., page layouts, type fonts). 1f3

This includes text output to a Computer Output to Microfilm (COM) device which can submit camera-ready copies for offset printing. 1f3a

4. Reading and searching of text with a variety of viewing formats. 1f4

This enables the user to read online documents in a more effective manner and locate particular passages with the aid of the computer. 1f4a

5. Structuring documents in an hierarchical ("outline") manner. 1f5

This is basic to the way one reads in this environment, allows better organization of ones thoughts, and facilitates retrieval of information. 1f5a

6. Textual communication. 1f6

There is a facility to send mail to individuals or groups. Any mail sent using this subsystem receives a unique accession number, automatic delivery to specified individuals or groups, and permanent storage of the mail in what we call the Journal. The Journal represents the total collection of short messages, letters, documents, reports, etc. that have been submitted by any user of the system. 1f6a

In effect, the Journal becomes a permanent repository of all dialogue among users of the system. [Privacy considerations are available to restrict reading and cataloguing of items in the Journal. However, the general openness of the Journal has provided a rich source of historical information.] Communication of mail items to anyone known to the system is possible, even if the recipient is "located" on another computer across the country. 1f6b

7. Other facilities include a computer based calculator, computer programming support subsystem, user customization subsystem [to modify the system interface to best suit the requirements of each individual], and various special user programs. 1f7

Cost Summary And Breakdown

Services within the Augmented Knowlege Workshop Utility are currently sold by subscription in units refered to as SLOTS. A Slot entitles the owning organization to a guaranteed percentage (currently 3%) of the available computational power of the Utility TENEX computer system, one (or more, at owner's option) guaranteed login slot(s) for jobs during operating hours of the system, 10 file

directories with an aggregate total of 3000 disk pages (7.5 million characters), access to an essentually unlimited off-line archival tape library, numerous personnel services provided by SRI-ARC, and membership in the KWAC community as a means of controlling the continuing evolution of the system. In addition to this basic guarantee, the slot owner's users will recieve a share of the computational power assigned to any slot(s) which is not actively being used by its owner(s) (refered to as Windfall). The current rate for service is $40,000 per Slot per Year. 2

Computer Services:

ARC purchases computer services in bulk and resells the services to the users of the Utility. The original Utility computer, refered to as OFFICE-1, is run by Tymshare Corp and is located in Palo Alto, California. This system is currently fully subscribed (25 slots). In addition, there is another Utility machine located at Bolt Beranek, and Neuman (BBNB) in Cambridge, Mass. This facility provides 7 more slots, but is not a dedicated machine as is Office-1. Computer services make up 75% of the total Slot cost, divided between $20k for actual computer time and resources and $10k for operations of the two computer centers. 2a

Personnal Services:

The other $10K per slot provides a portion of the budget from which the Applications group provides services to the Users. Approximately $5k goes to the salaries of the ARC/Applications management and administrative personnel, to the hardware personnel who develop and maintain the Lineprocessors and make any necessary terminal modifications, and to the staff of systems personnel charged with maintaining, tuning, and modifying the NLS and TENEX systems. The remaining $5k is used to develop and supply documentation, training, and applications development assistance to the Slot owners' personnel. This final category is actually costing SRI approximately $15k/Slot, but the difference is being absorbed as an investment cost required to bring the AKW up to a breakeven level (currently estimated at approximately 50-60 slot holders at today's rates.) 2b

Overview Of Possible New Developments

At the recent Knowlege Worker Architect Community (KWAC) meeting held in Boston, a primary topic of discussion was ways in which current Pricing algorithms for AKW services could be modified to be more responsive to the needs of the community of users. 3

Unbundling

One important need expressed by the architects was for ARC to "unbundle" the various Utility services, allowing the user organization to purchase additional units of processor power, storage, training, applications programing, documentation, and the

like on an incremental basis, instead of only as part of a full slot. These incremental services would be available, of course, only to users who had already purchased one or more standard slots. The prime purpose of such a change would be to allow the architect to tailor services purchased to the requirements of his specific applications. 3a

Selling Windfall

Another idea proposed was to allow the Utility to sell users with short term requirements for added power a "First Option" on the Windfall, the excess computer power above that guaranteed to all the other slot holders. This would allow an organization faced with a sudden, short term need for more power to obtain that power quickly and easily, without impacting other users access to those resources which were guaranteed them in their contracts. In addition, it would provide additional revenue to the Utility, which would then be reinvested in system upgrades to improve system performance for all users. 3b

Hardware upgrades

A third point discussed was the possibility of allowing organizations to apply end-of-year fallout money towards purchasing hardware upgrades to the Utility system which would improve their own service dramatically, and service to the whole community somewhat. For instance, an organization could provide ARC funds which would be earmarked for additional Core or disk. The system would be then configured so that the purchasing organization would have first access to the new resources, but that all other users could access the resources when not required by the purchaser. 3c

User-Owned Hardware

Finally, some discussions occurred on the mechanisms and costs involved in having the ARC provide system support for an NLS system running on a non-Utility host owned or leased by a user organization. Such an arrangement is especially interesting, as the NSW Project is doing just that in its part of the ISIC system, and other government agencies (the National Security Agency, in particular) are planning to implement AKW systems on inhouse facilities. 3d

Summary

In summary, participation in the community of users of the Augmented Knowlege Workshop provided by Stanford Research Institute's Augmentation Research Center has several tangable and intangable benefits. 4

It provides access to perhaps the most powerful, flexible, and evolutionary text editor/document production and control system

available, which in turn provides an opportunity to make a more cost-effective use of scarce, and expensive, personnel resources. 4a

It provides computer service to use this system at considerable savings over non-AKW prices. 4b

It provides an ability to guide the continued evolution of the system so that operational requirements are best fulfilled. 4c

It provides membership in a community of users interested in similiar problem areas and the role of the Computer in providing new, better alternatives to the slow, costly, error-prone manual document production environment of today. 4d

And it puts AFDSDC personnel in intimate, working contact with one of the most highly human engineered and advanced interactive systems available, contact which should lead to noticible improvements in the human engineering of interactive systems the Center provides to the field. 4e

Appendix 1: Hardware Survey Of Office-1 Configuration 5

DEC PDP-10/KA Central Processor with 256K (36 bit) words of core memory 5a

Drum controller handling 3 drums 5b

Disk controller handling 4 spindles of disk packs 5c

Magnetic Tape controller handling 2 drives 5d

Line printer 5e

Paper tape reader 5f

BBN TENEX Paging Unit 5g

Local Line Scanner (for direct connect/dialup terminals) 5h

Interface to TYMESHARE TIP (ARPANET access) 5i

Appendix 2: Cost Comparison For August NSW Office-1 Utilization 6

The purchase of computer resources via of the AKW Utility service provides for an economy of scale, and a levelizing of workload which provides significant financial savings to members of the community over what identical resources would cost if purchased on an individual basis at standard timesharing service costs. As an example of the savings possible, the following cost comparison

uses actual services which were received by the NSW group (AFDSDC, AFDSC, and some contractors) at Office-1 during the month of August, 1975. 6a

During that period, the group logged 18.25 CPU hours in 731.64 connect hours and was allocated an agregate total of 9000 pages of online storage. Tymshare, the organization which runs the Office-1 facility, also operates several other PDP-10 systems, on which it charges approximately $10 per connect hour, plus approximately $7.50 per CPU minute, plus storage costs on a sliding scale varying from .50 to .20 per 1k characters per month (depending on ammount purchased). 6b

Thus, for an equivalent service level, the group would have paid approximately $7300 in connection charges, plus $7900 for processor time, plus $7200 for storage, a grand total of $22,400. The computer service portion of the charges for 3 AKW Slots, on the other hand, was only $7500 [($40k/12)x(3slot)x(.75)]. 6c

Based on these figures (which are rough but fairly representative of what could be expected in the commercial timesharing world), the NSW group would have thus had to pay over 3 times as much for the same service as obtained via the AKW Utility. 6d

Appendix 3: Current AKW Subscribers 7

ACRONYM	Name of Organization	Location	
AFDSC	Air Force Data Service Center(Pentagon)	Washington, DC	7a
AFDSDC	Air Force Data Systems Design Center(Gunter)	Montgomery, AL	7b
AFLC	AF Logistics Command(Wright-Pat)	Dayton, OH	7c
AMC	Army Materiel Command HQ	Alexandria, VA	7d
ARMCOM	Armament command (AMC)	Rock Island, IL	7e
ARMCOM	Picatinny Weapons R & D Center (AMC)	Dover, NJ	7f
ARPA	Advanced Research Projects Agency	Rosslyn, VA	7g

ASL Albuquerque Seismological Laboratory Albuquerque, NM 7h

AVSCOM Aviation Systems Command (AMC) St. Louis, MO 7i

BELL Bell Canada Montreal, QU 7j

BRL Ballistics Research Laboratory (Army) Aberdeen, MD 7k

ECOM Electronics Command (AMC) Fort Monmouth, NJ 7l

ETS Educational Testing Service Princeton, NJ 7m

HUDSON Hudson Research Institute Croton-on-Hudson, NY 7n

MICOM Missile Command (AMC) Huntsville, AL 7o

MIT Mass. Institute of Technology, Lincoln Lab Cambridge, MA 7p

NADC Naval Air Development Center Johnsville, PA 7q

NCSL Naval Coastal Systems Laboratory Panama City, FL 7r

NELC Naval Electronics Laboratory Center San Diego, CA 7s

NRL Naval Research Laboratory Washington, DC 7t

NSA National Security Agency Fort Meade, MD 7u

NSRDC Naval Ship Research and Development Center Carderock, MD 7v

NSWC-D Naval Surface Weapons Center Dahlgrin, VA 7w

NSWC-WO	Naval Surface Weapons Center	White Oak, MD	7x
NUC	Naval Undersea Center	San Diego, CA	7y
NUSC	Naval Underwater Systems Center	New London, CO	7z
NWC	Naval Weapons Center	China Lake, CA	7a0
RADC	Rome Air Development Center	Rome, NY	7aa
SAC	Strategic Air Command (OFFUTT AFB)	Omaha, NE	7ab
SRI	Stanford Research Institute	Menlo Park, CA	7ac
TROSCOM	Troop Support Command (AMC)	St. Louis, MO	7ad

An overview of the AKW utility (draft/AFDSDC view)

(J26716) 21-OCT-75 09:26;;;; Title: Author(s): Lawrence A. Crain/LAC; Distribution: /JCN([ACTION]) KPH([INFO-ONLY]) AAB([INFO-ONLY]) AJM([INFO-ONLY]) MAS2([INFO-ONLY]) ; Sub-Collections: NIC; Clerk: LAC; Origin: < CRAIN, 01-USAGE.NLS;14, >, 21-OCT-75 08:37 LAC ;;;;####;

26716 Distribution
James C. Norton, Kenneth P. Hearn, Anthony A.L. Baggiano, Albert J. Mayhan, Marilynne A. Sims,

JBP 21-OCT-75 14:14 26717

Change Ident Request

Could you please change the ident for Derek Barber from DB to DLAB.
--jon.

1

Change Ident Request

(J26717) 21-OCT-75 14:14;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /MLK([ACTION]) ; Sub-Collections: SRI-ARC; Clerk: JBP;

26717 Distribution
Marcia L. Keeney,

USE OF THE TI ASR733 CASSET TERMINAL FOR DEX INPUT 1

This document describes the method of operation of the Texas Instruments ASR733 terminal and the CASSETTE utility program for use as a defferred execution input system. 1a

The operation of DEX is not covered, as this system is described completely in another document(...). 1b

A brief description of the terminal hardware features needed is also provided. 1c

TERMINAL HARDWARE 2

In order to be used as an input device for the CASSETTE utility program the terminal must provide facilities to allow the program to control the operation of the cassett drives remotely. 2a

To this end, the terminal to be used for cassette transmission must be equipped with the following options: 2b

Remote Device Control (RDC) 2b1

Full USASCII Character set 2b2

Automatic Search Control (This option is not necessary, but is potentially useful). 2b3

In order to check whether an existing terminal is so equipped, check the large sticker sometimes found inside the cover of the machine, or with the machine supplier. 2c

OFF-LINE PREPERATION OF TAPES 3

The terminal operators manual, "SILENT 700 ELECTRONIC DATA TERMINAL, MODEL 733 ASR/KSR OPERATING INSTRUCTIONS", (T.I. Manual no. 959227-9701, Revision C, or later) is included here by refrence. 3a

All tapes are prepared in CONTinuous format as per the instructions in section 5-1.1 of the operators manual. Terminate the tape by typing "Z<cr> and then turning the record control switch off to force the last record to be written onto the tape. 3b

Tapes may also be edited and played back off-line using the machine by following the instructions in sections 5-1.2 and 5-1.3. 3c

Tapes prepared (accidently, of course), in line mode may be re-formated into CONTinuous mode by following the instructions in

sections 5-1,5 or 5-1,7. This duplication operation is not advised, however, since it has been found to sometimes introduce extranious characters onto the tape. 3d

USING THE CASSETTE UTILITY TO READ TAPES INTO THE SYSTEM 4

To read tapes into the system perform the following operations on the terminal switch panal: 4a

1) Set KEYBOARD switch to LINE 4a1

2) Set PLAYBACK switch to LINE 4a2

3) Set RECORD switch to OFF 4a3

4) Set PRINTER switch to LINE 4a4

Place the casset to be read into either of the casset drives. (The left-hand drive is drive 1, the right-hand, drive 2). 4b

Login to TENEX in the normal manner and invoke the CASSETT Utility program. Operation of the program is illustrated by the following dialog. (Upper case text is typed by the system, lowercase by the user). 4c

```
@log kremers                                                    4c1
 JOB 23 ON TTY21 21-OCT-75 13:14                                4c2
 PREVIOUS LOGIN: 21-OCT-75 12:12                                4c3
 [KREMERS HAS ONE OTHER JOB]                                    4c4
 TENEX WILL GO DOWN WED 10-22-75 2200 TIL THU 10-23-75 0500     4c5
 FOR PREVENTIVE MAINTENANCE                                     4c6
@casset                                                         4c7
CASSETT TO SEQUENTIAL UTILITY                                   4c8
CASSETT RECORDER TYPE (TYPE "?" FOR HELP)ti                     4c9
COPY TO FILE: titf11,txt [New file]                             4c10
INPUT FROM FILE: tty:                                           4c11
                                                                4c12
```

```
ENTER CASSETT DRIVE NO. (1 or 2)1                                    4c13
TYPE SPACE WHEN READY                                                4c14
REWIND (Y OR N)yES                                                   4c15
   (... the system is now reading the tape)                          4c15a
MORE FILES (Y OR N)yES                                               4c16
COPY TO FILE: titf12.txt [New file]                                  4c17
INPUT FROM FILE: tty:                                                4c18
ENTER  CASSETT DRIVE NO. (1 or 2)1                                   4c19
TYPE SPACE WHEN READY                                                4c20
TYPE SPACE WHEN READY                                                4c21
REWIND (Y OR N)nO                                                    4c22
MORE FILES (Y OR N)nO                                                4c23
@logo                                                                4c24
```

The above illustraites reading multiple files, The procedure would be similar for a single file, 4d

USE OF THE TI ASR733 CASSET TERMINAL FOR DEX INPUT

(J26718) 21-OCT-75 16:46;;;; Title: Author(s): Jan H. Kremers/JHK; Distribution: /HGL([ACTION]) JMB([ACTION]) MEH([ACTION]) JCP([ACTION]) JCN([ACTION]) RWW([INFO-ONLY]) HGL([INFO-ONLY]) EKM([INFO-ONLY]) JBP([INFO-ONLY]) RLB2([INFO-ONLY]) ; Sub-Collections: NIC; Clerk: JHK; Origin: < KREMERS, TICASSET,NLS;3, >, 21-OCT-75 16:34 JHK ;;;;####;

26718 Distribution
Harvey G. Lehtman, Jeanne M. Beck, Martin E. Hardy, Jeffrey C. Peters, James C. Norton, Richard W. Watson, Harvey G. Lehtman, Elizabeth K. Michael, Jonathan B. Postel, Robert Louis Belleville,

messages form watson & carlson on nsw/nls

17-OCT-75 13:37:49-EDT,722;000000000000
Date: 17 OCT 1975 1337-EDT
From: WATSON
Subject: Protocol Support for the Debugger Work
To: millstein
cc: postel, watson, carlson at ISI 1

Bob, we are making great progress on the debugger work and for the first time have a debugger that knows about process structure and other nice things for debugging in an NSW type environment, but we are using incredible kludges to get around the serious deficiencies in MSG protocol. Conversations with Stu are not going anywhere as he does not seem to know MSG is supposed to support this effort. Would appreciate your passing him the workad so we can add the few things to MSG that are needed so we can get out of the kludges currently being used. Thanks Dick -------

17-OCT-75 18:13:47-EDT,1002;000000000000
Mail from USC-ISI rcvd at 17-OCT-75 1813-EDT
Date: 17 OCT 1975 1507-PDT
From: CARLSON at USC-ISI
Subject: Re: Protocol Support for the Debugger Work
To: WATSON at BBN-TENEXB, millstein at BBN-TENEXB
cc: postel at BBN-TENEXB, carlson 2

In response to the message sent 17 OCT 1975 1337-EDT from WATSON at BBN-TENEXB 3

i don't see how we can perturb msg until after the demonstration at gunter in mid-November. I also thinnk it will be necessary to get all the NSW contractors involved in the specification of the NSW debugger (as opposed to the 110 debugger). Nobody can afford to take time off to think about it right now. Unless Steve and Bob decide that debugging of the initial system is going so badly that we have to declare defeat and rebuild MSG to include debugging features, we can't stop. 4

How about sending the front-end guys to boston so they can get in the same room with Schantz and the COMPASS guys and just finish the initial system. 5

Sorry,
Bill
------- 6

18-OCT-75 17:11:05-EDT,852;000000000000
Mail from BBN-TENEXB rcvd at 18-OCT-75 1711-EDT
Date: 18 OCT 1975 1656-EDT
Sender: WATSON at BBN-TENEXB

messages form watson & carlson on nsw/nls

Subject: PRESENT SYSTEM
From: WATSON at BBN-TENEXB
To: CARLSON at ISI
Cc: WATSON, POSTEL
Message-ID: <[BBN-TENEXB]18-OCT-75 16:56:49-EDT,WATSON>

WE CAN STRUGGLE ALONG WITH CURRENT MSG UNTIL AFTER DEMO, BUT WE WOULD LIKE TO GET MORE IN THE PROTOCOL ACT AND WOULD BE VERY HAPPEY TO GET OTHERS IN DEBUGGING GAME AS ITS ABILITY TO SUPPORT TOOLS AND SYSTEMS WITH FORK STRUCTURE IS JUST WHAT NSW NEEDS FOR DEBUGGING. AS FOR SENDING FE GUYS TO BOSTON, WE HAVE DISCUSSED THAT WITH MCA AND SHANTZ AND PROBLEM IS NOT IN FE. IF BOB NEEDS US THERE WE HAVE SAID WE WILL COME, BUT SO FAR THE PROBLEMS ARE IN WM. WE DO WANT PROBABLY TO SEND NLS GUYS AND DEBUGGER GUY AS WE ARE HAVING PROBLEMS WITH THE WM, IT DOESN'T WORK AS ADVERTISED. DICK -------
18-OCT-75 17:47:26-EDT,383;000000000000
Mail from USC-ISI rcvd at 18-OCT-75 1747-EDT
Date: 18 OCT 1975 1445-PDT
From: CARLSON at USC-ISI
Subject: Re: PRESENT SYSTEM
To: WATSON at BBN-TENEXB, CARLSON
cc: POSTEL at BBN-TENEXB

In response to the message sent 18 OCT 1975 1656-EDT from WATSON at BBN-TENEXB

from your perspective, are the problems with the WM serious, or just details to be tidied up?

19-OCT-75 13:33:30-EDT,859;000000000000
Mail from BBN-TENEXB rcvd at 19-OCT-75 1333-EDT
Date: 19 OCT 1975 1321-EDT
Sender: WATSON at BBN-TENEXB
Subject: WM Problems
From: WATSON at BBN-TENEXB
To: carlson at ISI
Cc: WATSON, POSTEL
Message-ID: <[BBN-TENEXB]19-OCT-75 13:21:37-EDT,WATSON>

From where i am sitting, the problems we are having with the WM look more like the tiding up and making work as advertised type at this point. With respect to MSG deficiencies look more like to narrow a viewpoint is being taken. The NLS base FE BE split seems in good shape at our end, mostly just waiting for WM to get to point we can check our NLS WM interface out. FE is in very good shape. Debugger work also in good shape except for deficiencies in MSG. We do not think MCA is paying enough attention to either our NLS needs or protocol needs, but assume that will be corrected. Dick

messages form watson & carlson on nsw/nls

19-OCT-75 13:48:55-EDT,1773;000000000000
Mail from BBN-TENEXB rcvd at 19-OCT-75 1348-EDT
Date: 19 OCT 1975 1343-EDT
Sender: WATSON at BBN-TENEXB
Subject: Your suggestion of completion of NLS
From: WATSON at BBN-TENEXB
To: carlson at ISI
Cc: WATSON, POSTEL
Message-ID: <[BBN-TENEXB]19-OCT-75 13:43:44-EDT,WATSON>

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With respect to wrapping up NLS for documentation work, That is something we definitely want to do, We just responded to a well thought out RFP from GE for a system to handle large documents, NLS is the only system around that seems close, We presently meet 90+% of the needs, NLS failed to fully meet their needs in two areas, tables, equations, larger character set than ASCII in files (we presently handle it for COM with directives to escape to other sets), and ability toautomatically renumber, figures, tables, and cross references, There is need also to handle a raster printer, GE is mostly just fishing, testing state of the art, they don't have funding so I don't expect much to come of them, but it was interesting to see how close we were to their needs (I estimate we could meet their needs with 1-2 man years work in quicky fachion, more to do it deeper in file structure right) We will be talking with RADC next week about their interest in doing the above type of things right, Desire of Pentagon to run NLS for 100K a year not completely clear, It looks to me like the new DEC KL 10/20 at abouut 400K amortized over 4 years about does it and could support 16 terminals DNLS at high responsiveness and more a lower responsiveness, If we could interest someone in improved DEX and better interface to other word processing units, real cost could be cout much further, After I get back from RADC I will probably contact Mrs Shields and Maj Hearn, Regards Dick

---

19-OCT-75 13:49:36-EDT,3095;000000000000
Date: 19 OCT 1975 1349-EDT
From: WATSON
Subject: Message of interest from carlson on pentagon and gunter talks To: engelbart at OFFICE-1, norton at OFFICE-1, postel

13

I sent Bill a note asking him for background on any talks he has had with Pentagon and Gunter recently and told him about new kl 10/20 coming out, Here is his reply: 17-OCT-75
18:41:21-EDT,2704;000000000001
Mail from USC-ISI rcvd at 17-OCT-75 1840-EDT
Date: 17 OCT 1975 1530-PDT
From: CARLSON at USC-ISI

messages form watson & carlson on nsw/nls

Subject: Re: New PDP 10 coming out next year,
To: WATSON at BBN-TENEXB, carlson 14

In response to the message sent 17 OCT 1975 1343-EDT from WATSON at BBN-TENEXB 15

At Pentagon, I talked to Mrs. shields, Maj. Hignett, and Maj. wylie, they are bearish on the feasibility of even using NLS in the long term, They see little way of buying a PDP-10 for installation in-house or of buying substantial time on a comercial service, There was no interest in converting NLS to another machine, On the other hand, several people are learning NLS and the publication subsystem to ge the 66-1 manual out and there is a chance they
will begin to appreciate some of the finer points,
I think there is a good chance they will end up using NLS if I help them get a PDP-10 and if a stable version exists at the end of the current contract which can be maintained (including the parts of NLS they use plus the TENEX operating system) via the network for less than 100k per year, 15a

Maj Hearn has supplanted Baggiano as the kingpin for the project at Gunter, Baggiano will not return my phone calls, Gunter is pretty committed to NLS, but they are under severe pressure to show near-term results on a constrained cost-benefit analysis, Unless Maj Hearn can give assurance of an operational capability with assured low cost maintenance as a result of the current contract work, I suspect that NLS and the NSW are both dead at Gunter, 15b

A suggestion: (partially motivated by the fact that Jon Postel is needed for the DCA protocol work) - why not convince Bart Cox and Dave brown that completion of an operational NLS (or subset oriented to the application) is absolutely necessary
if SRI is to enter the text publication business in a serious way, Get them to find the best software development manager in SRI and have him do the job Jon has been doing, with the explicit goal of completing a product which SRI can proudly represent as an efficient document publication system under current technology, Meanwhile, you and Doug should think about new initiatives - true exploratory development aimed at demonstrating order of magnitude improvements at low cost (and with the understanding that the demontration systems will not be complete), 15c

How are we coming with new NLS? i consider January
the cut-off for capabilities which are to be in the production system, Then we have to get users on it banging away so it is very well sorted out by June 76, 15d

JBP 21-OCT-75 20:03 26719

messages form watson & carlson on nsw/nls

Regards,
Bill

19-OCT-75 13:51:20-EDT,383;000000000000
Date: 19 OCT 1975 1351-EDT
From: WATSON
Subject: messages to carlson
To: postel

Jon, in flurry of messages back and forth between carlson and I this weekend before my RADC trip if I told any lies or misrepresented how you see things with respect to works manager NLS interface MSG etc please send bill and I note straightening it out. Thanks Dick PS see you friday -------

JBP 21-OCT-75 20:03 26719

messages form watson & carlson on nsw/nls

(J26719) 21-OCT-75 20:03;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /JBP([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: JBP;

26719 Distribution
Jonathan B. Postel,

M*A*R*K*E*R*S

Tonight I decided to get the markers set right again in my initial file. The first thing I did was to Show Marker List. It replied "bad file". I updated compact and did Show Marker List again. It said "System Error; String Variable overflowed". The I tried to jump to a marker. A: said "?". Then I set some markers and tried show marker list which said the same thing thing about overflowed. Then I tried jumping to my new markers. They work fine. I guess this is a bug report about Show Marker List? 1

M*A*R*K*E*R*S

(J26723) 21-OCT-75 23:18;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /FEEDBACK([ACTION]) KLM([ACTION]) ; Sub-Collections: SRI-ARC FEEDBACK; Clerk: DVN;

26723 Distribution
Special Jhb Feedback, Kathey L, Mabrey,

DVN 21-OCT-75 23:42 26724

People You Might Talk With at EPA in Washington

Rob, more study of the EPA "Systems News of the Management Information and Data Systems Division" and EPA Org charts show that Ruth Swink has apparently disappeared and indicate the people you might call in Washington are Willis Greenstreet, Marguerit Hall or Anne Parks, Dr. Albert Trakowski, and Charles S. Conger, in that order of preference. 1

The September issue of the publication named above has a two-page statement about various problems associated with EPA data processing, particularly OSI and unsatisfactory terminals, and concludes"The final and most important priority is to improve MIDSD's communication throughout the agency". This statement is associated with Greenstreet who is director of MIDSD. His office seems to be at 401 M street SW in Washington, I don't have a phone number. 2

Hall and Parks are the people at EPA in charge of dealing with Bowne. Maybe they are at too low a level, hard to tell, but they are lilely to be aware of its limitations. Their phone numbers are (202)755-0803 and (202)755-2838 respectively. 3

Dr. Albert Trakowski is Deputy Assistant Administrator for R and Technical Support within the Adminstration of Research and Development. 4

Conger is head of the Data Processing and User Asist Branch within MIDSD. As such he seems mostly concerned with their data retrieval system, Storet. 5

Don't forget about ISG Analysis and design capability. 6

Sorry to be slow and not have very good addresses. 7

DVN 21-OCT-75 23:42 26724

People You Might Talk With at EPA in Washington

(J26724) 21-OCT-75 23:42;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /RLL([ACTION]) DOCPLAN([INFO-ONLY]) PMK([INFO-ONLY]) ; Sub-Collections: SRI-ARC DOCPLAN; Clerk: DVN;

26724 Distribution
Robert N. Lieberman, Joseph L. Ehardt, Raymond R. Panko, James H. Bair, David R. Brown, Glenn A. Sherwood, N. Dean Meyer, Kathey L. Mabrey, Norman R. Nielsen, Thomas L. Humphrey, Robert Louis Belleville, Elizabeth K. Michael, Richard W. Watson, James C. Norton, Robert N. Lieberman, Pat Whiting O'Keefe, Douglas C. Engelbart, Dirk H. Van Nouhuys, Peggy M. Karp,

KIRK 22-OCT-75 00:14 26725

Bug in CTRL-O with looping process branch.

I created the loop below in order to print several copies of something at my terminal. This was assuming that when I wanted to stop it, I could type CTRL-O. Try it. Move the branch to be statement 2 of your file. Process it. Then try to stop it with CTRL-O. You will then experience a rather nasty bug.

KIRK 22-OCT-75 00:14 26725

Bug in CTRL-O with looping process branch.

Pri Bra 1 1

Pro Bra 2 1a

KIRK 22-OCT-75 00:14 26725

Bug in CTRL-O with looping process branch.

(J26725) 22-OCT-75 00:14;;;; Title: Author(s): Kirk E. Kelley/KIRK;
Distribution: /FEEDBACK([ACTION]) JDH([ACTION]) ;
Sub-Collections: SRI-ARC FEEDBACK; Clerk: KIRK;

26725 Distribution
Special Jhb Feedback, J. D. Hopper,

USER SERVICES WEEKLY REPORT for Week of September 29 - October 3:

USER SERVICES WEEKLY REPORT for Week of September 29 - October 3: 1

from JMB 1a

US and ARC-APP meetings 1a1

Discussed new DNLS course with JHB, LJM, & SGR 1a2

Cassette program and DEX program testing with Jan Kremers, Did more writing on DEX--getting the user guide in shape as all the information comes together and everything gets implemented soon I hope. 1a3

Finished the Lineprocessor users guide, sent it to Reproduction and journalized it, Yeah! 1a4

Worked a little bit on the DNLS training I will do next week, other trip preparations, and making sure all the documentation will be ready, 1a5

Time given to ARC-ADG: 21 hours
Time given to US and communicating, meetings, etc: 19 hours 1a6

from SGR 1b

Spent a lot of time trying to finalize travel plans for the trips by myself, JMB, PKA, and PAW2 before and after the Architect's meeting, There were a couple of meetings to discuss what to teach the AMC people which resulted in a journal item to Ed VonGehren and Ron Uhlig about our decision. Also spent time getting reservations lined up for the KWAC meeting, 1b1

Had the User Services meeting and typed a memo online as the result of it, Met with Ann to learn Proof, Journalized the memo to KWAC concerning the expanded service being considered by US, Wrote a draft of the briefing which I guess will be used during some of the trips for the next 3 weeks but which does still need some work, 1b2

Attended the all-ARC meeting about the KWAC meeting and other misc, news, 1b3

Answered a few questions about formatting, and worked with Pam a little on XED because of one of the latest "scares", 1b4

from RH 1c

Spent the first two days at AMC-WDC teaching the first and

second courses (see trip report). Wednesday was spent half-time at ARPA and half-time at SRI talking with JCN. Thursday and Friday I was out sick. 1c1

from PKA 1d

On Monday had our weekly meeting. We talked about the word process symposium in more detail. That afternoon met with Ann, and she showed us how to proof the 66-1 document. I had planned to work with her all week on this, but due to the uncertainty of 66-1's future I didn't. I started making travel plans on Tues, and continued through Thurs,, changing things around from day to day. For several hours each day worked with Priscilla on formatting Ken Victor's Guide to the Debuggeer. Although we aren't using many directives we have tried some ones that are unfamiliar. At one point I thought I might be teaching XED to the AMC people so spent a little time trying to figure that out (but not much). An ARC-APP meeting was held on Fri. to hear about JCN's last trip and to briefly discuss the Architect meeting. Spent some time going over the Basic course in preparation for teaching it next week as it has been some time since I last taught it. 1d1

from PAW2 1e

Monday-Tuesday-Wednesday worked on the August Usestats. Reorganized entire file, sucked in new data, and sent out stats to all the architects. Had neglected this for a while, resulting in a big pile-up. US meeting on Monday- discussed some of the training Susan picked up from a session at the word symposium. 1e1

Thursday and Friday spent time working with output processor directives on a document for Ken Victor. Meeting on Friday, heard about Jim Norton's trip to Penn, and the possibility of some ITT people becoming clients. Brief discussion followed concerning the upcoming KWAC meeting, agenda, conference direction, etc. 1e2

&US 22-OCT-75 01:04 26726

USER SERVICES WEEKLY REPORT for Week of September 29 - October 3:

(J26726) 22-OCT-75 01:04;;;; Title: Author(s): User Services /&US; Distribution: /US([INFO-ONLY]) JCN([INFO-ONLY]) JHB([INFO-ONLY]) ; Sub-Collections: NIC US; Clerk: JMB;

26726 Distribution
Susan Gail Roetter, Priscilla A. Wold, Jeanne M. Beck, Pamela K. Allen, Rita Hysmith, Sandy L. Johnson, James C. Norton, James H. Bair,

ELF USER'S GUIDE ("Vanilla" version)

Ammended for Gunter ELF by LAC

B. W. Schafer
D. L. Retz
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This work is supported by the Advanced Research Projects Agency through Contract No. N00014-73-C-0221, administered by the Office of Naval Research.

ELF USER MANUAL

This is a rewrite of the standard ELF Users' Guide, modified to be primarily aplicable to Gunter AFS users. This version only includes those commands usable by a non-priveleged job. It also includes an additional section on technical and administrative proceedures for getting printout on the Gunter Lineprinter.

Introduction

Because the new ELF System was designed to support a larger variety of applications than the old system, using it for network access is slightly more complicated. The new system incorporates a user command language patterned after the TENEX executive. This language supports logging in, performing various utility functions, running programs, and logging out. The portion of ELF which interprets user commands is referred to as the ELF executive, or the ELF EXEC. Utility functions include finding out who is using the system and sending messages to other terminals. At present the only program of general interest is TELNET. It is this subsystem that performs the network access function (the total function of the old system). In the future, further subsystems will be added to support such things as the full FTP protocol (in much the same way TENEX does) as well as subsystems that provide access to local resources.

It is the purpose of this document to provide an introduction to the use of the ELF system.

A word about notation is required at this point. As is true with TENEX and other systems, keywords are used to identify various commands. These commands usually can be abbreviated by using only the first few letters of the keyword. To indicate which letters are required to specify a keyword, the keyword is spelled out completely with the optional letters in square brackets. As an example, the LOGIN keyword is used to log into the system but only the first three letters are required. This is denoted LOG[IN].

Following the keyword specifying the operation there may be zero or more operands, some of which may be optional. In this document the operand description is enclosed in angle brackets and further enclosed in square brackets if it is optional. For example the LOGIN keyword should be followed by one or two operands. The first of these is required as it specifies the user's name; this name is used to indicate who is using the terminal when other users request the SYSTAT operation. The second operand is currently optional, and it specifies a password which the user may or may not wish to have associated with his or her name. The above discussion of the operands is summarized by the following specification:

LOG[IN] <user name> [<password>]

It should be noted that a space, an escape, or an alt-mode terminates a field, whereas carriage return terminates a field and the line.

Executive Commands

Following is a list of executive commands together with a brief description of each, They are arranged in alphabetical order for easy reference, It is recommended that the descriptions be read the first time in the order

LOGIN, SYSTAT, VERSION, RUN, CONTINUE, LOGOUT, DETACH, ATTACH, NOECHO, ECHO, RESET, TELNET, DAYTIME

ATT[ACH] <job number> [<password>]

Description: The terminal is attached to the specified job if the following conditions are met:

(1) The job specified is currently detached,

(2) The password specified matches the password associated with the job specified (unless there is no password associated with the job),

CON[TINUE]

Description: The previously running subsystem is continued from where it left off when it was last interrupted by a control C,

DAY[TIME]

Description: Gives the current date and time,

DET[ACH]

Description: The terminal is detached from the active job, At a later time the ATTACH command can be used to attach the same or a different terminal to the job,

EC[HO]

Description: The command specifies that the system should echo each character as it is typed. As the echo state is the default, this command need only be used when the user has previously specified NOECHO (see below).

LOG[IN] <USER NAME> [<PASSWORD>]

Description: The user is logged in. After being logged in the set of commands described here are available to the user.

LOGO

Description: the active job is logged out of ELF.

NOE[CHO]

Description: This command specifies that no further echoing should be performed by the system. This would be used with certain terminals that do their own echoing.

NOT[IFY] <job#> ;<message>

Description: The message you specify is displayed upon the terminal currently attached to the specified job#. Editing (<^-A>)is possible during the entry of the message. The message is not sent until after you hit the CR.

RES[ET]

Description: Closes all open files and deletes the active subsystem (if one exists) making it impossible to CONTINUE. This function is

performed automatically when the user runs another subsystem or logs out.

RU[N] <subsystem name>

Description: The specified subsystem is run if there are sufficient resources. To return to the executive command mode the user should push control C. Note that if no command is specified the RUN command is assumed.

SY[STAT]

Description: Gives the system statistics including a list of the jobs currently logged in.

TEL[NET]

Description: Calls the Network access program (see below). Short for "RUN TELNET".

V[ERSION]

Description: Gives the current ELF system version number.

The TELNET Subsystem

This subsystem provides access to the ARPA NETWORK. A connection can be established with a foreign host computer and later closed. The following commands are currently available. (In the following discussion curly brackets ({,}) are used to denote a choice; one of the items listed should be chosen.)

CO[NNECT TO] [{<host names>-or-<host address>}]
[<socket number>]

This command requests that a connection be established with a specified host. If no host is specified the previous connection (if there was one) is resumed. Certain hosts can be specified by name. All other hosts must be specified by their numeric address (normally in octal - if you wish to use decimal prefix the number with ^D). Following is a list of the hosts that can be specified by name from GUNTER.

A[MES-67] ANL AR[PA-DMS] BBN[A] BBNB BBNC BBND CCA[-TENEX] CCB[S] CCN CMU-10A C[MU-10B] DOCB ECL HAR[V-10] HAW[AII-500] ISI[A] ISIB ISIC I4[-TENEX] I4B[-TENEX] LL-6[7] LL-TX[2] LLL[-RISOS] LO[NDON] MIT-A[I] MIT-DM[S] MIT-ML MIT-MU[LTICS] O[FFICE-1] PARC[-MAXC] RAND-I[SD] RAND[-RCC] RU[TGERS-10] SA[IL] SCI-[TENEX] SDC-C[C] SDC-L[AB] SR[I-AI] SU[-AI] SUM[EX-AIM] UCSB[-MOD-75] UTAH[-10]

It should be noted that if no command is specified the subsystem assumes that a connect was requested. For example, all of the following request a connection to OFFICE-1:

CONNECT OFFICE-1 <carriage return>

CO O <carriage return>

O <carriage return>

CL[OSE]

Closes the connection to the remote host computer.

D[ISCONNECT FROM] [{<host name>-or-<host address>}]
[<socket number>]

This command is exactly the same as the CLOSE command.

S[TATUS] [{<host name>-or-<host address>}]

This command is designed to be used to determine the status of a particular host or the local IMP. At present only the status of the local IMP can be accessed. S <carriage return> will return the local IMP's status.

E[SCAPE CHARACTER =]<character-desired>

This command is used to override the default escape character (control Z). The escape character is used to return to TELNET command mode after a connection has been established. To return to the connection after using the escape character the user need only push <carriage return>.

Q[UIT]

This command is used to quit TELNET and return to the executive. (Also closes your connections.)

Sample TELNET Session

```
LOG TYPICAL USER <carriage return>
(logs in with name "TYPICAL" and password "USER")

TEL <carriage return>
(runs the TELNET subsystem)

   ES <control-y><carriage return>
   (<ctl-z>is inconvenient if you will be sending messages)

   OFFICE <carriage return>
   (request a connection to Office-1)

      LOG YOURNAME ANDPASSWORD ANDACCOUNT <carriage return>
      (log into Office-1)

      SYSTAT <carriage return>

      MSG <carriage return>
      (Call the network message system)

         TN <carriage return>
         (types new messages)

         Q <carriage return>
         (Quits to TENEX)

      LOGO <carriage return>
      (logout of Office-1)

      <control-Y>
      (returns to local TELNET)

   QUIT <carriage return>
   (returns to local ELF executive)

LOGOUT <carriage return>
(logs out at local ELF system)
```

Obtaining Printouts on the Lineprinter

AFDSDC now has a facility available to all users requiring hardcopy of files on ARPANET, The facility allows you to make copies of your files on the high speed, upper/lowercase line printer attached to the GUNTER PDP-11 Network Access Subsystem computer, This section provides instructions on the technical and administrative procedures you should follow when using this service,

To get printed products using this system, you must make a copy of the information you want printed in a new temporary file in a special directory called <GUNTERPRINTER> at OFFICE-1 or ISIC, Once this copy has been made, the system automatically takes over, A special program watches this directory, and when anything appears, the program opens a connection to the GUNTER printer, prints header information, then prints the file, It next deletes the temporary file, The system will continue printing additional files until the directory is again empty, at which time it goes to sleep until another file is loaded into the directory,

There are three major ways you can get a file into this directory for printing, depending on which system you are currently using, NLS, TENEX, or a computer somewhere else,

NLS:

TO use the system from NLS, use the OUTPUT command to create a text version of your file in the GUNTERPRINTER directory, The form of the command is-

Output Quickprint File GUNTERPRINTER,FILENAME<cr>
(the FILENAME will be described below)

This will give you a rapid listing of your file as it would appear were you to use the Print Rest command at your terminal, Output processor directives are PRINTED, NOT acted upon, If you want the system to act on output processor directives, use:

Output Printer File GUNTERPRINTER,FILENAME<cr>

The system will tell you 'Processing Output' then come back to 'BASE C:' when finished,

TENEX:

To use the system from TENEX, do a:

COPY infofilename <GUNTERPRINTER>FILENAME<cr>

The system will return with an '@' when finished.

OTHER COMPUTERS:

To use the facility from other ARPANET Computers, you must invoke the TENEX File Transfer Program from that host's Exec system. Do this by typing:

```
FTP<cr>
CONN ISIC<cr>
LOG GUNTER AFS<cr>
ACCOUNT 3000<cr>
SEND infofile<esc><cr> <GUNTERPRINTER>FILENAME<cr>
QUIT<cr>
```

FILENAME convention:

The FILENAME you give your copy when you move it into the GUNTERPRINTER directory will be used as routing information by Production Control to insure your products get back to you. For this reason, the format of this name is quite critical. Note that the FILENAME you give this printer file in no way bothers the name of your INFOFILE. It is only a temporary name to be used by the system until the printing is complete.

The following convention should be used when naming printer files:

FILENAME====> FNM-ORGN-BLD[-OPIDNT][,COP]
where

FNM=any temporary name the user wants to use to indicate the origin of the print file,
ORGN=your 3 or 4 character office symbol
BLD=your building number,
OPIDNT=an optional field containing your IDENT or name, to be

used for routing within your own office.
COP=an optional number of copies you would like

All FILENAMEs must be made up of letters and numbers (with a letter in the first position), with the fields separated by the dash/minus sign. Maximum length of the FILENAME is 25 characters. For example, a file printed by Lt Crain (SYOA, building 325) might be named:

ANYFILE-SYOA-325,3 (note: will make 3 copies)
or
ANYFL2-SYO-325-LAC

The second and third fields, ORGN and BLD, are the most critical. If these are not as specified, your printout may be delayed, or may never get to you at all. Please be especially careful that your print FILENAMEs names match the specification so that we may give you the best possible service.

If you would prefer to pick up the printouts from production control (instead of waiting for distribution), use "HOLD4-ORGN" in the second and third fields, instead of "ORGN-BLD". Such printout will be held for pickup at the Production Control on the second floor of the Blockhouse.

i.e:
ANYFL3-HOLD4-SYO-CRAIN,2

If you have any questions, or need help, please contact Mrs Sims or Lt Crain at 4224/4229.

26727 Distribution
Air Force Data Systems Design Center , Ann Weinberg, Susan Gail Roetter, Eric M. Ostrom, David L. Retz,

DVN 22-OCT-75 13:18 26728

The Need for a Business Plan for the GE Nuclear Proposal

As you can see from (journal,25930,1m) a real proposal to G E awaits getting together a business plan. The difficlty is how to charge for (support to) NLS. Dick, Doug, Bart, Dave Brown, I, and Spencer Floyd have been invovled in the discussions that led to not proposing anything. Bart and Spencer believe Geof Steel must be involved. Dick and I hope that some one in ARC Applications will make a plan, discuss it with the people named above, as necessary, give it to me to put in the proposal, so I can get it signed off, and deliver it to GE, not later than November 15. Jim do you agree? Who will do the work in Applications? 1

DVN 22-OCT-75 13:18 26728

The Need for a Business Plan for the GE Nuclear Proposal

(J26728) 22-OCT-75 13:18;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /JCN([ACTION]) KLM([ACTION] In addtion to the docplan notebook and copies to Norm and Dave, would you send copies to Bart and Spencer Floyd?) DOCPLAN([INFO-ONLY]) ; Sub-Collections: SRI-ARC DOCPLAN; Clerk: DVN;

26728 Distribution
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DAV 22-OCT-75 14:13 26729

'y' viewspec

Sandy, The "y" viewspec has ALWAYS given me trouble, at both BBN and ISI. I have the feeling I'm one of the few persons who makes heavy use of it. But I like to know where one statement ends and the next begins, so I usually have it on. Lots of things that cause part of the screen to be updated just don't work, particularly with split screens. -- Dave 1

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'y' viewspec

(J26729) 22-OCT-75 14:13;;;; Title: Author(s): David C. Smith/DAV;
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Special Jhb Feedback,

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Support for Jim Bair's Documentation Plan

(journal, 26698,) sounds good to me, assuming the textbook is really a text book and does not turn into an unreadable User Manual organized hierarchically without regard to flow. I suggest Jim consider the typical format of language text books, with carefully ordered lessons, excercises, vocabulary, review, all that neat stuff. With regard to updating, I imagine that if everything were organized properly some sort of automatic process could notify the textbook maintaner whenever Help was changed with a citation to the locations of related matter in the text book. At that point the textbook maintaner could decide about rewriting. Then the online version of the textbook would always be up to date, and, as changes accumulated, it could be reprited (an endless source of income to textbook publishers).

1

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