DRAFT DESIGN FOR A TEXT/GRAPHICS PROTOCOL 1

This proposal should be seen as a synthesis of existing ideas rather than an attempt to put forth new ones. It is based on work by the NGG, Elaine Thomas, Peter Deutsch, Charles Irby, Ken Victor, Bill Duvall, Bob Sproull, and others at ARC, PARC, and BBN. 1a

We are concerned about the lack of text-handling capabilities of the protocol suggested in RFC 493. Also, we feel that the protocol will have a significant influence on the interface provided to writers of future graphics application programs, and consequntly that such things as "beam twiddling" should not be part of the protocol. 1b

Things of this nature address the problem at too low a level for a facility which is intended to service the needs of a wide range of graphics devices. 1b1

We feel that, although the breakdown into "levels" as proposed in RFC 493 may be expedient for initial experimentation, it is inappropriate for a Network Standard protocol. Instead, we propose that the protocal allow for two levels, segmented and structured. This allows the writers of graphics application programs to deal with a very simple display facility (segments consisting of lines, dots, or character strings) or with a powerful structure of display subroutines. 1b2

We propose an experimental implementation of such a scheme on the ARC, BBN, and PARC systems to test these ideas using several application programs (including NLS) and at least an IMLAC, ARDS, and an E&S LDS. 1c

Environment 2

We are trying to design a protocol used to communicate with a "virtual display" to operate at the other end of a wire (ARPANET connection) from a "host" which is running some kind of display application program. 2a

We will adopt the terminology that the human user, sitting at the display, is the "user" and the application program is the "server". 2a1

We wish to stress the fact that within a single application, a single terminal should be useable both as an "interactive graphics" terminal AND as an "interactive control" terminal. Thus, the graphics protocol must allow for teletype-like operations. 2b

The need for two sets of connections for running graphics programs over the Net (according to our understanding) is centered about the issue of handling (being able to recover gracefully from) berserk programs (and perhaps achieving greater bandwidth through the net). 2c

We recognize this problem but also think one should be able to run graphics programs using only one set of telnet connections. Also, it seems obvious that even though one is running a graphics program, one must expect to be able to handle "unescorted" characters (not embedded in a command or response message) being sent to his terminal. 2d

Consequently, we are proposing that the graphics protocol be implemented within telnet using 8-bit BEGIN-GRAPHICS-COMMAND and END-GRAPHICS-COMMAND characters or the 8-bit transparent mode of the new telnet. This means that one will be able to run graphics programs with one, two, or more sets of telnet connections. 2e

We also strongly propose that any site which is interested in supporting display terminals for use in network graphics would be prudent to implement local control over the display (such as IGNORE-GRAPHICS-COMMANDS, RESET-TO-TTY-MODE commands from the user to the using host). Failure to take such precautions may very well lead to burned out tubes 2f

Basic concepts 3

The Model 3a

The model we are adopting consists of an application program manipulating a (remote) display file. This file may be "segmented" or "structured", in which case it may be manipulated independently from the display itself. 3a1

For structured display files an "update display" command causes the display file to get mapped onto the display in whatever fashion is appropriate for the display. 3a1a

Part of this protocol deals with commands issued to the (remote) display file editor. This editor creates and changes the display file at the user host. 3a2

Structured Display Files 3b

A structured display file consists of named subpictures, each containing any number of named units. There are two types of units, primitive units and call units. The effect of a unit is

independent of its name or creation order within the subpicture. 3b1

Primitive units contain drawing instructions and associated coordinates that may generate visible information on the display screen. Drawing instructions and coordinates can occur only in primitive units. 3b1a

Call units give the display structure a subroutine capability. A call unit invokes the display of another subpicture. In other words, a call unit allows one subpicture to contain instances of other subpictures. As well as providing for subroutine-style control transfer, call units can be used to establish display parameters and maintain parameter transparency. For example, a call unit can be used to call a subpicture with a translation and relative intensity setting. On return from the called subpicture, these parameters are restored to their original values. 3b1b

A subpicture is an ordered list of units which can be any mixture of primitive and call units. Each subpicture begins with a header and terminates with the subpicture end unit. The subpicture end unit is a single unique unit in a display structure linked to the end of each subpicture. 3b1c

In order to understand how control passes through a structure, one can think of the display elements as follows: subpictures are subroutines and units are linked blocks of in-line code. When all of the units contained in a subpicture have been executed, the subpicture end unit returns control to wherever the subpicture was called from. A primitive unit contains display code and a transfer to the next unit. A call unit contains a subroutine call to a subpicture and a transfer to the next unit in line. 3b1d

Segmented Display Files 3c

A segmented display file consists of named segmentes, each containing any number of primitive units. The only operations available for segmented display files is to add new, delete old, or replace old segments (updating the actual display happens automatically). The effect of a unit is independent of its name or creation order within the subpicture. 3c1

Hosts 3d

Since a given terminal may be under partial control of several different hosts, all further discussion of names, coordinates,

display files, etc. should be taken as relative to each individual host. 3d1

That is, each host believes it has a display file, naming, and coordinate space and a set of state parameters entirely under its control; its only evidence of resource sharing is that the terminal may appear to be of different sizes at different times. 3d2

(We feel that in principle it should be processes within hosts, rather than hosts, that enjoy these properties, but it does not seem feasible to construct a process identification scheme that all hosts will find acceptable.) 3d3

Subpictures 3e

A subpicture has a name and zero or more units. 3e1

Subpicture names are arbitrary, globally unique, fixed-length identifiers (subpicture names are chosen by the host). 3e1a

Each unit (displayable component) has a name, which is local to the subpicture. 3e1b

A unit may be a "primitive unit", such as a string or a vector, or a "call unit", which implies displaying a (possibly transformed) copy of another subpicture. 3e2

The display data are organized into a re-entrant tree (acyclic graph) by the call units. 3e2a

A unit may be "visible" or "invisible". 3e3

A particular instance of a subpicture (the result of a call-unit) appears on the screen precisely if it and all subpictures on the logical path to it from the root of the tree are "visible". 3e3a

Primitive units 3f

Strings 3f1

A string unit is a horizontal line of characters with its own mode and X,Y origin relative to the origin of the subpicture. 3f1a

Note: intensity is always relative. 3f1a1

Font and mode (e.g. blinking) information logically accompanies each character. This is accomplished by means of embedded mode and font specification characters and a "restore original string mode and font" character. 3f1b

Note: Mode modifiers are non-displayable characters and do not take up character positions on the screen. 3f1b1

Determining the space occupied on the screen by a string requires knowledge of the font(s) being used; this is a separate question which is dealt with later. 3f1c

TTY units 3f2

A tty unit is a rectangle that consists of a number of lines. Within this unit the display acts as if it were an alpha-numeric display, e.g., 3f2a

characters which would write beyond the right hand margin of the rectangle cause an automatic line folding to take place 3f2a1

ascii control characters CarriageReturn, LineFeed, FormFeed, and BackspaceCharacter, (HorizontalTab and VerticalTab?), are interpreted appropriately 3f2a2

other control characters are displayed in a terminal specific manner, e.g. ↑F, <↑F>, etc. 3f2a3

display of the characters in the range 200-377 is left unspecified at this point (truncated to 7 bits?, alternate fonts?, alternate modes?) 3f2a4

It is hoped that we can agree on a standardization of some of the characters in this range to allow for such things as greek letters, common mathamatical symbols, super-scripting, and sub-scripting. 3f2a4a

linefolding that would cause characters to be written below the rectangle (whether performed automatically or by a LineFeed character, etc.) cause the text within the unit to be scrolled upwards one line (storage tube may adopt a different scheme). 3f2a5

Characters are displayed in a teletype unit in one of two ways: 3f2b

Characters sent to the terminal that are not part of any

command (unescorted characters) are appended to appropriate tty-units (see below --- USE-TTY-UNITS, TTY) 3f2b1

By use of the APPEND-STRING-TO-UNIT command for structured display files 3f2b2

The first character sent to a tty-unit appears as the first character (at the left margin) of the top line. This is necessary for a number of reasons, the most convincing of which is the behavior characteristics of storage tubes and most real alpha-numeric displays. 3f2c

Successive characters appear as successive characters within the top line until either an explicit (e.g., linefeed) or implicit (line overflow) line break occurs. 3f2c1

When a line break occurs, the next character appears on the second from the top line of the unit. 3f2c2

This continues until the bottom line of the tty-unit is reached. 3f2c3

At this point, a line break causes the lines within the unit to scroll up one line. 3f2c3a

Note: Storage scopes may use a different technique for scrolling. 3f2c3a1

Dots 3f3

A dot unit consists of an initial X0,Y0 followed by a series of points X,Y which describe a series of dots. 3f3a

Each dot unit logically carries mode information such as blinking, relative intensity, etc. 3f3b

Lines 3f4

A line unit consists of an origin X0,Y0 followed by a series of points X,Y which describe a series of straight lines connected tail-to-head (i.e a polygon). 3f4a

Each line unit logically carries mode information such as blinking, dotted vs. solid, invisible. 3f4b

Other kinds of lines, such as conic sections, may belong in the primitive set. 3f4c

Special points 3f5

This primitive unit consists of a series of points, which will be displayed joined by lines in the best available manner. 3f5a

The intent is to use Flegal's algorithms to produce a smooth curve. 3f5b

Device-specific 3f6

This primitive unit consists of any number of device specific commands. The device type may be obtained through an intorrogation command. 3f6a

Call units 3g

In addition to the name of the referenced subpicture, a call unit may include the following transformations: 3g1

Master/instance rectangle: specifies a rectangle in the caller's space into which a specified rectangle of the callee's space is to be imaged. This provides independent scaling in each coordinate as well as translation and clipping. 3g1a

Rotation. It may be desirable to combine this with scaling using the familiar idea of homogenous transformation. 3g1b

Intensity and color control. In principle, a call could specify intensity increments (positive or negative) for each color. 3g1c

It is assumed that best effort will be used in scaling and rotation of text. We recommend replacing it by a line when all else fails. 3g1d

Initial state 3h

After the initial telnet connection is established, the first graphics command issued by the applications program should be a request for either a structured display file or for a segmented display file. 3h1

The response to this request should be whether or not the requested display file was allocated and other parameters about the virtual display, e.g. screen size, character sizes, whether or not color is available, etc. 3h1a

Before the display file is allocated, the terminal should

appear as, and simulate to the best of its ability, a Network Virtual Terminal (NVT). 3h2

Any graphic commands issued before the allocation of a display file will be ignored. 3h3

After requesting and receiving a structured display file, the following structure will exist: 3h4

There will exist a subpicture, refered to as the ICP SUBPICTURE, whose rectangular extent corresponds to the extent of the virtual display allocated to this host 3h4a

There will exist a tty-unit, refered to as the ICP TTY-UNIT, in the ICP SUBPICTURE, whose rectangular extent corresponds to the extent of the virtual display allocated to this host 3h4b

This tty-unit will consist of n lines, where n is terminal dependent and available through a query command. 3h4b1

This tty-unit will be instituted for the display of unescorted characters. 3h4b2

There will be in effect an implicit call on the ICP SUBPICTURE. 3h4c

This call is not accessible to the applications program. 3h4c1

The applications program causes the display of information by: 3h4d

1) creating primitive units in the ICP SUBPICTURE 3h4d1

2) creating call units, to created subpictures, in the ICP SUBPICTURE 3h4d2

3) using the TTY command to make visible/invisible the ICP TTY-UNIT (or change its location or size) 3h4d3

After requesting and receiving a segmented display file, the following strucure will exist: 3h5

There will exist a segment, refered to as the ICP SEGMENT. 3h5a

There will exist a tty-unit, refered to as the ICP TTY-UNIT, in the ICP SEGMENT, whose rectangular extent corresponds to the extent of the virtual display allocated to this host 3h5b

This tty-unit will consist of n lines, where n is terminal dependent and available through a query command. 3h5b1

This tty-unit will be instituted for the display of unescorted characters. 3h5b2

The applications program causes the display of information by: 3h5c

1) creating primitive units in the ICP SEGMENT 3h5c1

2) creating new segments 3h5c2

3) using the TTY command to make visible/invisible the ICP TTY-UNIT (or to relocate it or change its size) 3h5c3

Display editing primitives 4

General editing primitives 4a

REQUEST-DISPLAY-FILE(file-type) 4a1

file-type is either structured or segmented. 4a1a

This command requires a response. 4a1b

Segmented display file editing 4b

SEGMENT(Segment) 4b1

If the segment Segment already exists, then it is cleared; if it did not exist then it is created. 4b1a

Pictures are displayed within segments by the use of the primitive unit commands listed below. 4b1b

DELETE-SEGMENT(Segment) 4b2

If the segment Segment exists, then it is deleted. 4b2a

Primitive Units 4b3

All unit opperations cause immediate display on the screen. 4b3a

STRING-UNIT(Segment,Mode,X-Origin,Y-Origin,Text) 4b3b

Writes the specified string unit. 4b3b1

Mode refers to relative intensity, blinking, reverse video, color, etc. 4b3b2

Errors: Segment does not exist. 4b3b3

LINE-UNIT(Segment,Type,Mode,X0,Y0,X1,Y1, ..., Xn,Yn) 4b3c

Draws the specified line segments. 4b3c1

Type refers to solid, dashed, dotted, etc. 4b3c2

Errors: Segment does not exist; illegal mode. 4b3c3

DOT-UNIT(Segment,Mode,X0,Y0,X1,Y1, ..., Xn,Yn) 4b3d

Draws the specified dots. 4b3d1

Errors: Segment does not exist; illegal mode. 4b3d2

SPECIAL-POINTS-UNIT(Segment,Mode, X1,Y1, ..., Xn,Yn) 4b3e

Draws the special-points curve. 4b3e1

The terminal should attempt to connect the specified points in the nicest way possible (e.g. Flegal's spline curve algorithm, straight line segments). 4b3e2

Errors: Segment does not exist; illegal mode. 4b3e3

TTY-UNIT(Segment, mode, rectangle, lines) 4b3f

Creates a unit which will behave as a tty-simulation area with "lines" lines distributed within the specified rectangle. 4b3f1

Unescorted characters will be echoed in this unit in addition to any other units they are being sent to. 4b3f2

Errors: Segment does not exist. 4b3f3

DEVICE-SPECIFIC-UNIT(Segment,device commands) 4b3g

Creates a unit of device specific commands. 4b3g1

TTY(parameters) 4b4

parameters are: 4b4a

position rectangle, visible/invisible, number of lines, mode of characters 4b4a1

This refers to the ICP TTY simulation. 4b4b

RESET( ) 4b5

deletes all segments, except ICP SEGMENT, and all units of ICP SEGMENT, except ICP TTY-UNIT 4b5a

resets all modes to their initial state (i.e., the state that existed immediately after a REQUEST-DISPLAY-FILE command) 4b5b

Structured display file editing 4c

SUBPICTURE(Subpicture, rectangle) 4c1

Creates a new subpicture with name "Subpicture". "rectangle" is the cordinates of a diagonal of the subpicture's virtual screen (i.e. its coordinate system). 4c1a

If a subpicture named "Subpicture" already exists, it is cleared and the new coordinate rectangle takes precedence. 4c1b

DELETE-SUBPICTURE(Subpicture) 4c2

Deletes the subpicture named Subpicture. Call units referring to Subpicture are also deleted. 4c2a

CLEAR-SUBPICTURE(Subpicture) 4c3

Deletes all units of the subpicture Subpicture, but does not delete the subpicture. 4c3a

Primitive Units 4c4

All the operations for creating units are transparent to the prior existence of the designated unit, i.e. they function as "replace" as well as "create". 4c4a

STRING-UNIT(Subpicture,Unit,Target-Key,Mode,X-Origin,Y-Origin,Text) 4c4a1

Replaces the unit by a string unit. 4c4a1a

Mode specifies the mode of the characters (e.g. blinking, underlined, etc). 4c4a1b

Target-Key is used in conjunction with the TARGET-SENSITIVE command and target input. It may also be set via the SET-TARGET-KEY COMMAND. 4c4a1c

Errors: Subpicture does not exist; X-Origin or Y-origin is outside the subpicture's virtual coordinate system. 4c4a1d

We explicitly do not require an error if the string extends beyond the right-hand edge of the subpicture; however, the results are not defined. 4c4a1d1

LINE-UNIT(Subpicture,Unit,Target-Key,Type,Mode,X0,Y0,X1,Y1, ..., Xn,Yn) 4c4a2

Replaces the unit by a line unit. 4c4a2a

Errors: Subpicture does not exist; illegal mode; some X or Y is outside the subpicture. 4c4a2b

DOT-UNIT(Subpicture,Unit,Target-Key,Mode,X0,Y0,X1,Y1, ..., Xn,Yn) 4c4a3

Replaces the unit by a dot unit. 4c4a3a

Errors: Subpicture does not exist; illegal mode; some X or Y is outside the subpicture. 4c4a3b

SPECIAL-POINTS-UNIT(Subpicture,Unit,Target-Key, Mode, X1,Y1, ..., Xn,Yn) 4c4a4

Replaces the unit by a special-points unit. 4c4a4a

Errors: Subpicture does not exist; illegal mode; some X or Y is outside the subpicture. 4c4a4b

CALL-UNIT(Subpicture,Unit,Target-Key,Called-Subpicture,Parameters) 4c4a5

Replaces the unit by a call unit. 4c4a5a

Parameters: 4c4a5b

Master-Instance rectangles 4c4a5b1

rotation 4c4a5b2

mode 4c4a5b3

Errors: Subpicture does not exist; Called-Subpicture does not exist; parameter errors. 4c4a5c

TTY-UNIT(Subpicture, unit, mode, rectangle, lines) 4c4a6

Creates a unit which will behave as a tty-simulation area with "lines" lines distributed within the specified rectangle. 4c4a6a

Errors: Subpicture does not exist. 4c4a6b

DEVICE-SPECIFIC-UNIT(Subpicture,Unit,Target-Key,device commands) 4c4a7

Creates a unit of device specific commands. The action of the commands should leave alone (or at least restore) any global modes, e.g., the standout mode (see below). 4c4a7a

APPEND-STRING-TO-UNIT(Subpicture, unit, Text) 4c5

Appends the specified text to the specified unit. This only makes sense if the specified unit is a string or tty unit. 4c5a

Errors: Subpicture does not exist, unit does not exist, not a string or tty unit. 4c5b

DELETE-UNIT(Subpicture,Unit) 4c6

Deletes a unit. 4c6a

VISIBLE-UNIT(Subpicture, Unit,Flag) 4c7

Makes the Unit visible or invisible as specified by Flag. 4c7a

If a unit which is target sensitive is made invisible, it is no longer target sensitive. However, in the absense of a subsequent modifying target sensitive command, the unit becomes target sensitive again if it should be made visible. 4c7b

Errors: Subpicture does not exist, unit does not exist. 4c7c

SET-TARGET-KEY(Subpicture, Unit, Target-Key) 4c8

sets the target key for the specified unit to the specified value. 4c8a

SET-STANDOUT-MODE(mode) 4c9

Sets the mode that will be used to make text and/or units stand out to blinking, underlining, etc. 4c9a

If the terminal does not support the specified mode, the terminal should make a best effort or use another method to make things stand out. 4c9b

STANDOUT-UNIT(Subpicture, unit, yesno) 4c10

makes the specified unit stand out (according to the mode set by SET-STANDOUT-MODE) or not, according to "yesno". If the unit which is to stand out is a call-unit, the instance of the subpicture which is the result of the call (all the way to the terminal nodes) is made to stand out. 4c10a

STANDOUT-TEXT(Subpicture, unit, begin-char-count, end-char-count, yesno) 4c11

Unit must refer to a string unit. 4c11a

Makes the specified text stand out (according to the mode set by SET-STANDOUT-MODE) or not, according to "yesno". 4c11b

UPDATE-STRUCTURED-DISPLAY( ) 4c12

This causes any changes that have been made to the display file, since the last update or since ICP, to be reflected on the screen. 4c12a

TTY(parameters) 4c13

parameters are: 4c13a

position rectangle, visible/invisible, number of lines, mode of characters 4c13a1

This refers to the ICP TTY simulation. 4c13b

USE-TTY-UNITS(Subpicture1, unit1, ..., Subpicturen, unitn) 4c14

Unescorted characters are to be appended only to the specified tty units. 4c14a

Errors: Subpicture,unit does not exist. 4c14b

RESET(How) 4c15

Case How Of 4c15a

= Permanent 4c15a1

Immediately resets the terminal to its initial ICP state 4c15a1a

= Temporary 4c15a2

Immediately resets the terminal to its initial ICP state without destroying the previous state. 4c15a2a

= Restore state saved from last RESET(Temporary). 4c15a3

Direct Feedback 5

It seems extremely desireable, given network speeds, to allow the using host to perform direct feedback to the user without intervention from the application program in the serving host. This is already done in telnet with local echoing. We propose extending this capability to graphics by allowing "dragging" (attaching a subpicture's origin to the position of the cursor), "tracking" (following the movement of the mouse, stylus, or light pen with a distinctive mark on the screen), "inking" (plotting the trail of the cursor on the screen) and "rubber banding" (a straight line attached to a fixed point on one end and the cursor location on the other). 5a

These should be seen as allowable extensions of the protocol rather than as requirements. There should, however, be commands available in the protocol for determining their existence and controlling them. 5b

Data input primitives 6

Input control 6a

TARGET-SENSATIVE(key1, ..., keyn) 6a1

Arms the units which have the specified keys for target selection. 6a1a

SET-INPUT-MODE(Device, parameters) 6a2

Selects the mode in which a logical device shall produce input and under what conditions. 6a2a

the logical devices are specified below as well as their possible input formats and conditions. 6a2b

Errors: no such device. 6a2c

Keyboard input 6b

The keyboard has only one input mode, in which it sends a character whenever a key is struck. 6b1

Binary devices 6c

Unless otherwise specified, binary devices act as an extension of the keyboard and produce 8-bit characters which are not distinguishable from keyboard characters by the serving host. 6c1

The algorithm for translating binary devices into characters is not specified, but something like the NLS accumulation algorithm for mouse-keyset chords is intended. 6c1a

Binary devices may also input binary data (according to their up/down states), which is transmitted on state changes. Examples of this type of device are function keys and overlay cards, mouse and keyset (used independently or together), pen-up/pen/down, light pen buttons, etc. 6c2

Coordinate input 6d

Coordinates may be sent according to any subset of the following criteria: with every character in some designated set (e.g. control characters, or all characters); with every binary device state change input; after some time interval has elapsed; after a position change P > (y1-y0)↑2+(x1-x0)↑2, etc. 6d1

Coordinates may be sent in either or both of "X-Y" or "target" format. 6d2

X-Y format is just the location of the cursor relative to the screen region assigned to the host. 6d2a

Target format is the "call stack" (logical path from the root unit - the ICP SUBPICTURE - to the closest unit) plus the target-key of that unit plus the count of the closest character within the string or the closest line segment or dot or special point if appropriate. 6d2b

Target input is unavailable for segmented display files. 6d2b1

In the event of overlapping target sensitive units, it is not specified which of the units selected will be returned as the hit unit. 6d2b2

Time input 6e

Since hosts may wish to consider two events happening sufficiently close together to be simultaneous, or to keep detailed interaction statistics, it must be possible to request time information to be sent with some reasonable subset of other types of input. 6e1

Interrogations 7

It must be possible for the serving host to discover its environment (e.g. screen size, available devices) and to read back state information (display file). 7a

This is very desireable both for debugging and for redirecting a displayed image to another device (e.g. a plotter). 7a1

Environment 7b

Terminal parameters: screen size and resolution, available input devices, terminal type (for device specific control), number of lines in the ICP TTY-UNIT. 7b1

Character parameters: available character sizes, special (non-ASCII) characters, font characteristics, sub- and super-scripting facilities. 7b2

State 7c

Display file or display file components. 7c1

Cursor Position 7d

It should be possible for the application program to read the cursor position at any time. 7d1

Display File Support 7e

It should be possible to find out if this user process supports only segmented or structured display files, or both. 7e1

Command support 7f

It should be possible to get a matrix from the user process which indicates which commands are implemented. This is a neccessity to find out which, if any, of the direct feedback features are supported, and might be nice to allow for, e.g., the possibility of a text only or grapgics only subset of the protocol to be implemented. 7f1

Encoding Principles 8

Commands will have the format: BGC OPCODE DATA EGC where: 8a

BGC (Begin Graphics Command) places the telnet connection into a "read graphics command" mode, 8a1

OPCODE DATA is the specific graphics command and data, and 8a2

EGC (End Graphics Command) restores the telnet connection to its normal state. 8a3

Note: This may all have to be bracketed by telnet Begin-8-bit-transparent-mode and End-8-bit-transparent-mode commands. 8a4

Numbers in general will have have 7-bits of significance in each byte -- if the high order bit of a byte is on, then the significant bits from the next byte should be concatenated onto the low-order end of the bits collected so far, etc.. 8b

Subpicture names - shall be 14-bit numbers, assigned by the serving host. 8c

Unit names - shall be 14-bit numbers, assigned by the serving host. 8d

Strings - shall be 8-bit characters, with an escape convention to represent changes of font and mode. 8e

Since the channel is 8 bits wide, there is room for many more than 128 displayable characters. However, the interpretation of codes 200B and above is not standardized 8e1

Coordinates should be as described in RFC 493. 8f

Rectangles - shall be specified by the coordinates of the endpoints of one of the diagonals 8g

Encoding 9

The actual encoding of this protocol is forthcoming. Since we expect some changes to come about because of the upcomming Network Graphics Group Meeting, we have postponed the actual encoding until after this meeting. 9a

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A Proposed Network Text/Graphics Protocol

(J17810) 14-JUL-73 01:53; Title: Author(s): Charles H. Irby, Kenneth E. (Ken) Victor/CHI KEV; Distribution: /NGG WSD LPD DEL RMM; Sub-Collections: NIC NWG SRI-ARC NGG; RFC# 553; Clerk: CHI; Origin: <IRBY>GP.NLS;10, 14-JUL-73 01:47 CHI ;

Proposed system using two viewspecs to view warps (text specified by a link instead of link syntax).

Warps on. When viewspec 1 is on, the text at the addresses specified by links (warps) will be viewed instead of the link syntax unless viewspec 2 is in the viewspec field of the link. 1

Warps off. When viewspec 2 is on, link syntax will be seen instead of warps. 2

If viewspec 2 precedes viewspec 1 or viewspec 2 and not viewspec 1 is in the viewspec field of a link, only the syntax for that link will be seen even if warps are on. When you jump to a link with viewspec 2 in it, warps will be off unless viewspec 1 is also in the viewspec field of the link. 3

If viewspec 2 precedes viewspec 1 in the viewspec field of a link, only the syntax for that link will be seen even if warps are on. However, warps will be turned on when you jump to that link. 4

If only viewspec 1 is in the viewspec field of a link and viewspec 1 is on, the warp will be viewed instead of the link syntax, and the view of the warp will have warps on. That is, the view will be the same as if neither viewspec 1 nor 2 were in the viewspec field. 5

However, if viewspec 1 precedes viewspec 2 in the viewspec field of a link and viewspec 1 is on, the warp will be viewed instead of the link syntax, but the view of the warp will have warps off.
**6

Stacking warps is controlled by viewspec 1 followed by some number of viewspec 2's. Each additional viewspec 2 adds the capability of seeing one more stacked warp. 7

I propose that warp views be allowed to include more than one statement and be governed by the viewspecs in the viewspec field of the link. If viewspec 1 or 2 is in the link, only viewspecs to their left will apply to the warp view. Only viewspecs to their right will apply when jumping to link. A link with an empty address field cannot be a warp. Addressing and editing the text in a warp should be possible when warps are on. 8

Warps should be surrounded by the delimitors of the link. 9

For example, warps off: 10

LOCATOR <nic,locator,0:122sebbmz> 10a

JOURNAL (journal, tjcat, 1:xbr2) 10b

Warps on: 11

Proposed system using two viewspecs to view warps (text specified by a link instead of link syntax).

LOCATOR <<NIC>LOCATOR.NLS;115, 12-JUL-73 17:17 KIRK ;
1 USING THE LOCATOR ONLINE
(:wn)
1A The Locator organizes selected NIC documents so that you can reach and read any part of documents online with few commands.
2 NIC DOCUMENTS
(:ebtm)
2A ARPA NETWORK RESOURCES NOTEBOOK NIC 6740
(:tebbn)
2B GLOSSARY
(This is the NIC GLOSSARY.
To find the definition of a one word term. type:
p[rint] b[ranch] .TERM CR CR
CONTROL o (!o) stops printing.
For an offline formatted version, use <NIC,GLOSSARYFL,0:w>)
2C INDEXES TO THE NIC CATALOG COLLECTION NIC 5145
(:tebm)
2D NIC USER GUIDE NIC 7590 and ARC USER GUIDES
(userguides,arclocator,2:tebm2)> 11a

JOURNAL (journal, tjcat, 1:xbr2) 11b

KIRK 13-JUL-73 20:46 17811

Proposed system using two viewspecs to view warps (text specified by a link instead of link syntax).

(J17811) 13-JUL-73 20:46; Title: Author(s): Kirk E. Kelley/KIRK ; Distribution: /NP DCE (fyi) JCN (fyi) DVN (fyi) ; Sub-Collections: SRI-ARC NP; Clerk: KIRK ;

17814

TITLE: USING matters
COMMENT:
AUTHOR(S):JAKE
DISTRIBUTION:JI NJN DHC
SUBCOLLECTION:
CLERK:JAKE

Dave,

Sorry we haven't been able to connect with each other over Ma Bell - I was tied up with a visitor when you called. Tried to call you 2 or 3 other times and you were out.

Three things are on my mind:

1. Jean Iseli would really like to report some of the ideas from the USING meetng in the July ARPAnews. He feels the news is a good forum for user dialog, and he also feels that if too much time elapses between the meeting and a discussion of the outcome, we may lose our momentum. I think we can use all the publicity we can get, so why not have a brief rundown in ARPAnews. (He will do the writing if you will do the approving.) This will not detract from the Group Note or RFC that you and Nancy will issue, in my opinion. I recollect that one of our criteria for a USING member was that he be 'someone who is willing to work'. Jean certainly fits that criterion, and I feel we should at least give him some feedback on his suggestion for action. Let me know what transpires.

2. I would like to advertise the fact that the USER group exists and let people know how to become a member. If I have not heard anything to the contrary from you or Nancy by July 20th, a note to this effect will be sent out. If you do not want to advertise the USER group for some reason, please let me know your feelings on the subject.

3. When will the USING minutes be published? (I am not trying to pressure you as I know they are a bitch to condense, etc., but several people have asked me and I would like to be able to give them an approximte date.) I got your note about no feedback. Did you and Nancy get the sndmsg I sent to her (copy to you)? I was concerned about leaving out Padlipsky's work on NETED in my version.

That's it for now. I have seen the NETED dialog and other notes. Hope I can find some time to get my two cents worth in. (As you always say - isn't controversy fun) Several people here have expressed an interest in USING too, so looks like things are getting started.

JAKE

P.S. We might want to start thinking about a fall meeting when other more immediate matters are taken care of. After Sept. 1 I will be

available to help handle details if the meeting is going to be at SRI-ARC as was suggested. Keep in touch. J.

6

**07 17814

(J17814) 15-JUL-73 18:07; Author(s): Elizabeth J. (Jake)
Feinler/JAKE; Distribution: /JI DHC NJN; Sub-Collections: SRI-ARC;
Clerk: JAKE;
Origin: <FEINLER>DAVE.NLS;2, 15-JUL-73 18:06 JAKE ;

KIRK 15-JUL-73 20:39 17815

AN NLS INFORMATION RETRIEVAL SYSTEM

This has been reissued because of renewed interest in an NLS Query Language and because of changes in the previous version especially in the proposed TNLS command syntax.

AN NLS INFORMATION RETRIEVAL SYSTEM

PREFACE

This file has been structured so you can find the specific information you want with the least superfluous text displayed, To see a table of contents view of the topics avalaible, only show one line and a few levels, For a description of the term in each line, add more lines. The statements are modular and average ten lines in length. The number of levels you read depends on how deep you want to delve into the subject as the file can be sensibly read without looking at the lower levels. However, if you want to zoom in on a particular point, open more levels or lines under the statement of your choice. Links to more information are in most statements. You can go directly to a term by a name search as every significant term has a statement expanding it. 1

INTRODUCTION

This proposed system uses all of the basic file structure dimensions currently available in NLS and imbeds them with a distinct but intuitive meaning that makes possible the elimination of redundancy and diverse views of information using the full range of NLS level and line structuring including the eventual use of the Set System described in (Journal, 6983,1). In addition, it allows a mixed novice and expert environment, and finding the particular information you want (especially when you don't know the exact term under which it is classified) without having to know any of the current NLS command language or wade through data you may already know or not care about. In other words, this system has all of the advantages of the current query language with none of its limitations and more than a whole dimension of added possibilities. 2

DIMENSIONS

NLS has four basic directions the user can go in a database which can be metaphorically aligned with the four basic dimensions in mathematical models of physical phenomena:

One:	points in a line	--	a line of text
Two:	lines in a plane	--	a statement containing lines
Three:	planes in volume	--	statements in levels
Four:	space in time	--	viewspecs at addresses

When predefined viewspecs and addresses are combined in links, they provide the vehicle for the database analogy of a space-time ship. 3

STATEMENT

a node in tree structure defining a module of the database bush and containing characters and lines that make up two NLS dimensions and allow pre-specification of two other dimensions. There are two basic types of statements. One type contains data in the lowest conceptual levels of a branch. The other classifies data contained in lower levels and defines or explains the classifying term. 3a

CLASSIFYING STATEMENT
a statement with these two basic functions: to classify all of the statements in its conceptual substructure including other classifying statements; and to provide an expanded description and references for the classifying term. If these statements are used extensively, they can contain most if not all of the information in a database. Every classifying term is the name of a statement located in its proper place according to the nature of the database classification structure. The lines in the statement defining or describing the term can be accessed in TNLS by the Questionmark function. Try Jump to Name on questionmark. 3a1

SYNTAX
Each classifying statement begins with a classifying term (which is a statement name) and any other words classifying the information conceptually contained in its substructure. Then a carriage return precedes a link containing viewspecs defining the desired view of the classified data (which does not have to be actual substructure to that statement) unless the desired view is (:teb), in which case no link is necessary. The carriage return and optional link following a statement name carry the same meaning as a colon after a term being defined in a dictionary. The rest of the LINES of the statement contain expansions, alternatives, introductory remarks, a description or definition of the term used to classify the substructure and any other information that does not conceptually belong in substructure. Links are used to reference information that cannot fit in the statement, or already exists somewhere else. 3a1a

EXAMPLE of a CLASSIFYING STATEMENT MODULE
(:w) These lines explain that this is indeed an example as stated in the first line and point to places where additional information may be obtained. See
-- Classifying:w> and
-- Syntax:w>
and additional examples:
-- Kelley, Science, 050:w> or
any of the higher level statements in this proposal. 3a1b

DATA STATEMENT
any node of any form in an online database. This is currently limited to text, but could eventually take other forms such as audio tapes, video frames, and graphic drawings. The CLASSIFYING STATEMENT is a special case of the DATA STATEMENT. 3a2

SYNTAX

Data statements can use as many lines or levels or be in any form desired including that described for the Set System in--6983,3> limited only by the capabilities of NLS and the nature of the information to be accessed. 3a2a

LEVEL
the factor distinguishing those statements n nodes away from the root node, from statements n+1 or n-1 nodes away from the root node in a tree structure. The relationship between a branch node and the nodes one level under it is equal to the mark of distinction as defined by G. Spencer Brown in the LAWS of FORM. Substructure statements are subsets or parts of the whole defined by the branch node. The branch node statement as defined above is a classifying statement and contains information that expands, references, counters, or otherwise is not conceptually part of the substructure. In a logical file such as <KELLEY,SCIENCE, 1:xlBz> all statements in the same level and plex are related by the logical function: AND (though the user sees them as a series of alternatives). The parent node of that plex is the THEN part of a conditional proposition with the plex obviously being the IF portion. Levels define the third dimension of NLS. 3b

CONCEPTUAL SUBSTRUCTURE
substructure that fits the relationship described above except that it is not necessarily located by statement number under the branch node but could be somewhere else in the file or in another file. Instead of copying information and wasting input time and disc space with redundant information and all of the upkeep problems that go with redundancy, a link is placed to actual substructure if it already exists somewhere else. Set Description and Domain Description branches also define conceptual substructure. This is a powerful concept that allows a properly formatted data base to answer the inexhaustible, "why?" until the questioner becomes satisfied (or exhausted). 3b1

ACTUAL SUBSTRUCTURE
statements that are heirarchically located by statement number under a branch node in a file. 3b2

LINK
the vehicle to the fourth dimension of NLS. Links allow the online editor to specify any view of any place in a database including the invoking of content analyzer patterns. 3c

The major advantage of having links in the Query system is that it eliminates the need for the Bring command and allows TENEX file structure to be invisible to the user. This simplifies

the query command language almost 50% and allows DNLS and TNLS users to use the same files. 3c1

Dynamic uses of the second and third NLS dimensions (lines and levels) are possible with links but not possible in the current query language. Extra lines in a statement need only be viewed when the information contained in them is desired. However, with the proposed system they are readily available in case the user does need the information. Likewise, levels can extend as far as desired instead of just one as in the current system. Allowing dynamic use of levels would decrease the computer time and people time necessary to create and maintain a database by allowing much more freedom in this area. Making full use of these two dimensions allows the most amount of information to be easily available with the least amount of superfluous data in the way of the user and on the disc; and the least amount of necessary database support. 3c2

In addition, links allow the use of conceptual substructure described above, the turning off and on of statement numbers and statement names. and for a future probability that will dramaticaly affect viewing a database, see -- 6C>. 3c3

COMMANDS

The command system that allows DNLS and TNLS users easiest access to databases built with the structure described under DIMENSIONS is described below. 4

DNLS Jump to Mouse Command

allows the user to access any file with no more than the three buttons on the mouse. The right most button specifies a statement. The middle button specifies a word to be used for a statement name search. In addition to pointing with the mouse, any typed literal is taken as an address. The button that is pushed after insertion of literal text uses the text as an address to do what ever function is represented by that button. 4a

IN

Pushing the rightmost button after specifying an address is equivalent to Jump to Link. If an invalid link is found this command Jumps to Item with viewspecs ebt unless there is no substructure in which case it Jumps to Item with viewspec s. If a link is found with no viewspecs, this command repeats the above function on the address in the link. When the Set System is implemented, IN will act as the Execute Instantiate Set command if the branch is a Set Definition. 4a1

QUESTIONMARK

Pushing the middle button on the mouse after specifying an

address is equivalent to Jump to Item with viewspecs: seb. It does the same searching as described under LITERAL CHARACTERS below. Note that you could point at the space between two words to search for the second in the branch of the first. If no name is found, it jumps with viewspec s to the statement in which the bugged word occurs. 4a2

RETURN
Pushing the leftmost button on the mouse is equivalent to Jump to Return. This button acts as backspace character or "wrong one" when specifying an address. 4a3

OUT
Pushing the two leftmost buttons at the same time is equivalent to the IN command acting on the statement UP from the statement at the top of the screen. This button combination may also be used as backspace word when typing a word. If this command is used when the origen statement is at the top of the screen, the user will be taken to a special directory file with links to other available files. 4a4

NEXT
Pushing the two rightmost buttons at the same time is equivalent to "Jump to the next statement within the current viewspecs." This could be used to scroll statements by pointing at the top of the screen and would be useful when the next statement is not visible and you do not know if it is up, down, a successor, or within the specified view. 4a5

GOTOSTATE
Pushing the IN button and the RETURN button at the same time (the two outside buttons) causes the user to return to the command he was using before entering the Jump Mode. 4a6

NULL
pushing down all three buttons causes the system to disregard that signal. This is the only function available to an L-10 program for this combination of buttons. 4a7

LITERAL CHARACTERS
If a literal is typed in, it is taken as an address. If two or more names are typed with an invisible between them, the system will search the branch of the first for all occurrences of the second (and so on with additional words). If there are a large number of entries with the same name, the number of the entries is displayed requiring user confirmation before the entire listing is printed. Additional capabilities for searching content could be added similar to current abilities already implemented in the Ident system. (See also -- FILEFINDER) 4a8

TNLS Query Mode
As TNLS was designed to initate DNLS, these commands attempt to do on a teletype what the Jump to Mouse command does on the display. Most of the Jump to Mouse commands are already of the simplest TNLS syntax in the proposed DAE or else unnecessary in TNLS because of the availability of a hardcopy record of what has already happened. It is assumed that the user is in a special Query Mode subsystem of NLS. The herald or ready signal for this mode is A: . Old query commands or other special commands are available after typing a <SP>. 4b

IN
The function of the "IN" button is specified by the Carriage Return key and does the same thing as described in LITERAL CHARACTERS under the DNLS Jump to Mouse command. The user types a DAE followed by a carriage return. A number following the address allows the user to specify a link in a statement if there is more than one. 4b1

Sample Syntaxes: 4b1a

A: DAE <CR> 4b1a1

A: WORD1 <SP> WORD2 <SP> 3 <CR> 4b1a2

QUESTIONMARK
The function of the "questionmark" button is specified by the Line Feed key and is identical to the current Query command: Show ; and the TNLS command: Print Branch ADDR CA seb CA except that no knowledge of viewspecs is necessary and it reduces by five the number of characters whose syntax must be remembered and typed every time it is used. In addition, this command does the same word search as described in LITERAL CHARACTERS under the DNLS Jump to Mouse command. 4b2

Syntax:
A: WORD <LF> 4b2a

APPLICATIONS 5

LOCATOR
This is an area of application where in order to make everything easily accessible online it would not only be easier to create and to use the TNLS commands and the format described here than to continue working within the limitations of the current query system, it would also eliminate the necessity of duplicating and re-formatting all of the files in order to access them in DNLS. 5a

USERGUIDES for Online Help

This is an area of immediate application where people (everyone's a novice in some area of NLS) can get information by themselves to do whatever specialized function they want from the wide range of NLS capabilities. They can get this information while they are still in DNLS or TNLS so they can try a command and learn about others without having to continually go in and out of another system. Also they do not have to try to learn the whole system or wade through bunches of superfluous data (formatted for offline viewing) about features they already know or do not need at the current time. Some proposed userguide online standards are in <kelley, userguides, 1:w>. See -- ijournal, 16639, 5c2:wy> for a description of the other proposed ideas in this area. Please compare these with this proposed system. 5b

HANDBOOK
For a concise description of this superdocument, see -- 12445, 7a:w> 5c

ENCYCLOPEDIA
an online subject index of general knowledge. See -- Kelley, Science, 081:w>. The evolution of concepts necessary for implementing the encyclopedia is what spawned this proposal. In my spare time I have created and used parts of this proposed system for the Encyclopedia. (See:
-- Kelley, Encyclopedia, 0:Blxz> and,
-- Kelley, Jump, 1:wz)
The REL file <KELLEY>TQ is an experimental version of the TNLS Query language. 5d

FUTURE PROBABILITIES
Until now, I left out features that are not trivial to program. This seems to be an appropriate place to describe some future probabilities that will dramatically improve the proposed system. 6

Jump to Return as far as desired in DNLS instead of just the five node ring including Jump to File Return when necessary so TENEX file structure is invisible when pushing the RETURN button. 6a

WARPS
view the text referenced by the address in a link (warp) instead of the link syntax itself. This would be controlled by two viewspecs that would hide (:ebs) type links when turned on. 6b

Warps on. When viewspec 1 is on, the text at the addresses specified by links (warps) will be viewed instead of the link syntax unless viewspec 2 is in the viewspec field of the link. 6b1

Warps off. When viewspec 2 is on, link syntax will be seen instead of warps. 6b2

If viewspec 2 precedes viewspec 1 or viewspec 2 and not viewspec 1 is in the viewspec field of a link, only the syntax for that link will be seen even if warps are on. When you jump to a link with viewspec 2 in it, warps will be off unless viewspec 1 is also in the viewspec field of the link. 6b3

If viewspec 2 precedes viewspec 1 in the viewspec field of a link, only the syntax for that link will be seen even if warps are on. However, warps will be turned on when you jump to that link. 6b4

If only viewspec 1 is in the viewspec field of a link and viewspec 1 is on, the warp will be viewed instead of the link syntax, and the view of the warp will have warps on. That is, the view will be the same as if neither viewspec 1 nor 2 were in the viewspec field. 6b5

However, if viewspec 1 precedes viewspec 2 in the viewspec field of a link and viewspec 1 is on, the warp will be viewed instead of the link syntax, but the view of the warp will have warps off. 6b6

Stacking warps is controlled by viewspec 1 followed by some number of viewspec 2's. Each additional viewspec 2 adds the capability of seeing one more stacked warp. 6b7

I propose that warp views be allowed to include more than one statement and be governed by the viewspecs in the viewspec field of the link. If viewspec 1 or 2 is in the link, only viewspecs to their left will apply to the warp view. Only viewspecs to their right will apply when jumping to link. 6b8

A link with an empty address field cannot be a warp and should instead disappear when warps are on. Addressing and editing the text in a warp should be possible when warps are on. 6b9

Warps should be surrounded by the delimitors of the link. 6b10

For example, warps off: 6b11

LOCATOR <nic,locator,0:122sebbmz> 6b11a

JOURNAL (journal, tjcat, 1:xbr2) 6b11b

Warps on: 6b12

LOCATOR <<NIC>LOCATOR.NLS;115, 12-JUL-73 17:17 KIRK ;
1 USING THE LOCATOR ONLINE
(:wn)

1A The Locator organizes selected NIC documents so that you
can reach and read any part of documents online with few commands.
2 NIC DOCUMENTS
(:ebtm)
2A ARPA NETWORK RESOURCES NOTEBOOK NIC 6740
(:tebbn)
2B GLOSSARY
(This is the NIC GLOSSARY.
To find the definition of a one word term, type:
p[rint] b[ranch] .TERM CR CR
CONTROL o (^o) stops printing.
For an offline formatted version, use
<NIC,GLOSSARYFL,0:w>)
2C INDEXES TO THE NIC CATALOG COLLECTION NIC 5145
(:tebm)
2D NIC USER GUIDE NIC 7590 and ARC USER GUIDES
(userguides,arclocator,2:tebm2)> 6b12a

JOURNAL (journal, tjcat, 1:xbr2) 6b12b

stacked statement names used as an address in a link. 6c

a new file system with MPS that will allow faster searches and other important database features such as backlinks. 6d

File Sets -- 6983,1> 6e

Matrix Structure -- 16245,1> 6f

graphics capabilities. 6g

the five button (keyset) mouse. 6h

audio video capabilities, 6i

"juke boxes" containing machine readable digital cassettes, audio cassettes, video cassettes or holographic discs. (one 30 minute video cassett could photograph all the pages of approximately 300 average books). 6j

hooking in to a cable TV system where the user very easily accesses almost any conceivable form of information using only a mouse in addition to his TV screen. 6k

References 7

G. Spencer Brown, LAWS OF FORM, George Allen and Unwin LTD, LONDON, England. 7a

Bill Duvall and Bruce Parsley, Proposed Set System (Journal, 6983,) 7b

DAE (Dynamic Address Element) is explained in the command language documentation. (17052,6:w) 7c

AN NLS INFORMATION RETRIEVAL SYSTEM

(J17815) 15-JUL-73 20:39; Title: Author(s): Kirk E. Kelley/KIRK ;
Distribution: /NIC-Query NPS ; Sub-Collections: SRI-ARC NIC-QUERY;
Clerk: KIRK ;
Origin: <KELLEY>FILE.NLS;131, 15-JUL-73 20:36 KIRK ;
AN NLS INFORMATION RETRIEVAL SYSTEM
Proposal for an information retrieval system in NLS which functions as a heirarchically structured keyword-subject index and encyclopedia.
This file describes a structural language that communicates databases online. It includes a proposed standard format for easily accessed, versatile online super documents (DIMENSIONS) and the commands that most easily access such super documents in DNLS and TNLS (COMMANDS). Essentially, this system allows an editor to make all of the complicated formatting decisions so the unassisted online user can concentrate totally on determining what information he wants instead of on the mechanics of finding it.

USING Publicity

This note is to JAKE, JI, DHC in response to JAKE's (17814,): 1

Jake-- 2

I see two possible plans for publicizing USING. One is to make an entire issue of the ARPANEWS devoted to the USING group. This would include the minutes of the meeting , a statement of the purpose of the group, an encouragement for people to add their bodies and ideas to our group, and some of the future plans. Clearly this couldn't happen for several months, in which case it would be wise to put in a short article on the group for the July isue. 3

The alternative is to fill the next several issues of the ARPANEWS with one item each time from us--the items beingselected from the list above. In this case the USING notes will be ready for the next issue. I am the only thing holding them up right now, in that I have been ill for a week and haven't had a chance to read them. (Dave, I promise to look at it today.) 4

Both plans have their advantages. I don't think I have a preference. The decision made on this will effectively answer your other two questions, Jake. Jean probably has the most say on the format of the ARPANEWS, so I now defer to him and Dave. 5

--Nancy 6

Notice of Content Analyzer Primer

Notice in lieu of hard copy distribution of (KJOURNAL,17698,).

Notice of Content Analyzer Primer

The NLS Content Analyzer Primer is now available. An on-line version will be maintained as (userguides,l10-contentanalyzer,). Printed copies are available from Marcia Keeney. 1

Notice of Content Analyzer Primer

(J17819) 16-JUL-73 08:32; Title: Author(s): N. Dean Meyer/NDM;
Distribution: /MAG BM DEE2 MI ERM CF RJP GJM JF2 CJM2 DJK JFH GB EJC LCG
FAM TS2 DLJ LMB JAS MAB WAM2 DMM TLG NCT2 DD HAT OAH PLC PMR TED JAP JTM
JMP BMW; Sub-Collections: SRI-ARC; Clerk: NDM;

DVN 16-JUL-73 08:50 17820

Advanced NLS Course Outline for Rome July 17th-18th

A outline of my teaching Activity at RADC July 17th and 18th. 1

Two formal classes from 9:00-12:00 each day aimed at refreshing people who already work with NLS and exploring best use of the techniqus they already know We will cover as many of the following subjects as possible in the following order: 2

- Overview of NLS 2a
- Overview of NIC 2b
- Addressing 2c
  - Links 2c1
  - Contcatenation of Addresses 2c2
  - Knowng where you are. 2c3
  - Show Control Marker 2c4
- New Features 2d
  - Insert Sequential 2d1
  - Output Sequential 2d2
  - Status Commands 2d3
  - Assimilate 2d4
  - Archive/interrogate 2d5
- Output Processor Directives 2e
  - Including review of printing options from a TIP 2e1
- Viewchange 2f
- Content Analyzer 2g
- User Programs 2h

During the afternoons as opportunity affords I will try to give basic instruction to two secrataries, and Messers Tomaini and Thayer, and be availble to answer other questsions as thy arise. 3

I hope also to get a chance to bring people up to date on ARC efforts

to adapt cheaper dsplays to NLS and to discuss procedures...how to use NLS best, particularlly within the new login allocations. 4

DVN 16-JUL-73 08:50 17820

Advanced NLS Course Outline for Rome July 17th-18th

(J17820) 16-JUL-73 08:50; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /DLS JHB EKM JCN; Sub-Collections: RADC SRI-ARC; Clerk: DVN;

First impressions on the Mail protocol

<CLEMENTS>RCC.NLS;2, 16-JUL-73 09:28 RCC ; 1

1) I think the use of Telnet GO-Ahead suffers from the same problem as is described in RFC 529 re the Synch sequence. 1a

2) i am congenitally and emotionally opposed to the ambiguous date form 1/2/73 (jan 2 or feb 1) and 1b

would point out that the international sites (england, norway) 1c

probably won't like the american form when a non-ambiguous form is available on most systems (1-jan-1973). 1d

3) The voluminousness of the spec frightens me off. I would like to see a proposed implementation subset for, e.g., a TENEX other than the NIC, a site where the mail server is a wheel (has its own directory and access to all passwords and files), a site where the mail server runs in the environment of an ordinary user (Multics, or isnt that what you feel they would do?), and a mini-host. 1e

Very brief comments on the mail protocol: 1f

RCC 16-JUL-73 09:32 17822

First impressions on the Mail protocol

(J17822) 16-JUL-73 09:32; Title: Author(s): Robert C. Clements/RCC;
Distribution: /JEW RCC; Sub-Collections: NIC; Clerk: RCC;

DHC 16-JUL-73 10:29 17823

Using Users Usefully

Hello, All:

I think it will be best (read: 'easier') to do the ARPAnews stuff in bits and pieces. It will also give us more exposure. Nancy was wrong about being the only one holding up the Usingnotes. Jean noted many typos -- I reread the Notes and found many such errors. Have been working on them slowly. Hope to be done by tomorrow. (tues).

I have no special feelings about the format. I was thinking of issuing the note as an RFC and Jean could rework the file (mostly delete the RFC info) for the ARPAnews.

Please DO advertise USERS. The Comment, associated with the Ident says that membership is open to anyone. There is also a similar comment in the Usingnotes and my copy of Jean's charter.

Jake, I got your note and included the reference to NETEDS. I also sent you a journal message about (apparently got lost).

--cheers. d/

1

Using Users Usefully

(J17823) 16-JUL-73 10:29; Title: Author(s): David H. Crocker/DHC;
Distribution: /JAKE JI NJN; Sub-Collections: NIC; Clerk: DHC;

Info about Superwatch vs. Fact Files

I have again taken a look at the Superwatch vs. the Fact Files statistics concerning CPU used. For the last four weeks, the average difference between CPU used according to Superwatch and the Fact Files is 11.5%. This is quite an improvement over the period of time I had checked previously when the average difference was 30%. 1

The reason for the improvement does not lie solely with the CHECKPOINT program as it was instituted before the statistics showed a marked change. 2

I have talked to both Smokey and Don Andrews and neither of them have done anything which would affect either system. But for the present the results look much better, and I guess I'll keep an eye on the statistics and let you know if there are any other major changes. 3

Info about Superwatch vs. Fact Files

(J17824) 16-JUL-73 10:44; Title: Author(s): Susan R. Lee/SRL;
Distribution: /PR; Sub-Collections: SRI-ARC; Clerk: SRL;
Origin: <LEE>FACTMEMO.NLS;2, 16-JUL-73 10:43 SRL ;

NDM 16-JUL-73 12:19 17831

New Heuristic Input Sequential

Jean -- I have improved on inseqn a bit. The user program now is called INSEQH. It can still be loaded without specification of a directory, since it is in the director <user-progs>. If there ever are any problems, or if you have any suggestions, please let me know. Thanks fo your message. Dean Meyer 1

NDM 16-JUL-73 12:19 17831

New Heuristic Input Sequential

(J17831) 16-JUL-73 12:19; Title: Author(s): N. Dean Meyer/NDM;
Distribution: /JI MEJ(note to ji); Sub-Collections: SRI-ARC; Clerk: NDM;

ILA 17-JUL-73 07:55 17839

PROBLEM LOGGING INTO SRI-ARC

WE HAVE BEEN HAVING PROBLEMS LOGGING INTO THE NIC THROUGH YOUR TIP WE KEEP GETTING TIMEOUT. WE CAN LOG INTO USC AND BYUSING TELNET THERE CAN USE SRI-ARC. ALSO THROUGH THENBS-TIP WE CAN GET DIRECTLY TO SRI-ARC. THIS HAS JUST RECENTLY STARED OCCURRING. 1

17839 Distribution
Jean Iseli,

ILA 17-JUL-73 07:55 17839

PROBLEM LOGGING INTO SRI-ARC

(J17839) 17-JUL-73 07:55; Title: Author(s): I. Larry Avrunin/ILA;
Distribution: /JI; Sub-Collections: NIC; Clerk: ILA;

**09:26 17841

FROM AKB AT MIT-DMCG

SUBJECT: USING THE NEW FTP MESSAGE SUBMISSION FACILITY

I am experimenting with youur new submission facility via our FTP and MAIL programs. I shall see how this output looks like.

Can I use addresses such as "akb@dmcg" etc., in addition to NIC idents? That would be a useful addition if it is not already there. The format of citations that you send us looks good. Perhaps you can expand the NIC idents of authors.

Sometimes I have a hard time finding who the message is from. Another suggestion I have is to allow a convenient message reading facility. For example, we have a "print" and a "copy" command in our NETWRK subsystem which allow a user to print and copy files using network pathnames. I should be able to print the nls file using a pathname such as nic:<ljournal>123456 or 123456.nls. Does this work? I shall try and find out. I guess I should have used the heuristic option instead of this which will give me one line statements. Do respond to my comments. I want to submit an RFC via this mechanism. How do I specify a preassigned NIC number to your new facility? A suggestion I have is to allow headings like "number: 123456", "comments: foo", etc. in addition to "title: header", to do other journal stuff.

Please answer soon as I do want to get this RFC out.

17841 Distribution
James E. (Jim) White,

**26 17841

(J17841) 17-JUL-73 09:26; Author(s): Abhay K. Bhushan/AKB ;
Distribution: /JEW ; Sub-Collections: NIC; Clerk: AKB; .SNF=HIRM;

Response to your note of 17-July

When the Server systems are very sluggish, the various timeouts chosen by the various "user" systems become evident. In your case you have noticed the fact the usc system uses a longer timeout htan the TIP does, and SRI just happened to be running at the load where their logger falls in between the two. 1

17842 Distribution
I. Larry Avrunin,

BPC 17-JUL-73 10:02 17842

Response to your note of 17-July

(J17842) 17-JUL-73 10:02; Title: Author(s): Bernie P. Cosell/BPC;
Distribution: /ILA; Sub-Collections: NIC; Clerk: BPC;

DHC 17-JUL-73 10:22 17843

Thoughts on the ANTS User-Interface

18 JUL 73

Dear John;

1

I have been looking over the ANTS Getting Started Guide with an eye on the command set. On the assumption that the Mark II version will be similar, I/we would like to offer some suggestions for changes.

2

Our biggest suggestion is adoption of the Tenex approach to the user interface. This manifests itself primarily with command recognition and completion.

3

That is, typing <esc> causes the system to attempt to use the text I have so far typed and finish the typing for me, as well as simply allowing me to type only part of the command and then <space> or <cr>.

3a

This allows commands which are, in their entirety, quite verbose (even with explicit noise words) and therefore easier to remember; but which do not REQUIRE the user to type the entire command. Profficiency is rewarded, inexperience is aided.

3b

We would also like to suggest the following changes. Most are merely command name changes, but some are additional features:

4

(1) The †BACK character should have an effect in Charmode. It should send a Telnet IAC EC.

4a

(2) The †DELETE character should also have an effect in Charmode. It should send a Telnet IAC EL.

4b

(3) It should therefore also be possible to set these two characters to be nothing, if a user does not want ANTS to be so clever.

4c

(4) The term †FLAG does not not seem to be obvious in its intent. I don't have one that is really a win, but suggest either:

4d

†ANTS (COMMAND CHARACTER) -- since the character is intended to preface what you have to say to ANTS, as opposed to the net; or

4d1

†ESCAPE (CHARACTER) -- since it is escaping out of the transmit and into a 'listen' mode.

4d2

(5) As opposed to merely consulting an internal table, the †HOSTS command should sample DMCG, if it is up. The SITES command should

(if it isn't) actually do an NCP ECO-ERP sequence to the specified host(s). 4e

(6) Additionally, a bit more verbosity for the HOSTS command, such as HOSTS (STATUS), would be helpful. 4f

(7) ↑UP could mean anything. How about ↑ANTS (UPTIME) or ↑TIMEUP? 4g

(8) Since ↑MSGMODE is advertised as putting the user into a line-at-a-time mode, it would be much simpler for the user to remember ↑LINEMODE. 4h

(9) Terminating a connection is called CLOSE. To keep things consistent (and therefore easier to remember) creating a connection should be ↑OPEN. 4i

(10) ↑TO is brief to type, but unclear. ↑MSG (TO), tho still awkward, would be easier to handle. 4j

(11) Simply because it is more widely used, ↑HELP is better than ↑TEACH. 4k

(12) ↑STATUS is too general a word. How about ↑TERMINAL (STATUS)? 4l

(13) Also, STATUS should give the NAME of the user on a given terminal. With this in mind, it would also be nice to have a WHERE (IS USER) command. 4m

(14) Please give the user a switch to turn off/on the Time field of ANTS print-outs to the terminal. It is nice to be able to get the time, but nicer, still, to be able to stop getting it. 4n

(15) We would like to see echoing separated from transmission. Going into Charmode should default me to foreign echo, but I should be able to force local echo. 4o

(16) A user should be able to flush pending output. He should be able to hold it and then query the status of his buffers (e.g., to decide whether he wants to flush the text). 4p

(17) We would like to put in a strong vote for a TIP imitation capability. TIPs are generally inadequate, but they are also plentiful. 4q

(18) The TIP has some nice control features. Specifically, it can be put into a 'transparent' mode, in which there is no escape (↑) character. Additionally, it is nice to be able to have the Network send commands to a TIP terminal. This way, I can have processes do some set-ups for me. 4r

To reiterate: our thinking is that, since ANTS is primarily (solely) a user-interface system, it should be made as friendly to humans as is possible. We are aware that some of the suggested changes are quite significant. However, we strongly believe that they are vital. 5

The document did not explain: 6

CARDLIST, PRINTX, PRINT (lineprinter?), DRAWX, READY, PRINTRJS, OPERATOR, SYNCH, BREAK, DRAWRJS, READRJS, COPYTAPE. 6a

What do they mean? 6b

And lastly, what are the planned facilities (interfaces) for the peripherals? Will you be able to get a listing on the line-printer by simply doing an FTP to it (for example)? 7

Many thanks for the time. I'd appreciate knowing your reactions (besides the obscenities) to our thoughts, suggestions, and questions. 8

--Dave Crocker (with input from Lou Nelson, Jon Postel and Chuck Kline) 8a

17843 Distribution

John D. Day, W. Jack Bouknight, Steve D. Crocker, Lou C. Nelson, Chuck S. Kline, Jonathan B. Postel,

Thoughts on the ANTS User-Interface

(J17843) 17-JUL-73 10:22; Title: Author(s): David H. Crocker/DHC; Distribution: /DAY WJB SDC2 LCN CSK JBP; Sub-Collections: NIC; Clerk: DHC;

**10:57 17845

FROM AKB AT MIT-DMCG
subject: More on use of network journal submission and delivery. I send two messages a while ago but our sending program died (due to no fault of yours). What do you do with unfinished submissions? Throw them away - seems reasonable - or is there a way to recover? Now I am creating this file using our TECO and will submit it using the heuristic conversion algorithm. If you like I will continue to experiment and flood you with questions, suggestions and comments. Your prompt response will give me a lot of encouragement to continue experimenting.

My first need is to be able to submit RFC's via this mechanism. We usually have a machine prepared copy of the RFC we mail by US MAIL to you. This causes a week's or 2 week's turnaround time delay. By contrast the NIC journal system takes only a few hours to disseminate information. Further the NIC gets a "journalized" copy of the document. As I see it a way for me to submit RFC would be to have in beginning "Number: 12345" similar to "subject: foo".

I seem to like the heuristic conversion algorithm very much (I have yet to see results). Your document RFC 543 did not specify what the insert assembler convesion algorithms are. I can use our local editor and runoff facilities to create the document in the way I want it (possibly having the indents) and get a good journal file from it. Only one suggestion regards your heuristic algorithm. It would be nice if your system could detect "Headings" of subsections such as "I. Introduction", the next line starts with 4 spaces. A suggested algorithm -- A new statement line that does not begin with spaces (with current indentation) but the next line has indentation (starts a new statement). I do feel that any indentation, such as 3,4, 5, or more spaces should begin a new statement (this means indentation more than before). I dont know wether you do this now. I am going to experiment and see.

Please also respond to my question on the "automated" citation retrieval via FTP. How do I retrieve journal documents in a suitable form that can be printed on a line printer or console (like what we receive in hard copy from the NIC). This would help our users a lot.
Now these are some random comments to see how the heuristic algorithm works. I tried to use the new facility via our ftp, telnet and mail and found that it is quite readily usable. I hope Jim got my previous message.
If you see funny statement numbers and indentations, they have been deliberately put there.
How do I get to TOP level.

I wonder what this statement is.

BUT THIS IS A HEADING

Under this section are my comments on the journal submission and delivery system:

1. I find the new system easier to use than nls.
2. I make fewer mistakes.
3. When I make mistakes I can correct them more easily.
4. The availability (and response time) of my local host
is much better than that of my Host combined with NIC.
5. The journal submission can be done by a "DEMON" process that wakes up in the middle of the night and submits stuff to journal when NIC isn't busy (chewing up only idle computer time in shift 4). 6. The users at our site dont have to learn NLS (hurray).

A. This is a new statement because of 2 CR's.

B. So is this but level should be changed.

c. What abou this one.
d. and this

e. 2 CR'S but same indentation.
NO cr's no indentation.

ENOUGH EXPERIMENTATION.
One more thing, I want to see what a new page (FF) does.
there was a formfeed just before this line and prior to that too.

17845 Distribution
James E. (Jim) White,

**57 17845

(J17845) 17-JUL-73 10:57; Author(s): Abhay K. Bhushan/AKB ;
Distribution: /JEW ; Sub-Collections: NIC; Clerk: AKB; .SNF=HIRM;

JEW 17-JUL-73 14:29 17848

Verbose Host Names in BBN # 1822

Alex-- Just a quick note to acknowledge the format change made recently to the host appendix to BBN # 1822. The verbose installation names are, I think, much more helpful than the abbreviations formerly employed. Thanks. --Jim 1

17848 Distribution
Alex A. McKenzie,

Verbose Host Names in BBN # 1822

(J17848) 17-JUL-73 14:29; Title: Author(s): James E. (Jim) White/JEW; Distribution: /AAM; Sub-Collections: SRI-ARC; Clerk: JEW;

SOFT WARE RELIABILITY PAPER

Idneed a paper on software relibility to give to the group at woods hole. 1

17849 Distribution

Dirk H. Van Nouhuys, James H. Bair, Duane L. Stone, Frank J. Tomaini,

RHT2 17-JUL-73 14:56 17849

SOFT WARE RELIABILITY PAPER

(J17849) 17-JUL-73 14:56; Title: Author(s): Richard H. Thayer/RHT2;
Distribution: /DVN JHB DLS FJT; Sub-Collections: RADC; Clerk: RHT2;

JEW 17-JUL-73 15:20 17850

TNLS Bug, Halfduplex Terminals, First Char of Ident Echoed

When TNLS is run from a HALFDUPLEX terminal, the first character of an ident is echoed by the system (e.g., in the Ident system Status command), resulting in that character's being echoed TWICE, once by NLS and once by the user's terminal. Reported by MAP. 1

17850 Distribution
Diane S. Kaye, Harvey G. Lehtman, Charles H. Irby,

JEW 17-JUL-73 15:20 17850

TNLS Bug, Halfduplex Terminals, First Char of Ident Echoed

(J17850) 17-JUL-73 15:20; Title: Author(s): James E. (Jim) White/JEW; Distribution: /BUGS; Sub-Collections: SRI-ARC BUGS; Clerk: JEW;

Answers to Miscellaneous Questions

Mike-- Answers to some miscellaneous questions of yours: 1

Change passwords by addressing the following command to the TENEX EXEC: 1a

[@]CHANGE <SP> P[assword (of login directory from)] <curr> <CR>
[(to)] <new> <CR> 1a1

Your current delivery mode is ONLINE (neither HARDCOPY nor NETWORK). I have no response from you to RFC 510 (16400,), and therefore assume that NETWORK delivery is not desired. 1b

Citations that are placed by the Journal in the JOURNAL branch of your initial file at the NIC stay there unless explicitly deleted by you (e.g., with 'Delete Statement'). They'll live forever unless you weed them out periodically. 1c

Our on-site line printer is a Data Products Corp. Model 401, upper/lower case, 132 columns, 300 lines/minute. Material we send out in Xeroxed form was probably generated on that printer. We also generate a lot of printed material on an IBM 2403 (or something like that -- the successor to the 1403) using a special print chain designed here at SRI and built to our specs by IBM. It includes such things as script, the Greek alphabet, etc. 1d

NLS does indeed echo the first character of Idents for halfduplex terminals. A bug in NLS. I've sent a description of the problem to ident=BUGS for fixing. 1e

17851 Distribution
Michael A. Padlipsky,

Answers to Miscellaneous Questions

(J17851) 17-JUL-73 15:24; Title: Author(s): James E. (Jim) White/JEW; Distribution: /MAP; Sub-Collections: SRI-ARC; Clerk: JEW;
Origin: <WHITE>MAPMSG.NLS;2, 17-JUL-73 15:23 JEW ;

JEW 17-JUL-73 15:43 17852

Problems with SMFS

Dave-- About recent SMFS problems: 1

A general assumption that I will verify or refute -- the bugs that you're running into are not in the TENEX SMFS code (since I haven't touched it in many moons), but rather result from changes to other pieces of code (e.g., SMFS at UCSB, the TENEX monitor). 1a

I haven't managed to catch UCSB disconnected, so haven't yet explored the 'OPENF: Connection Byte Size Mismatch' message yet. 1b

A change in the behavior of one of the TENEX string I/O system calls was introduced with version 1.31 of the monitor. The effect of that change is catastrophic, in that it causes every fifth character (or so) of a file to be clobbered in transit to or from UCSB. Fix, however, is simple, and will be made by me shortly. 1c

I frequently get the diagnostic 'Filename contains characters which make it invalid at UCSB.' in any command which involves a filename explicitly or (as in the NEWS command) implicitly. 1d

The diagnostic is mine and is issued when I receive a reply code from UCSB indicating that the filename contained one or more characters other than A-Z, a-z, 0-9, and dash. 1d1

I've done a bit of experimenting and believe that the message is erroneously generated by UCSB even for a legal filename if and only if the filename contains 'k' or 'm' (as hard as that is to fathom). I've told Mark Krilanovich (MCK) at UCSB that I think the problem is his. I'll keep tabs on that. 1d2

Those are the ONLY problems that I've been able to stumble upon. I can't generate, for example, a case where a command seems to run to completion (i.e., issues no diagnostic and returns a prompt for the next command) but actually does nothing. 1e

It's possible that MCK is currently working with the code, and it's behavior is changing. 1e1

I'd appreciate it if you can provide a short scenario which illicits the kind of behavior you describe. 1e2

By the way, I have the specs from MCK for the already-implemented DIRECTORY command at UCSB, and will implement it shortly in the TENEX subsystem. Should be extremely powerful, in that it permits '*' for fields of the filename in the same way that the TENEX EXEC command does. 2

17852 Distribution
David H. Crocker, Mark C. Krilanovich,

Problems with SMFS

(J17852) 17-JUL-73 15:43; Title: Author(s): James E. (Jim) White/JEW; Distribution: /DHC MCK; Sub-Collections: SRI-ARC; Clerk: JEW; Origin: <WHITE>DHCMSG.NLS;2, 17-JUL-73 15:42 JEW ;

QUERY-RSEXEC Interface Proposed by BBN

At the RSEXEC meeting hosted by BBN in May, the NIC was asked and agreed to work with Bob Thomas' RSEXEC group in making the NIC Query system accessible to Network users via an RSEXEC command. We (JEW, MDK, RHT, and DCW3) agreed on a basic approach, and Bob agreed to write a detailed proposal for the interface between SRI-ARC software and the RSEXEC. I received that spec via SNDMSG on 27-JUN, and hereby pass it along to the Query folks (HGL) for negotiation, implementation, whatever. The original spec is <THOMAS>QUERY.DOC;1 at SRI-ARC. I created a structured version for Journalization. The rest of this document is my NLS rendering of Bob's document: 1

Use of NIC Query System from RSEXEC -- Bob Thomas 2

This note proposes an approach for making the NIC Query subsystem available to TIP users via an RSEXEC command. Access to the Query system in this way will give TIP users a convenient way to query the Resource Notebook, ARPANET News and the TIP Users Guide. The approach proposed is essentially that agreed upon at the workshop at BBN in May. 3

1. What the RSEXEC user will see: 4

The RSEXEC command to enter the NIC Query System will be: 4a

@QUERY (Document) DOC <CR> 4a1

where DOC may be one of the following: 4a1a

USERGUIDE 4a1a1

RESOURCE-NOTEBOOK 4a1a2

ARPANET-NEWS 4a1a3

or 4b

@QUERY <CR> 4b1

Use of the command with an argument will cause the appropriate file to be automatically loaded. 4c

For example (user input is in brackets): 4d

```
@[QUERY] (Document) [ARPANET-NEWS]
NIC QUERY SYSTEM
type ↑C to return to RSEXEC
type ? <CR> for help
```
4d1

(n1) ARPANET NEWS June 1973 Issue 4 NIC xxxxx
Choose one by typing:
.
.
.
4d2

-[s]how [n10]
.
.
.
-[↑C]
@
4d3

2. What the RSEXEC will do in response to the QUERY command: 5

a. Establish TELNET connection with the NIC; 5a

b. Read up to and including the EXEC prompt character ("@"); 5b

c. Send "NIC <CR>" to invoke the NIC QUERY Subsystem; 5c

d. Output the message "NIC QUERY SYSTEM <CR> type ↑C to return to RSEXEC" 5d

e. If an argument was supplied to QUERY command: 5e

1. read and discard NIC QUERY sign-on message; 5e1

2. send the command to load the appropriate data base: 5e2

"a" for ARPANET NEWS,
"r" for RESOURCE NOTEBOOK,
"b[ring] x" for USERGUIDE (where file x doesn't yet exist); 5e2a

3. Output the message "type ? <CR> for help"; 5e3

4. Output the NIC QUERY prompt character ("-"). 5e4

f. Shuffle characters between user and NIC; 5f

g. Recognize ↑C and break TELNET connection with NIC after sending ↑C and "LOGOUT" to NIC. 5g

3. What the NIC must do to support the RSEXEC QUERY command: 6

a. Make NIC QUERY subsystem available to users without requiring login (This requires a small change to the TENEX EXEC); 6a

b. Allow a user to consume X seconds of CPU time before EXEC does autologout; i.e., rather than autologout after 30 seconds if user fails to login, allow X seconds of CPU time. After .9X seconds of CPU time is used have EXEC warn user that autologout is about to occur; when X seconds have been used do autologout and break the TELNET connections. (This requires a change to the TENEX EXEC) 6b

c. Create the appropriate data base for the TIP Users Guide. 6c

d. Modify NIC QUERY sign-on message so that it terminates with an easily recognizable character or change the NIC QUERY prompt character to one not appearing at beginning of the line in the sign-on message. (While not necessary, this would make the RSEXEC's job easier.) 6d

James E. (Jim) White
Stanford Research Institute
Augmentation Research Center
333 Ravenswood Avenue
Menlo Park, California 94025

To:
Cerf, Vinton G.
Stanford University
Electronics Research Laboratory
Stanford, California 94305

17854

17853 Distribution

Harvey G. Lehtman, Robert H. Thomas, David C. Walden, Michael D. Kudlick, Elizabeth J. (Jake) Feinler,

QUERY-RSEXEC Interface Proposed by BBN

(J17853) 17-JUL-73 17:06; Title: Author(s): James E. (Jim) White/JEW; Distribution: /HGL RHT DCW3 MDK JAKE; Sub-Collections: SRI-ARC; Clerk: JEW;
Origin: <WHITE>QUERY-RSEXEC.NLS;4, 17-JUL-73 16:57 JEW ;

Sending NLS Files via SNDMSG

You're right. SNDMSG does NOT understand NLS files. To the best of my knowledge, the ability to send NLS files via SNDMSG has never been claimed, promised, advertised, alluded to, or planned. 1

If you desire to send an NLS file through the Net as mail, you have the following mechanisms from which to choose: 2

If the intended recipient has NETWORK Journal delivery specified for himself (which you can determine by executing : 2a

nls <CR>
[*]g[oto]i[dentification submode] <CA>
[>]s[tatus for I:] <ident> <CA> 2a1

and noting whether 'Network' appears in the 'Delivery:' field), you can simply send the file to him via the Journal, either by NLS command in the normal way or via FTP as outlined in RFC 543 (17777,). 2a2

You can load the file in NLS, perform an 'Output Sequential' to reduce the file to sequential form, and send it via SNDMSG with SNDSG's control-B option. 2b

You can send him the name of the NLS file via SNDMSG, and then he himself can retrieve it via FTP by appending the string ';XNLS' to the pathname. 2c

JEW 17-JUL-73 17:22 17854

Sending NLS Files via SNDMSG

(J17854) 17-JUL-73 17:22; Title: Author(s): James E. (Jim) White/JEW; Distribution: /VGC; Sub-Collections: SRI-ARC; Clerk: JEW; Origin: <WHITE>VGCMSG.NLS;2, 17-JUL-73 17:21 JEW ;

17854 Distribution
Vinton G. Cerf,

JHB 18-JUL-73 08:25 17859

CONSULTANT VISITATION/MEETING

For your action/information

JHB 18-JUL-73 08:25 17859

CONSULTANT VISITATION/MEETING

Dr. Dave Conrath will be here on the 18th of Jul (Wed.) to introduce the Communication Analysis that he will accomplish within the ISI branch. This will use the Communication Transaction Tally method that he pioneered. The branch meeting will be held at 1530 in conference room A. An explanation of the purpose and value of this investigation will be offered. 1

17859 Distribution

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

CONSULTANT VISITATION/MEETING

(J17859) 18-JUL-73 08:25; Title: Author(s): James H. Bair/JHB;
Distribution: /DLS EJK RADC; Sub-Collections: RADC; Clerk: JHB;

In the data management area, RADC is completing the first implementation of a data management system DM-1 (Data Manager). This system is extremely flexible in design, is programmed in JOVIAL and its overall design contains the best features of many other systems incorporated into one system design. From DM-1 will come many of the items that will aid in future Data Management acquisition. An in-house effort to investigate the potential of the ARPA sponsored MULTICS operating system as a host for data management has been highly successful. 1

As a result, a GCOS Multics File Transfer Facility is being built for the Data Services Center using these functions and the program is expanding in conjunction with ESD/MCI in producing a secure data management system within a modified MULTICS. Exploratory efforts are also beginning to assess the feasibility of distributed data management using the ARPA network and also the effect of associative processing on data management requirements and capabilities. 2

In the data management testing area, RADC & JTSA are jointly supporting research to develop data management evaluation tools. Currently, a user is forced to assess the systems on a parameter type basis. And it is not until he has implemented, does he find out his deficiencies. A second chance is too costly. It is the goal of this area to develop a Simulation Facility where the user can analytically and empirically experiment with his problem and various DMS alternatives prior to a commitment to a specific system. 3

The other main thrust in the Management Information Systems area is in the exploitation and assessment of the on-line system developed by SRI under ARPA sponsorship called Augmentation Knowledge Workshop. 4

RADC personnel have monitored this program for the past five years and are convinced that the feasibility of significant job performance improvement in an intellectual knowledge worker environment is indeed possible. The system provides on-line tools for a set of core activities which all knowledge workers do regardless of their special interests such as studying, analyzing, conferring, communicating, and documenting. SRI has developed the system through a "Bootstrapping" process where the system's capabilities at any particular instance in time are used to further develop the system. 5

The development activity during FY-73 has been concentrated on acquiring the necessary physical plant for use and evaluation of the SRI/AKW system. RADC is connected to the ARPA Net via a standard H316 Terminal Interface Processor (The initial specification of a baseline management system complete with SOPs, file design, and personnel role assignment has been completed.) The research group at RADC has progressed to the point where they are doing the bulk of their daily work using the system; in fact, this TPO was prepared,

coordinated and edited a number of times using the system. The FY-74 activity will be concentrated on training the rest of the ISI branch (approximately 40 people). 6

The assessment at RADC will cover a two-year period, and include engineers, secretaries, administrators, and managers at three levels in the chain of command. The evaluation will evolve slightly behind the actual implementation of the system within the ISI Branch. Results on the effectiveness of the system in augmenting individuals and teams will be available near the middle of FY-74 and organizational results at the end of FY-74. If promising, it is planned to create a large scale prototype at RADC, probably the Information Sciences Division - 120 people - elements of staff and center management. 7

17860 Distribution
Dirk H. Van Nouhuys,

TPO NO 11 SOFTWARE SCIENCES TECHNOLOGY

(J17860) 18-JUL-73 08:48; Title: Author(s): John L. McNamara/JLM;
Distribution: /DVN; Sub-Collections: RADC; Clerk: JLM;

JAKE 18-JUL-73 09:34 17862

Possible margin bug

I seem to have misplaced margins again since the new system came up.
Can someone check to see that the tty, printer, and display margins
are all the same. Thanks. ...JAKE

1

17862 Distribution
Diane S. Kaye, Harvey G. Lehtman, Charles H. Irby,

Possible margin bug

(J17862) 18-JUL-73 09:34; Title: Author(s): Elizabeth J. (Jake) Feinler/JAKE; Distribution: /BUGS; Sub-Collections: SRI-ARC BUGS; Clerk: JAKE;

BPC 18-JUL-73 09:36 17863

Response to your response to my response to your note

Larry-
The TIPs timeout is about 30 seconds. That should be the time between when "LOGGER" and "TIMEOUT" is typed. What you describe is very strange. I've received n o reports of similar problems from other TIP Users as yet.
When the problem occurs, can you log to other sites besides USC-ISI? Also, does @n work? If so, can you get into SIS that way, or always goes to BBN?

Keep me informed on how things are going-

Bernie

1

17863 Distribution
I. Larry Avrunin,

BPC 18-JUL-73 09:36 17863

Response to your response to my response to your note

(J17863) 18-JUL-73 09:36; Title: Author(s): Bernie P. Cosell/BPC;
Distribution: /ILA; Sub-Collections: NIC; Clerk: BPC;

DCE 18-JUL-73 10:09 17865

Visit Log: 16 Jul 73, Dave Malone and Aleco Christakis, Battelle and the Academy for Contemporary Problems

No immediate action required; potential Utility subscribers within several years

Visit Log: 16 Jul 73, Dave Malone and Aleco Christakis, Battelle and the Academy for Contemporary Problems

Visitors: 1

Dr. David Malone
Battelle Columbus Laboratories
505 King Ave
Columbus, Ohio 43201
(614) 299-3151, ext 3703 1a

He is also associated with the Academy. He had sent ahead two publicatons descirbing and giving some problem deiscussions about the Academy: XDOC (16559,) and (16560,). 1a1

He had been on the staff at Purdue for a number of years; he arranged for my visit there in 1971 (see my visit-summary letter to Professor Modrey -- 7269,), which led to our the successive contacts with Garrett and crowd (e.g. last contact, 4 Apr 73 -- 15607,). While at Purdue he was associated for some time with their Center for Large Scale Systems: see copies of some of his papers and memos from there (16561,), (16562,) and (16563,). 1a2

Dr. Aleco Christakis 1b

Academy for Contemporary Problems
505 King Ave
Columbus, Ohio 43201
(614) 299-3151, ext 1555 1b1

1755 Massachusets Ave., N.W.
Washington, D.C. 20036
(202) 232-8553 1b2

The academy seems to be a joint venture between Battelle and Ohio State. 1c

Visit-log notes: 2

They visited with me, from about 0915 through lunch, until about 1325; they then stopped briefly by to see Dave Hall before going on to The Institute for the Future. I demonstrated NLS, described AKW philosphy, our bootstrapping Community strategy, how our collaborative dialogue is currently supported, the general nature of the Workshop Utility, and something of the general approach to integrating AKW practice in an evolutionary way into an organization or a community. 2a

Sample branch. (Relevant for the record -- although actually

developed by Aleco Christakis during the demonstrating and experiencing of NLS.) 2a1

We are now interested in determining the utility and relevance of this system in the context of social policy planning. 2a1a

They have been interested lately in the use of hierarchical structurng for mapping the "intent" of textual material -- considering the possibility for an algorithmic approach doing the structuring automatically. 2b

Two primitive concepts: an element set, S, and a relation, R. Trying to build a system that will assist the user in establishing the network for relationships among those elements. 2b1

Picture that the system would systematiccally interrogate the user, pairwise between the elements of S; assume transitivity, and use automatic checks upon the "stated" relationships to work for consistency, and to make inductive links from the assumed transitivity. 2b2

Three levels of interest for them: the policy context; the theory of hierarchical sructuring; and mechanical implementation of the process; and utilizing the theory within the context. 2b3

A person at Batttelle has developed what appears to be a suitable algorthimic approach for their purposes. 2b3a

Expect to involve real people in the "context", and to build a workable system that can support actual work within that context. 2b3b

Expect to want graphical portrayals of the network and of its "conceptual topology". 2b3c

Now surveying the possibilities, hardware, software, etc., for the computer implementation. 2b3d

Leads to question -- over how much of this could NLS be useful to them? 2c

As an internal communication mechanism, for a community of collaborators. 2c1

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As a base upon which to implement their above "concept-structuring tools." 2c2

Miscellaneous, volunteered notes: 2d

Their approach seems to relate directly to the "conceptual structuring" discussion of OSR1 ('72 document, on list below of their takehome documents). 2d1

Whole-workshop environment for any special set of tools such as they have been considering. 2d2

Community support, system-development support, etc., from the AKW, for what they are after doing. 2d3

Aleco's thoughts: 2e

Aid to the "pre-modelling" stages -- NLS could help significantly here. 2e1

Malone: NLS coul rally be of help in each of the several stages of both evolution, and actual operational functioning whn their tools become workable. 2f

Reference contacts: 3

Duane L. Stone, Air Force Rome Air Development Center: technical leader of an activity to adopt and evaluate our Augmented Knowledge Workshop tools and techniques within their internal operations -- (315) 330-3857. 3a

Tom O'Sullivan, Human Resources Research Office, Advanced Research Projects Agency -- actively working to build up a community of Computer Based Instruction researchers and appliers; planning to have them on the ARPANET, planning to use the Community Coordinated information services of an Augmented Workshop (using our Workshop Utility services) as part of the support to that Community. (202) 694-5917 3b

Don Atkinson, Bell Northern Research (for Bell-Canada telphone system), working out their plan for buying Workshop-Utility services from us, and experimenting on internal-office applications (as a starter). (514) 870-5915 3c

Col. John Perry, Information Processing Techniques Office, ARPA -- technical coordinator at ARPA for use of the Workshop Utility for successive stages of application to their internal office work. 3d

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Literature they took away: 4

D. C. Engelbart, "Augmenting Human Intellect: A Conceptual Framework", Stanford Research Institute report, AFOSR-3223, AD-289 565, October 1962 (SRI-ARC XDOC Catalog Item -- 3906,) 4a

D. C. Engelbart and W. K. English. "A Research Center for Augmenting Human Intellect", AFIPS Proceedings, Fall Joint Computer Conference, 1968, Washington, D.C. (SRI-ARC XDOC Catalog Item -- 3954.) 4b

D. C. Engelbart, "Intellectual Implications of MULTI-ACCESS COMPUTER NETWORKS", A paper for the Proceedings of The Interdisciplinary Conference on Multi-Access Computer Networks in Austin, Texas, April 1970. (SRI-ARC XDOC Catalog Item -- 5255.) 4c

Augmentation Research Center, "Online Team Environment: Network Information Center and Computer Augmented Team Interaction", Stanford Research Institute, final report RADC-TR-72-232, 8 June 1972 (SRI-ARC Journal Item -- 13041,) 4d

D. C. Engelbart, COORDINATED INFORMATION SERVICES for a DISCIPLINE- OR MISSION-ORIENTED COMMUNITY, paper presented at the Second Annual Computer Communications Conference, San Jose, California, 24 January 1973. (SRI-ARC Journal Item -- 12445.) 4e

D. C. Engelbart, R. W. Watson, J. C. Norton, THE AUGMENTED KNOWLEDGE WORKSHOP, paper presented at the National Computer Conference, New York City, June 1973. (SRI-ARC Journal Item -- 14724.) 4f

Post-visit summary notes: 5

It is clear to both them and me that our AKW bootstrapping-community approach merges nicely with their independent conepts and aspirations. Apparently, though, there is no readily apparent source of support for buying into the Utility. I recommended several approaches: 5a

Battelle's institutional approach, of investing in Utility support for some group who would be natural AKW architects, and subsequent growth when coordinated by them and as meeting managerial support, sponsorship possibilities, application payoff, etc.; 5a1

Their (Malone's and Christakis') doing some promoting of a special-interest community whose discipline coincides with

Visit Log: 16 Jul 73, Dave Malone and Aleco Christakis, Battelle and the Academy for Contemporary Problems

theirs, then going after sponsorship and community development as the "community nucleators." 5a2

Of special interest here is the fact that Battelle has a great deal of experience in establishing and running special "information analysis" centers. For years these were operated by hand, so to speak; over the past few years they have developed a computer support system for this kind of operation that is very general in its potential scope of application, and could provide a very good adjunct service within an AKW. 5b

Note also that Bob Landau and Norman Cottrell have been developing and promoting an external (to Battelle) information service, involving some large, special data bases, to subscription clientele. Battelle is to serve as a support "subcontractor" to provide the storage and access facility through their on-line computer system; SIA is the broker who handles clients, arranges support for putting different data bases into the system, etc. 5b1

They have set up a separate organization called Science Information Association (SIA) to handle this activity. See XDOC item (16555,), "The Group Associate Program, A description of the Program and a Cost Proposal", (16554,) a "Newsletter" and (8457,) a brief letter from Cottrell after his visit here in Spring 72. 5b2

We should stay in touch with Malone and Christakis; I would like very much to see such people become part of the bootstrapping AKW community. 5c

17865 Distribution

Richard W. Watson, James C. Norton, Paul Rech, Bonnar Cox, David R. Brown, Duane L. Stone,

DCE 18-JUL-73 10:09 17865

Visit Log: 16 Jul 73, Dave Malone and Aleco Christakis, Battelle and the Academy for Contemporary Problems

(J17865) 18-JUL-73 10:09; Title: Author(s): Douglas C. Engelbart/DCE ; Distribution: /rww jcn pr bc drb dls ; Sub-Collections: SRI-ARC; Clerk: DCE ;

new entity for nls

in deleting and inserting of text within a statement i have found that spacing about the words causes some problems. 1

i suggest that a new entity might be included in future versions of nls. 2

for lack of a better name this new entity can be called fields (phrase would have been better but alas, 'p' is used for plex). it would take two addresses and act very similar to 'text' except it would adjust the spacing between words at the beginning and end of the specified text. 2a

an example or two* 2b

statement : this sentence is short. 2b1

command : d[elete] e[xpression from a:] .1 ;sentence; ca [to a:] ;is; ca [ok?] ca 2b2

new statement : this short. 2b3

note: one may position the cm to any character within the first word to be deleted and similarly for the last word 2b4

command :: i[nsert] e[xpression after a:] ;this; ca [t:]was a ca 2b5

new statement : this was a short. 2b6

note: the insertion command takes one address 2b7

overall this entity is to the entity 'word' as 'text' is to 'character'. 2c

the commands replace, transpose, move, copy, substitute, append can also apply to this new entity in an obvious manner. 2d

new entity for nls

(J17867) 18-JUL-73 11:54; Title: Author(s): Robert N. Lieberman/RLL;
Distribution: /NP JCN JI FGB; Sub-Collections: NIC NP; Clerk: RLL;

Reliability References

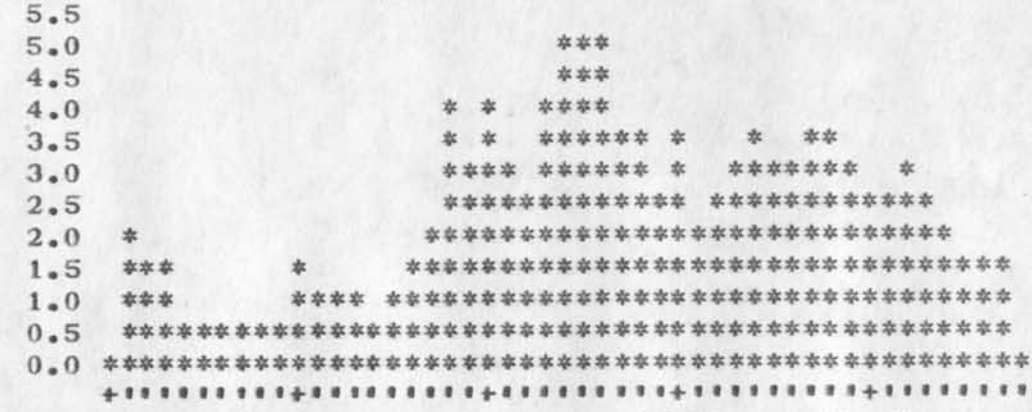
References to reliability may befound in the NIC indeces, tilte word index, for example (catalog,nictincnl-b,2173). 1

Reliability References

(J17871) 18-JUL-73 13:37; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /JHB RHT2 DLS; Sub-Collections: RADC SRI-ARC; Clerk: DVN;

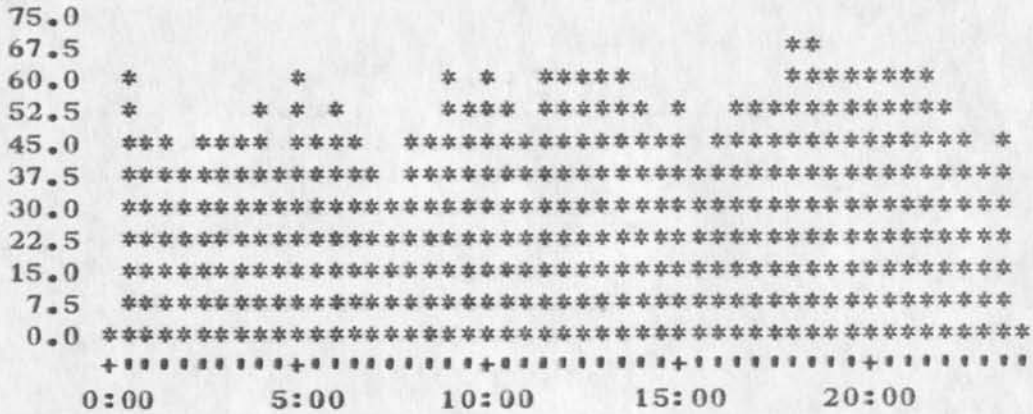
Superwatch Average Graphs for Week of 7/9/73

TIME PLOT OF AVERAGE NUMBER OF GO JOBS FOR WEEK OF 7/9/73
x axis labeled in units of hr:min, xunit = 30 minutes 1



1a

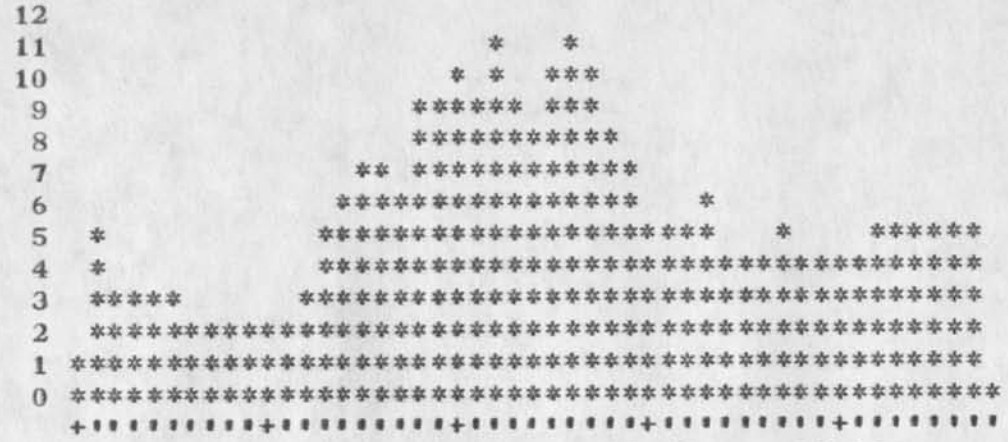
TIME PLOT OF AVERAGE PER CENT OF CPU TIME CHARGED TO USER ACCOUNTS
FOR WEEK OF 7/9/73
x axis labeled in units of hr:min, xunit = 30 minutes 2



2a

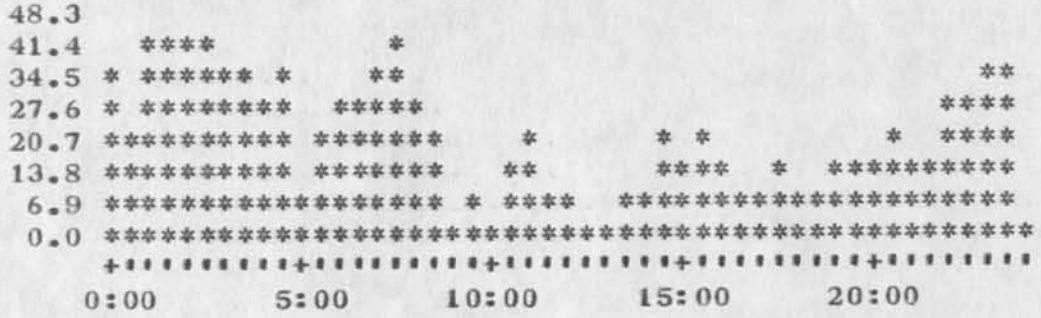
Superwatch Average Graphs for Week of 7/9/73

TIME PLOT OF AVERAGE NUMBER OF NETWORK USERS FOR WEEK OF 7/9/73
x axis labeled in units of hr:min, xunit = 30 minutes 3



3a

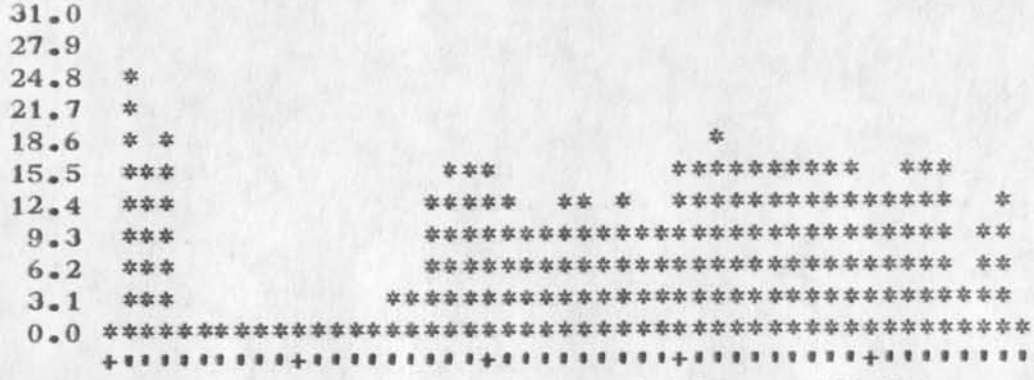
TIME PLOT OF AVERAGE IDLE TIME FOR WEEK OF 7/9/73
x axis labeled in units of hr:min, xunit = 30 minutes 4



4a

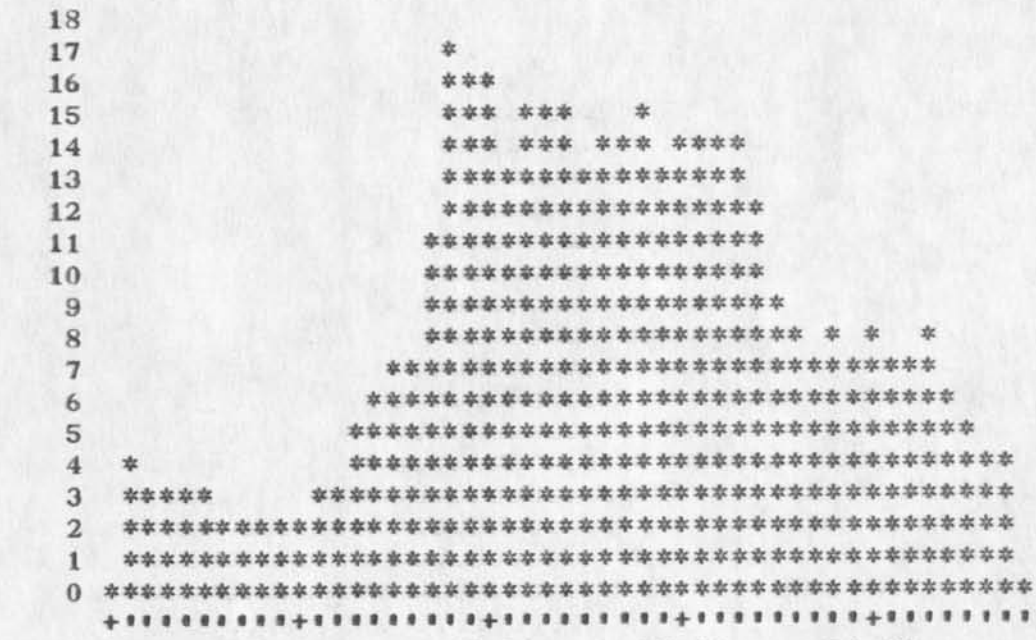
Superwatch Average Graphs for Week of 7/9/73

TIME PLOT OF AVERAGE PER CENT OF SYSTEM USED IN DNLS FOR WEEK OF 7/9/73
x axis labeled in units of hr:min, xunit = 30 minutes 5



5a

TIME PLOT OF AVERAGE NUMBER OF USERS FOR WEEK OF 7/9/73
x axis labeled in units of hr:min, xunit = 30 minutes 6



6a

SRL 18-JUL-73 15:54 17873

Superwatch Average Graphs for Week of 7/9/73

(J17873) 18-JUL-73 15:54; Title: Author(s): Susan R. Lee/SRL;
Distribution: /JCN RWW DCE PR DCW JCP DVN JAKE CFD KIRK DLS BAH;
Sub-Collections: SRI-ARC; Clerk: SRL;
Origin: <LEE>WEEK7/9GRAPHS.NLS;2, 18-JUL-73 15:49 SRL ;

Substituting Null text for old text - Bug

In trying to substitute a null character for a series of parens in some text I was working on I discovered that SP BACKSPACE was substituted literally for a paren. However, when Chuck D. tried the same substitution using xxx BACKSPACE WORD the paren was removed and nothing was substituted in its place. This seems to be a bug that someone may want to check. It would be much more convenient to be able to just give a CA or CR to indicate that null text was being substiuted after <new test>. JAKE

1

Substituting Null text for old text - Bug

(J17874) 18-JUL-73 16:06; Title: Author(s): Elizabeth J. (Jake) Feinler/JAKE; Distribution: /BUGS; Sub-Collections: SRI-ARC BUGS; Clerk: JAKE;

DHC 18-JUL-73 16:08 17875

SMFS varies its misbehavior

Jim, got your mesage. Just tried the following, with NIC's SMFS:

SMFS <cr>
#news <cr>
net:2.3-2004;t
#new <cr>
net:2.3-2004;t
#locate netref.nls;1
net:2.3-2004;t
#locate planalc.nls;1
net:2.3-2004;t

Whatever it is, it's consistent

Dave. 1

SMFS varies its misbehavior

(J17875) 18-JUL-73 16:08; Title: Author(s): David H. Crocker/DHC;
Distribution: /JEW; Sub-Collections: NIC; Clerk: DHC;