

MEMORANDUM

To: Software Distribution List

From: J. B. Levin

Subject: User Communication Between the PDP-1d and the Network
SD #2

Date: September 5, 1972

The PDP-1d EXEC III network software is so structured that only one user at a time can talk to the network, i.e., own the network interface. To permit users to share the network, therefore, a *Network Handler* (named SYSNET) runs as a multiplexor between users and the network: all network input is written into queues on third 2 of the Fastrand for user access, and users place their output on a queue from which SYSNET sends it to the network. This memo describes the structure and use of these queues.

Output

To send a message of any length (2 to 505 words), it is written on third 2 as an item (item length = message length + 2), and a NETPUT (IOT 2500) is executed with 1 in the AC and the DRA of the item in the IO. This places the DRA in an EXEC list accessible by SYSNET. It is a two return IOT; R1 means that SYSNET is not up, or the buffer is full. R2 means that the item has been accepted and placed in the list. SYSNET will retrieve the items on this queue on a first-in-first-out basis, put them out to the network and attempt to expunge them from the drum (expecting ownword FLEXO NET).

Input

Input from the network is first examined by type (see Report 1822). Message types 1,2,4, and 10-14 are handled appropriately. Types 0,5,7,8, and 9 are passed on to the user. The queue chosen is addressed through invariant numbers 1000-1377: 1000 + <8 least

significant bits of source Host address> (the from-IMP bit is ignored). Each message is represented by a 16 word block in an item containing 8 such blocks (see attached crib sheet). As messages are received for a specific queue, blocks are added from the beginning towards the end of the queue item; but items are *pushed* in the queue. Thus the invariant number addresses the current item, which in turn points to the next most recent item—in other words, blocks within an item are first-in first-out, but items are last-in first-out (unless some fancier addressing is done). If a message is longer than 9 words, the entire message is written as a separate item, addressed by word 10 of the block. The end of the queue is marked by a pointer of 0 or by an illegal item (ERCODE 1000). In any case, in general blocks older than about five minutes old should be ignored.

When a message is read, the user should mark it by writing -0 on top of the first leader word (word 0) of the block. Input queue items, though "held" by SYSNET, may be rewritten. Use ownword FLEXO NET and be prepared for rewrite-number errors.

JBL/1e

A handwritten signature in black ink, appearing to be 'JBL' with a stylized flourish extending from the end.

NETWORK INPUT QUEUE ITEM STRUCTURE

OVERHEAD-	/	!	!	QUEUE ITEM LENGTH (204)
	!	!	!	RE-WRITE NUMBER
	!	!	!	CHAIN POINTER TO PREVIOUS ITEM
	!	!	!	REL. POINTER TO FIRST EMPTY BLOCK
	\	!	!	
8.	/	!XXX!	!	MSG WORD 0 (LEADER)
	!	!	!	
	!	!XXX!	!	MSG WORD 1 (LINK)
	!	!	!	
	!	!XXX!	!	MSG WORD 2
	!	!	!	
	!	!XXX!	!	MSG WORD 3
	!	!	!	
	!	!XXX!	!	MSG WORD 4
	!	!	!	
	!	!XXX!	!	MSG WORD 5
	!	!	!	
	!	!XXX!	!	MSG WORD 6
	!	!	!	
	!	!XXX!	!	MSG WORD 7
	!	!	!	
	!	!XXX!	!	MSG WORD 8
	!	!	!	
	!	!	!	POINTER TO MESSAGE ITEM IF LONGER THAN 9 WORDS
	!	!	!	LENGTH OF MESSAGE (WORDS)
	!	!	!	
	!	!	!	DATE PLACED ON QUEUE
	!	!	!	
	!	!	!	TIME PLACED ON QUEUE
	!	!	!	
	!	!	!	SPARE
	!	!	!	
	!	!	!	SPARE
	!	!	!	
	\	!	!	SPARE

* - SAMPLE SEND ROUTINE FOR OUTPUT TO NET

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SEND,      DAP SEND.X
           LAW 2
           ADD MSGLEN      /GET ITEM LENGTH
           DAC ITMLLEN
           LAC (FLEX0 NET)
           DAC OWNWD
           LAW ITMLLEN
           WNIF+5          /WNIH ALSO WORKS FINE
           JMP DRUMER      /OOPS
RETRY,     LAW 1          /I TELLS NETHANDLER WHAT TO DO
           NETPUT          /IOT 2500
           JMP WAIT        /EXEC Q IS FULL...TRY AGAIN LATER
           .               /NETPUT DOES A NETPOK
           .
           .               /GO THROUGH SOME GYRATIONS TO MARK LINK BLOCKED
           .               / SET UP POINTERS FOR MORE OUTPUT, ETC...
           .
SEND.X,    JMP .

WAIT,      CLA
           DELAY
           JMP RETRY

ITMLLEN,   0              /FIRST WORD OF MESSAGE ITEM
           0              /REWRITE NUMBER

OUTBUF,    .+506./        /FIRST WORD OF ACTUAL MESSAGE IS HERE

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