

# MEMORANDUM

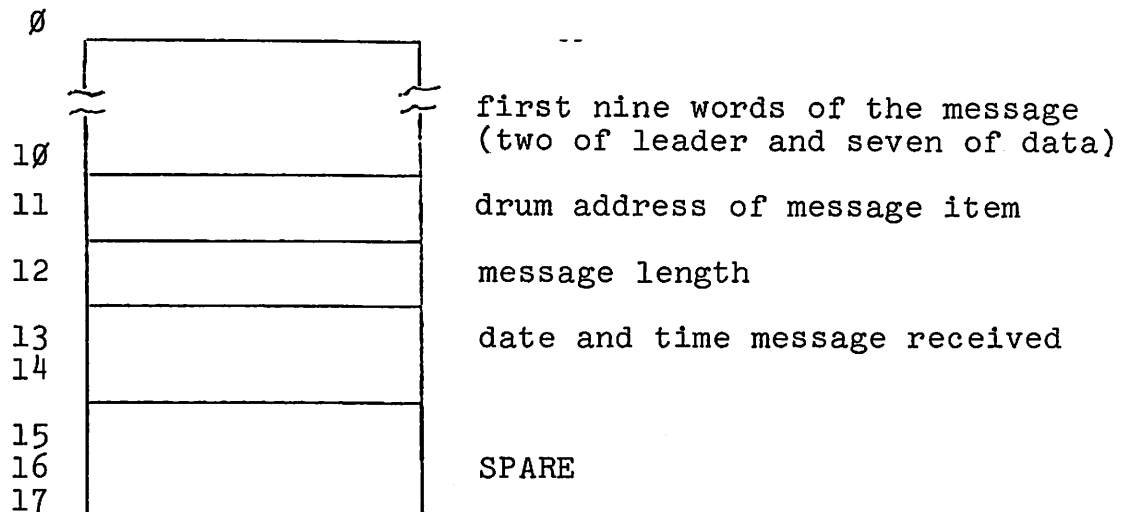
To: IMP Guys  
From: E. Belove  
Subject: PDP-1 User Interface to the Network  
Date: May 17, 1972

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The user interface to the network consists of two special user programs - the network handler and the garbage collector.

The network handler does all of the actual I/O to the network and is the only program that can use the restricted network IOTs. To preserve flexibility, the handler does no preprocessing of data either to or from the network. This, unfortunately, means that each user program will have to handle its own IMP/Host protocol as well as its own Host/Host protocol. Communication between the handler and network user programs is effected by means of queues on the Fastrand.

All messages that come in from the network get forwarded onto one of 256 network input queues, one for each link number. Each queue consists of a single item addressed by invariant number 1000 + link number. The item consists of a series of 16 word blocks, one per message. For each message, its block in the queue will contain:



Messages of nine words or less will have no separate item associated with them. All queues and messages will reside on third two.

In the event that there are no messages for a given link number, its invariant number will be set to -1.

The garbage collector keeps the drum from slowly filling up with messages that no user program wants. A message block will be removed from the queue, and the message it addresses removed from the drum, when the message is more than one minute old. Also, to make it a little easier for user programs to do their own garbage collection, it will remove any message whose drum address entry in the queue has its sign bit set. Thus, a user program would look at a message and when done with it just set the sign bit in the drum address word of its message's block, and the garbage collector will remove the block from the queue and the message from the drum. If the user program would like to retain the message, it would rewrite the drum address entry in its message's block with a sign bit and all zeroes; that is, "delete this message block but no item is associated with this message."

Output is handled through a single queue, pointed at by invariant number 1400. This queue is also a single item, consisting of one word entries. This word contains the drum address of the message to be sent. Both the address and the message itself will be deleted from the drum when the message is sent. If the user wishes to save the message, he can put the complement of the drum address on the queue. Then, when the message is sent, the drum address will be deleted from the queue, but the message itself will be left on the drum.

When there are no messages waiting to be output, the output invariant number will point to a null queue. Thus, users will not have to check for the existence of the output queue, but can merely add words to the end of the queue. (This can be done very neatly using scatter gather.)

The OWNWD of all queues and messages written by the network handler is "IMP" in internal code. User programs wishing to have messages expunged by the handler should use the same OWNWD.

EB/le