**APPENDIX A** : G.DELOCHE- TERM PAPER

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Request for Comment: 7 University of California at Los Angeles

NIC: 4693 May 1969

**Host-Imp Interface**

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Object: Arpa Network - Specification Outlines for Host-IMP (HI)

Interface Programs.

Outline

I. Introduction

II. Scope of the software organization.

II-1 Network program

II-2 Handler program

III. Questions

[The original of [RFC 7](http://tools.ietf.org/html/rfc7) was hand-written, and only partially illegible

copies exist. [RFC 7](http://tools.ietf.org/html/rfc7) was later typed int NLS by the Augmentation

Research Center (ARC) at SRI. The following is the best

reconstruction we could do. RFC Editor.]

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**I. Introduction**

This paper is concerned with the preliminary software design of the

Host IMP interface. Its main purpose is on the one hand to define

functions that will be implemented, and on the other hand to provide

a base for discussions and ...(unreadable).

This study is based upon a study of the BBN Report No. 763.

II. Scope of the software organization.

The system is based upon two main programs: the Handler program that

drives the channel hardware unit, and the Network program which

carries out the user's transmission requests.

As the communication is full duplex, each of these programs can be

viewed as divided into two parts: one is concerned with the output

data, the other with the input. (See Fig. 1)

These two programs exchange data through a pool of buffers, and

logical information through an interface table.

In the following we only focus on the output part of each program

(See Fig. 2). The input part would be very similar.

II-1. Network program.

II-1-1. Multiplex function.

This program multiplexes the outgoing messages (and distributes the

incoming messages). The multiplexing consists in stacking up all the

user's (or caller, or party) requests and filling up the pool of

buffers so as to keep the handler busy emitting.

Multiplexing (and distribution) is based on the link identification

numbers. (Link = logical connection between two users). The

multiplexing problem is closely related to the interface between a

user's program and the network program, that is in

fact...(unreadable) operating system (See below: Questions).

II-1-2. Output message processing.

When a user's program wants to send out text it should indicate the

following information (through a macro, or as call parameters): text

location, text length in bytes, and destination.

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Using these data the Network program:

\* prepares a 16 bit Host heading (1 bit: trace, 2 bits: spares, 8

bits: link identification no., 5 bits: destination host)

\* inserts a 16 bits marking between the header and the text so as

to start the text at a word boundary. This marking consists of

a one preceding the first bit of the text and, in turn,

preceded by fifteen zeros to fill up the gap.

\* checks the length of the user's text - if it exceeds 1006 bytes

+- -+

|8080 (max host message length) - 32 (heading + marking)|

|-------------------------------------------------------|

| 8 (byte = 8 bits) |

+- -+

the program breaks down the text into a sequence of messages whose

maximum length is 1006 bytes - Each of these messages is preceded by

a heading as explained above.

Remark: in that case one of the heading space bits could be used for

indicating that several messages belong to the same text.

\* \_transcodes\_ the EBCDIC characters constituting the messages

into ASCII characters.

\* \_fills\_ the buffers of the pool with the content of the

messages.

\* \_updates\_ the content of the interface table and moves the

filling pointers (see below).

II-2. Handler program.

This program is initiated either by the network program, or by the

I/O interrupt.

This program will be very short. It will be coded in master mode

(privileged instructions) and should be integrated in the I/O

supervisor of the operating system.

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This program:

\* \_controls\_ the channel hardware unit. It initiates the

emission, eventually provides data chaining between the

buffers, tests the different device status upon receiving an

interrupt.

\* \_empties\_ the buffers that are filled up by the network

program.

\* \_explores\_ and \_updates\_ the interface table (see below).

\* can eventually insure a control transmission procedure with the

IMP (See Questions).

II-3 Buffers and Interface Table.

II-3-1 Buffers.

They should be large enough for containing the maximum host message

text + heading and marking (1006 + 4 = 1010 bytes).

Consequently the buffer size could be chosen equal to 256 words (1024

bytes). As for the buffer number it will determine the link

utilization frequency -

II-3-2 Interface table.

It is through this table that the network program informs the handler

with the location and length of the emitting data.

This table could be a ring table with 2 pointers: one for filling,

the other for extracting. They are respectively updated by the

network and the handler program.

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[Length] of the message

contained

in the buffer

^

|

+--------------+----------+

| Buffer addr. | nb bytes |

+--------------+----------+

| | | <== Filling pointer

+--------------+----------+ |

| | V

| |

// //

| |

| |

| |

+--------------+----------+

| Buffer addr. | nb bytes | <== eEtracting pointer

+--------------+----------+ |

| Buffer addr. | nb bytes | V

+--------------+----------+

III. Questions.

III-1. Why is there not a simple control procedure between the HOST and

the IMP? What happens if a message, issued from the HOST,

reaches the IMP with an error due to the transmission?

From the BBN specifications it appears that this error will be

transmitted as far [as] the receiving HOST.

In that case must an HOST-HOST control procedure be provided?

III-2. Where will the special channel hardware unit be connected

(MIOP/SIOP)?

How will this device be notified of an outgoing message end in order

to start the padding?

(The program will provide to the MIOP SIOP the number of bytes of the

outgoing message, and will receive back an interrupt when the last

byte is sent out. Is it that signal which will be also sent to the

special device?)

Vice versa how does the Handler know the length of the incoming

message? From the contents of the previous one or should this

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program always ready to receive a message of maximum length? (Then

an interrupt should be triggered when the real end is detected by the

hardware).

III-3. When does the Gordo documentation will be available in order to

design the user-network program interface. What are the

mechanisms for program initiations, transferring parameters from

one program to another, etc...

HOST (Sigma 7) <--|/|--> Outside world

Users |/|

| |/|

| |/| Special Standard

V |/| | |

+--------------+ +------------+ |/| V | V

o----| | | | |/| +------+------+

| Output |-->| Output |-->|/|-->| | |-->IMP

. . .| | | | |/| | |

| | | | |/| | | |

o----| (Multiplex) | | | |/| | |

|\_ \_ \_ \_ \_ \_ \_ | |\_ \_ \_ \_ \_ \_ | |/| | \_ \_ \_| \_ \_ \_|

o----| | | | |/| | | |

| Input |<--| Input |<--|/|<--| |<--IMP

. . .| | | | |/| | | |

| | | | |/| | |

o----|(Distribution)| | | |/| +------|------+

| | | | |/| HARDWARE

+--------------+ +------------+ |/| Interface

NETWORK HANDLER |/|

Program Program |/|

|/| (Fig. 1)

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+------------------+

| | | |

| | | interface |

| | | |

| |

| ====> Data |

| |

| ----- Logical |

| information|

+------------------+

+ - - - - - - - - - - - - - -+

| |

interface table

| +----------+ | | |

| | +---->| |<----+ | |

| | | | +----------+ | | interrupt | |

| | ^ | | +----<-------| |

| | | | +- -+ | | | | |

| | | V | \_\_\_\_\_\_\_\_\_ | V V V | |

o----| |-+ +---------+-+ | | || +-+--+--+---+ | |

| | \ |+---------+| | |\_\_\_\_\_\_\_\_\_|| |+---------+| | |

| | \|| || | | || || | |

| | +| || | - - - - - -| || || | |

| | || || | | || || | |

- - - - - -|| NETWORK ||=>- \_\_\_\_\_\_\_\_\_ -=>|| HANDLER ||=======>| |

| | +| Progr. || | | || || Progr. || | |

| | /|| || | |\_\_\_\_\_\_\_\_\_|| || || | |

| | / |+---------+| | | |+---------+| | |

o----| |-+ +-----------+ | \_\_\_\_\_\_\_\_\_ | +----+------+ | |

^ | | | | || | | |

| | | | |\_\_\_\_\_\_\_\_\_|| +--->---------->| |

| ^ +- ^ -+ Commands | |

Users | | | |

| Pool of buffers | |

User's ^

Interface |

Hardware

Interface

(Fig. 2)

[ This RFC was put into machine readable form for entry ]

[ into the online RFC archives by Bob German & Lorrie Shiota 1/02 ]

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