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INITIAL CONNECTION PROTOCOL--REVIEWED

INTRODUCTION

At the Network meeting preceding the SJCC '71, an "ICP Committee" was established. It's purpose was to get "something" working fast with minimum modifications to the current ICP so as to minimize complaints. (This seems like a good definition for almost everything!) Consequently, those who had objections to the current ICP were interviewed and a compromise was reached in the form of RFC #165. The ICP committee didn't have a chance to think about an alternative because of the above mentioned constraints. In this note we attempted a simple version of an ICP assuming that we can add commands to Host-Host protocol. We hope that this will be useful in the design of the next version of the Host-Host protocol.

ICP COMMANDS

To establish a regular connection one party can issue an INIT (NCP sends RTS or STR commands), then the other party can accept the request for connection by responding with an INIT or refusing it with a CLOSE. We think that

a similar, simple mechanism is desirable for the ICP. Furthermore, the ICP should allow for simplex as well as duplex connections from user to server.

The following commands are necessary for simplex connections:

ISC - Initiate Simplex Connection

ASC - Accept Simplex Connection

RSC - Refuse Simplex Connection

The notation for parameters is similar to that of RFC #165:

L - Server socket name, in one special case the server is "logger".

U - User socket.

S - Socket assigned by server for the connection with user.

X - Is the byte size if U is odd and is the link number if U is even.

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X - Is the complement of X (X is the link number if U is odd and byte size if U is even.

To initiate a simplex connection the user's NCP issues:

ISC, L, U, X

To refuse this connection the server's NCP issues:

RSC, L, U

MINIMUM MODIFICATION TO CURRENT ICP

The minimum change we can think of to make the current ICP look similar to the above is to add one NCP level command -- accept:

ACC, L, U, S

The exchange between NCPs in the notation of RFC #165 is now:
<where the original uses a script lowercase "L" we use "l">
<where the original uses subscripts we use {} so that
A-subscript-B is printed A{B} >

Server NCP

User NCP

Listen for connection on L

RST,U,L,l{A}

ACC,L,U,S

S is passed by NCP to the user and connection from U to L is closed.

STR,S+1,U+2,B{s}

STR,U+3,S,B{u}

RTS,S,U+3,l{B}

RTS,U+2,S+1,l{c}

Wait for connection

Wait for connection

ALL,l{B},m{B},b{B}

ALL,l{c},m{c},b{c}

An alternative way to the ACC command is a CLS command with an additional parameter (32 bits long). If parameter is zero the request for connection by the user is refused; if the parameter is non-zero, the request is accepted and socket S is the value of the parameter.

All suggested changes improve the ICP dialog both from the aesthetic and efficiency points of view. We lean strongly, however, to the first, more major ICP modification.

A COMMENT ABOUT CLS COMMAND

It seems appropriate to mention here for the purpose of the next version of the Host-Host protocol that the CLS command has more than one function. We think that the CLS command should be reserved to close connections in the "connected state" only (i.e., "open" connections). Two additional commands can be used for "refusing" and "rejecting" requests for connections:

REJ<mysocket><yoursocket> -- when a request for connection is rejected unconditionally.

REF<mysocket><yoursocket><reason> -- when a request for connection is refused temporarily because the NCP could not handle it. For example: no process LISTENed to it and it was timed-out, or NCP tables are full in which case the user process may try again. The reason for refusing is indicated in the parameter "reason".

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