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                        Telnet Environment Option

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Abstract

   This document specifies a mechanism for passing environment informa-
   tion between a telnet client and server. Use of this mechanism en-
   ables a telnet user to propagate configuration information to a re-
   mote host when connecting. Distribution of this memo is unlimited.

1. **Command Names and Codes**

        ENVIRON   36
             IS   0
             SEND   1
             INFO   2

             VAR   0
             VALUE   1
             ESC   2
             USERVAR   3

2. **Command Meanings**

IAC WILL ENVIRON

   The sender of this command is willing to send environment vari-
   ables.

IAC WONT ENVIRON

   The sender of this command refuses to send environment variables.

IAC DO ENVIRON

   The sender of this command is willing to receive environment vari-
   ables.

IAC DONT ENVIRON

   The sender of this command refuses to accept environment vari-
   ables.

IAC SB ENVIRON SEND [type ... [type ... [...]]] IAC SE

   The sender of this command requests that the remote side send its
   environment variables. The "type" may be either VAR or USERVAR,
   to indicate either well known or user variable names. Only the
   side that is DO ENVIRON may initiate a SEND command. If a list of
   variables is specified, then only those variables should be sent.
   If no list is specified, then the default environment, of both
   well known and user defined variables, should be sent. If one of
   the variables has no name, then all the variables of that type
   (well known or user defined) in the default environment should be
   sent.

IAC SB ENVIRON IS type ... [VALUE ...] [type ... [VALUE ...] [
...]] IAC SE

   The sender of this command is sending environment variables. This
   command is sent in response to a SEND request. Only the side that
   is WILL ENVIRON may send an IS command. The "type"/VALUE pairs
   must be returned in the same order as the SEND request specified
   them, and there must be a response for each "type ..." explicitly
   requested. The "type" will be VAR or USERVAR. Multiple environ-
   ment variables may be sent. The characters following a "type" up
   to the next "type" or VALUE specify the variable name. The char-
   acters following a VALUE up to the next "type" specify the value
   of the variable. If a "type" is not followed by a VALUE (e.g., by
   another VAR, USERVAR, or IAC SE) then that variable is undefined.
   If a VALUE is immediately followed by a "type" or IAC, then the
   variable is defined, but has no value. If an IAC is contained
   between the IS and the IAC SE, it must be sent as IAC IAC. If a

variable or a value contains a VAR, it must be sent as ESC VAR.

If a variable or a value contains a USERVAR, it must be sent as
ESC USERVAR. If a variable or a value contains a VALUE, it must
be sent as ESC VALUE. If a variable or a value contains an ESC,
it must be sent as ESC ESC.

IAC SB ENVIRON INFO type ... [VALUE ...] [type ... [VALUE ...] [
...]] IAC SE

The sender of this command is sending information about environ-
ment variables that have changed. It is identical to the IS com-
mand, except that the command is INFO instead of IS. Only the
side that is WILL ENVIRON may send an INFO command. The INFO com-
mand is not to be used to send initial information; the SEND/IS
sequence is to be used for that. The INFO command is to be used
to propagate changes in environment variables, and may be spon-
taneously generated.

[3](). Default Specification

The default specification for this option is

     WONT ENVIRON
     DONT ENVIRON

meaning there will not be any exchange of environment information.

[4](). Motivation

Many operating systems have startup information and environment vari-
ables that contain information that should be propagated to remote
machines when Telnet connections are established. Rather than create
a new Telnet option each time someone comes up with some new informa-
tion that they need propagated through a Telnet session, but that the
Telnet session itself doesn't really need to know about, this generic
information option can be used.

[5](). Well Known Variables

USER   This variable is used to transmit the user or account
              name that the client wishes to log into on the remote
              system. The format of the value the USER variable is
              system dependent, as determined by the remote system.

JOB   This variable is used to transmit the job ID that the
              client wishes to use when logging into the remote system.
              The format of the value the JOB variable is system depen-
              dent, as determined by the remote system.

ACCT   This variable is used to transmit the account ID that the

client wishes to use when logging into the remote system.
The format of the value the ACCT variable is system
dependent, as determined by the remote system.

   PRINTER   This variable is used to identify the default location
               for printer output. Because there does not currently ex-
               ist a standard way of naming a printer on a network, the
               format of this variable is currently undefined.

   SYSTEMTYPE This is used to transmit the type of operating system on
               the system that sends this variable. It value is identi-
               cal to the value of the SYSTEM (SYST) command in FTP [2].
               The format of the value shall have as its first word one
               of the system names listed in the current version of the
               Assigned Numbers document [3].

   DISPLAY   This variable is used to transmit the X display location
               of the client. The format for the value of the DISPLAY
               variable is:
                   <host>:<dispnum>[.<screennum>]
               This information is identical to the information passed
               using the Telnet X-DISPLAY-LOCATION option. If both the
               DISPLAY environment variable, and the X-DISPLAY-LOCATION
               option[4] are received, and they contain conflicting in-
               formation, the most recently received information re-
               ceived should be used.

   Because it is impossible to anticipate all variables that users may
   wish to exchange, the USERVAR type is provided to allow users to
   transmit arbitrary variable/value pairs. The use of an additional
   type allows implementations to distinguish between values derived
   by the remote host software and values supplied by the user.
   Paranoid implementations will most likely treat both types with an
   equal level of distrust. The results of a name-space collision
   between a well-known and a user variable are implementation specif-
   ic.

6. Implementation Rules

   WILL and DO are used only at the beginning of the connection to ob-
   tain and grant permission for future negotiations.

   Once the two hosts have exchanged a WILL and a DO, the sender of
   the DO ENVIRON is free to request that environment variables be
   sent. Only the sender of the DO may send requests (IAC SB ENVIRON
   SEND IAC SE) and only the sender of the WILL may transmit actual
   environment information (via the IAC SB ENVIRON IS ... IAC SE com-
   mand). Though this option may be used at anytime throughout the

life of the telnet connection, the exchange of environment informa-

tion will usually happen at the startup of the connection. This is
because many operating systems only have mechanisms for propagating
environment information at process creation, so the information is
needed before the user logs in.

The receiving host is not required to put all variables that it re-
ceives into the environment. For example, if the client should
send across USERVAR "TERM" VALUE "xterm" as an environment vari-
able, and the TERMINAL-TYPE [1] option has already been used to
determine the terminal type, the server may safely ignore the TERM
variable. Also, some startup information may be used in other
ways; for example, the values for "USER", "ACCT" and "PROJ" values
might be used to decide which account to log into, and might never
be put into the users environment. In general, if the server has
already determined the value of an environment variable by some
more accurate means, or if it does not understand a variable name,
it may ignore the value sent in the ENVIRON option. The server may
also prefer to just put all unknown information into the users en-
vironment. This is the suggested method of implementation, because
it allows the user the most flexibility.

The following is an example of use of the option:

```
  Host1                               Host2
  IAC DO ENVIRON
                                      IAC WILL ENVIRON
  [ Host1 is now free to request environment information ]
  IAC SB ENVIRON SEND VAR "USER"
  VAR "ACCT" VAR USERVAR IAC SE
  [ The server has now explicitly asked for the USER and ACCT
    variables, the default set of well known environment variables,
    and the default set of user defined variables.  Note that the
    client includes the USER information twice; once because it was
    explicitly asked for, and once because it is part of the
    default environment.  ]
                                      IAC SB ENVIRON IS VAR "USER"
                                      VALUE "joe" VAR "ACCT" VALUE
                                      "kernel" VAR "USER" VALUE "joe"
                                      VAR "DISPLAY" VALUE "foo:0.0"
                                      USERVAR "SHELL" VALUE "/bin/csh"
                                      IAC SE
```

It is legal for a client to respond with an empty environment (no
data between the IAC SB and IAC SE) when no well-defined or user
variables are currently defined. For example:

```
   IAC SB ENVIRON IS IAC SE
```

is a valid response to any of the following:

```
    IAC SB ENVIRON SEND IAC SE
    IAC SB ENVIRON SEND VAR IAC SE
    IAC SB ENVIRON SEND USERVAR IAC SE
    IAC SB ENVIRON SEND VAR USERVAR IAC SE
```

(The last example is equivalent to the first...)

It is expected that any implementation that supports the Telnet EN-
VIRON option will support all of this specification.

7. Security Concerns

It is important for an implementor of the ENVIRON option to under-
stand the interaction of setting options and the login/authentication
process. Specifically careful analysis should be done to determine
which variables are "safe" to set prior to having the client login.
An example of a bad choice would be permitting a variable to be
changed that allows an intruder to circumvent or compromise the
login/authentication program itself.

8. References

[1] VanBokkelen, J., "Telnet Terminal-Type Option", RFC 1091, FTP
    Software, Inc., February 1989.
[2] Postel, J. and J. Reynolds, "File Transfer Protocol (FTP)", RFC
    959, ISI, October 1985
[3] Reynolds, J. and J. Postel, "Assigned Numbers", RFC 1060, ISI,
    March 1990
[4] Marcy, G., "Telnet X Display Location Option", RFC 1096, Carnegie
    Mellon University, March 1989.

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