

## TELNET EXTENDED ASCII OPTION

### 1. Command Name and Code.

EXTEND-ASCII 17

### 2. Command Meanings.

IAC WILL EXTEND-ASCII

The sender of this command requests Permission to begin transmitting, or confirms that it may now begin transmitting extended ASCII, where additional 'control' bits are added to normal ASCII, which are treated specially by certain programs on the host computer.

IAC WON'T EXTEND-ASCII

If the connection is already being operated in extended ASCII mode, the sender of this command demands that the receiver begin transmitting data characters in standard NVT ASCII. If the connection is not already being operated in extended ASCII mode, The sender of this command refuses to begin transmitting extended ASCII.

IAC DO EXTEND-ASCII

The sender of this command requests that the receiver begin transmitting, or confirms that the receiver of this command is allowed to begin transmitting extended ASCII.

IAC DON'T EXTEND-ASCII

The sender of this command demands that the receiver of this command stop or not start transmitting data in extended ASCII mode.

IAC SB EXTASC

<high order bits (bits 15-8)><low order bits (bits 7-0)> IAC SE

This command transmits an extended ASCII character in the form of two 8-bit bytes. Each 8-bit byte contains 8 data bits.

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### 3. Default

DON'T EXTEND-ASCII

WON'T EXTEND-ASCII

i.e., only use standard NVT ASCII

### 4. Motivation.

Several sites on the net, for example, SU-AI and MIT-AI, use keyboards which use almost all 128 characters as printable characters, and use one or more additional bits as "control" bits as command modifiers or to separate textual input from command input to programs. Without these additional bits, several characters cannot be entered as text because they are used for control purposes, such as the greek letter "beta" which on a TELNET connection is CONTROL-C and is used for stopping ones job. In addition there are several commonly used programs at these sites which require these additional bits to be run effectively. Hence it is necessary to provide some means of sending characters larger than 8 bits wide.

### 5. Description of the option.

This option is to allow the transmission of extended ASCII.

Experience has shown that most of the time, 7-bit ASCII is typed, with an occasional "control" character used. Hence, it is expected normal NVT ASCII would be used for 7-bit ASCII and that extended-ASCII be sent as an escape character sequence.

The exact meaning of these additional bits depends on the user program. At SU-AI and at MIT-AI, the first two bits beyond the normal 7-bit ASCII are passed on to the user program and are denoted as follows.

Bit 8 (or 200 octal) is the CONTROL bit  
Bit 9 (or 400 octal) is the META bit

(NOTE: "CONTROL" is used in a non-standard way here; that is, it usually refers to codes 0-37 in NVT ASCII. CONTROL and META are echoed by prefixing the normal character with 013 (integral symbol) for CONTROL and 014 (plus-minus) for META. If both are present, it is known as CONTROL-META and echoed as 013 014 7-bit character.)

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## 6. Description of Stanford Extended ASCII Characters

In this section, the extended graphic character set used at SU-AI is described for reference, although this specific character set is not required as part of the extended ASCII Telnet option. Characters described as "hidden" are alternate graphic interpretations of codes normally used as format effectors, used by certain typesetting programs.

### Code Graphic represented

000	null (hidden vertically centered dot)
001	downward arrow
002	alpha (all Greek letters are lowercase)
003	beta
004	logical and (caret)
005	logical not (dash with downward extension)
006	epsilon
007	pi
010	lambda
011	tab (hidden gamma)
012	linefeed (hidden delta)
013	vertical tab (hidden integral)
014	formfeed (hidden plus-minus)
015	carriage return (hidden circled-plus)
016	infinity
017	del (partial differential)
020	proper subset (right-opening horseshoe)
021	proper superset (left-opening horseshoe)
022	intersection (down-opening horseshoe)
023	union (up-opening horseshoe)
024	universal quantifier (upside-down A)
025	existential quantifier (backwards E)
026	circled-times
027	left-right double headed arrow
030	underbar
031	right pointing arrow
032	tilde
033	not-equal
034	less-than-or-equal
035	greater-than-or-equal
036	equivalence (column of 3 horizontal bars)
037	logical or (V shape)
040-135	as in standard ASCII

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136 upward pointing arrow  
137 left pointing arrow  
140-174 as in standard ASCII  
175 altmode (prints as lozenge)  
176 right brace  
177 rubout (hidden circumflex)