Digital SNA 3270 Terminal Emulator for OpenVMS

Use

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The Digital SNA 3270 Terminal Emulator for OpenVMS lets users of Digital computer systems running OpenVMS access the resources of an IBM computer system that is part of an SNA network. This book describes how to set up, start, use, and terminate the Terminal Emulator.

Revision/Update Information:	This is a revised manual.
Operating System and Version:	OpenVMS VAX Versions 6.1, 6.2, or 7.0 OpenVMS Alpha Versions 6.1, 6.2, or 7.0
Software Version:	Digital SNA 3270 Terminal Emulator for OpenVMS, Version 1.6

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Preface

The Digital SNA 3270 Terminal Emulator (TE) for OpenVMS is a software product that lets OpenVMS users communicate with programs running on an IBM system through one of Digital's interconnect systems. You can use the 3270 Terminal Emulator with any of the following interconnect systems:

- the Digital SNA Gateway-ST
- the Digital SNA Gateway-CT
- the Digital SNA Domain Gateway
- the Digital SNA Peer Server
- the OpenVMS/SNA (OpenVMS VAX Version 6.1 only)

The IBM system must be part of a network configuration designed according to IBM's Systems Network Architecture (SNA).

Manual Objectives

Digital SNA 3270 Terminal Emulator for OpenVMS Use gives you the information you need to use the TE. This manual describes how the TE software uses the terminal's keyboard and what screen displays you can expect to see.

Intended Audience

This manual is intended for anyone who needs to use the TE to access an IBM computer system from a Digital SNA network. The manual provides tutorial information for the inexperienced user, as well as reference material for the experienced user.

Changes and New Features

The Digital SNA 3270 Terminal Emulator for OpenVMS, Version 1.6 differs from the Version 1.5 product only in that it includes support for utilizing TCP/IP to communicate between TE and the Gateways (Domain and/or Peer Server).

Those logicals relevant to TCP/IP transport support include:

- SNA_TCP_PORT
- SNA_TRANSPORT_ORDER
- Specifying TCP/IP hostnames

SNA_TCP_PORT

The SNA_TCP_PORT logical refers to the remote connection TCP/IP port. The default connection TCP/IP port number is 108. For example, if you want the remote connection TCP/IP port number to be 1234, you can enter the following command line:

```
$ define SNA_TCP_PORT 1234
```

If you want the remote connection TCP/IP port to be made to a service defined and enabled in the UCX database; for example *service_name*, you can enter the following command line:

```
$ define SNA_TCP_PORT service_name
```

SNA_TRANSPORT_ORDER

The SNA_TRANSPORT_ORDER logical refers to a transport list, which is used in automatic selection of transports. Connections are attempted once for each transport in the list until either a successful connection is made, or an error is returned when all transports in the list fail to connect.

For example, if you want the software to try the DECnet transport and if this fails then to try the TCP/IP transport, you can enter the following command line:

```
$ define SNA_TRANSPORT_ORDER "decnet, tcp"
```

If you want the software to try the TCP/IP transport and if this fails then to try the DECnet transport, you can enter the following command line:

```
$ define SNA_TRANSPORT_ORDER "tcp, decnet"
```

If you want the software to never try the DECnet transport and to try only the TCP/IP transport, you can enter the following command line:

```
$ define SNA_TRANSPORT_ORDER "nodecnet, tcp"
```

If you want the software to never try the TCP/IP transport and to try only the DECnet transport, you can enter the following command line:

```
$ define SNA_TRANSPORT_ORDER "decnet, notcp"
```

Note

If the SNA_TRANSPORT_ORDER logical is not defined, the default transport order for OpenVMS Alpha will be decnet, tcp; and the default transport order for OpenVMS VAX will be local, decnet, tcp.

Specifying TCP/IP Hostnames

If you want to specify a full path hostname, the hostname must be enclosed in a pair of double-quotes; for example, "foo.bar.company.com".

If you want the TCP/IP transport to be used as the preferred transport, without specifying a TCP/IP full path hostname, then define the SNA_TRANSPORT_ ORDER with "tcp" as the first element in the transport list.

If the hostname ends with a single full-colon (":"), then the TCP/IP transport will be used; for example, "foo:" or foo:.

Note

If you specify a double full-colon ("::"), you force the DECnet transport to be used; for example, "foo::" or foo::.

How to Use This Guide

This manual contains three chapters and five appendixes. Chapters 1, 2, and 3 provide introductory material and general instructions for the inexperienced user. The information is presented in the following order:

- Chapter 1 introduces the TE software, describing the terminal's screen display and keyboard features that result from emulating the IBM product. Chapter 1 also introduces basic IBM SNA terms.
- Chapter 2 describes how to start, use, and exit from the TE.

- Chapter 3 defines TE keyboard functions and illustrates the key or key combinations you must press to access those functions.

Appendixes A through E contain reference material for the experienced user as well as the person responsible for software management.

- Appendix A describes TE status messages and appropriate user responses.
- Appendix B describes visible attribute mode.
- Appendix C describes how to set up Digital terminals to use the TE software.
- Appendix D provides instructions for redefining your keyboard layout.
- Appendix E lists the 3270 features supported by the TE.

If you are unfamiliar with the TE, you may wish to read through Chapters 1, 2, and 3 before using the product.

If you are an experienced user, you may only need to refer to Chapters 2 and 3 to review any new qualifiers or features.

If you are responsible for software management, refer to the appendixes for information.

Associated Documents

The following documents make up the manual set for TE:

- *Digital SNA 3270 Terminal Emulator for OpenVMS Installation*
- *Digital SNA 3270 Terminal Emulator for OpenVMS Use*

You should have the following Digital documents available for reference when you use the TE:

- *Digital SNA Domain Gateway Guide to IBM Resource Definition*
- *Digital SNA Domain Gateway Installation*
- *Digital SNA Domain Gateway Management*
- *Digital SNA Gateway-CT Installation Guide*
- *Digital SNA Gateway Problem Determination Guide*
- *Digital SNA Gateway-CT Problem Solving (OpenVMS & ULTRIX)*
- *Digital SNA Gateway-CT Guide to IBM Parameters*
- *Digital SNA Gateway-CT Management (OpenVMS)*
- *Digital SNA Gateway-ST Installation Guide*

- *Digital SNA Gateway-ST Guide to IBM Parameters*
- *Digital SNA Gateway-ST Problem Solving (OpenVMS)*
- *Digital SNA OpenVMS Gateway Management Guide*
- *Digital SNA Peer Server Installation and Configuration*
- *Digital SNA Peer Server Management*
- *Digital SNA Peer Server Network Control Language Reference*
- *Digital SNA Peer Server Guide to IBM Resource Definition*

See the *Digital SNA Introduction* for an overview of interconnect concepts.

Associated IBM Documents

You should have the following IBM documents for reference.

- *ACF for VTAM Version 2, Messages and Codes* (IBM Order No. SC27-0614)
- *IBM 3270 Information Display System and 3274 Control Unit Description and Programmer's Guide* (IBM Order No. GA23-0061)
- *IBM 3287 Printer Models 1 and 2 Component Description* (IBM Order No. GA27-3153)
- *MVS/TSO/VTAM Data Set Print Program Description/Operations Manual* (IBM Order No. SB21-2070)
- *IBM 3270 Information Display System*, Order No. GA23-0060
- *IBM 3270 Information Display System Data Stream Programmer's Reference*, Order No. GA23-0059
- *Systems Network Architecture—Introduction to Sessions Between Logical Units*, Order No. GC20-1869
- *Systems Network Architecture—Sessions Between Logical Units*, Order No. GC20-1868
- *IBM 3270 Information Display System: Operator's Guide*, Order No. GA27-2742

Graphic Conventions

The following graphic conventions are used throughout this manual:

Convention	Meaning
UPPERCASE LETTERS	Uppercase letters in a command line represent the commands that you must enter.
lowercase italics	Italics in a command indicate that you must supply a precise value.
`Special type`	This special type indicates an example of system output or user input.
Ctrl/*x*	The expression Ctrl/*x* refers to a control character keying sequence. When you see this symbol, press the key labeled Ctrl and the appropriate character key simultaneously.
KP *x*	The expression KP *x* refers to a key on the application keypad. When you see this notation, press the appropriate key on the application keypad.
EXT + *x*	The expression EXT + *x* refers to a special combination of two keys. When you see this notation, first press the EXT key (KP .), then press the appropriate character key.
[]	Brackets enclose values that either are separated by a vertical bar or listed vertically.
|	Vertical bar indicates that you must choose between the values separated by the bar. Do not type the vertical bar in the command line.
Return	Unless otherwise specified, every command line is terminated by pressing the Return key.

Terminology

Interconnect System	Refers to the Digital SNA Gateway-ST, the Digital SNA Gateway-CT, the Digital SNA Domain Gateway, the Digital SNA Peer Server, or the OpenVMS/SNA (OpenVMS VAX Version 6.1 only).
Interconnect Products	Refers to the Digital SNA Gateway-ST, the Digital SNA Gateway-CT, the Digital SNA Domain Gateway, the Digital SNA Peer Server, the OpenVMS/SNA (OpenVMS VAX Version 6.1 only), and the Digital SNA 3270 Terminal Emulator for OpenVMS.
Interconnect Manager	Refers to the person responsible for the installation and management of an interconnect product.

Acronyms

The following acronyms appear throughout this manual:

ACF/NCP	Advanced Communications Function/Network Control Program (also referred to as IBM's NCP)
ACF/VTAM	Advanced Communications Function/Virtual Telecommunications Access Method (also referred to as VTAM)
CICS/VS	Customer Information Control System/Virtual Storage (also referred to as CICS)
LU	Logical unit
LU2	Logical unit type 2
PLU	Primary logical unit
PU	Physical unit
SLU	Secondary logical unit
SNA	IBM's Systems Network Architecture
SSCP	System services control point
SPR	Software Performance Report
TE	Digital SNA OpenVMS 3270 Terminal Emulator software
TSO	IBM's Time Sharing Option
VTAM	Virtual Telecommunications Access Method

1
Introduction

The Digital SNA 3270 Terminal Emulator (TE) for OpenVMS lets Digital video terminal users access application programs on an IBM SNA computer system through one of the following Digital interconnect systems:

- Digital SNA Gateway-CT
- Digital SNA Gateway-ST
- OpenVMS/SNA (OpenVMS VAX Version 6.1 only)
- Digital SNA Domain Gateway-CT
- Digital SNA Domain Gateway-ST
- Digital SNA Peer Server

These interconnect systems provide the necessary protocol translation for system-to-system communication. The TE enables a Digital video terminal to emulate a remote 3270 Information Display System (IDS). The TE software operates on Digital computer systems that have access to a node that is running the Digital SNA Gateway software.

1.1 Digital SNA 3270 Terminal Emulator Description

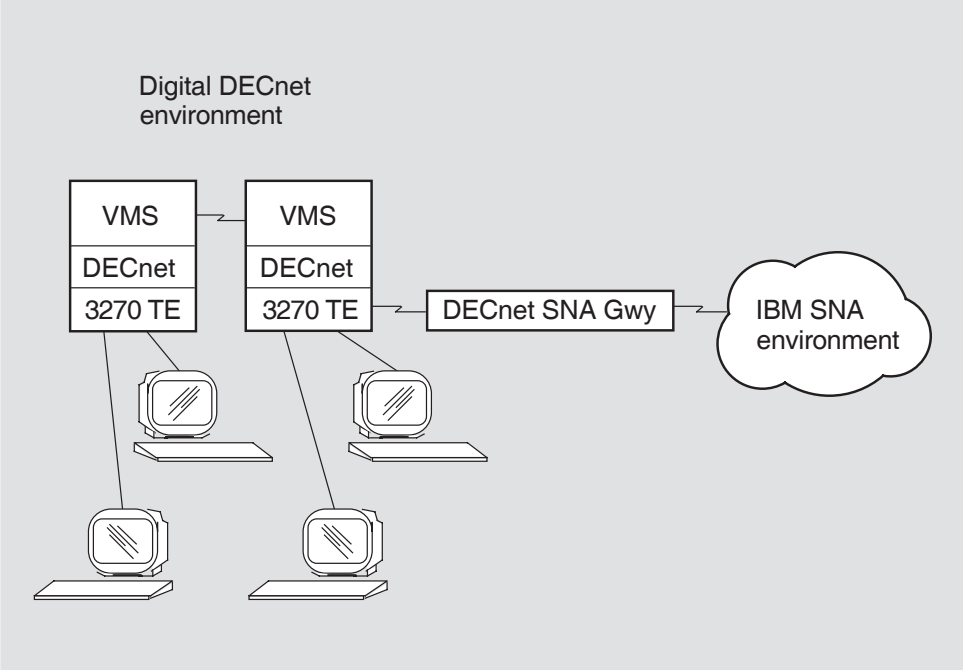
The 3270 Terminal Emulator lets a single terminal access both IBM and Digital computer systems. The Digital system runs the TE and emulates an IBM Information Display System terminal. Digital system users can use the TE to accomplish tasks that require access to an IBM computer system.

Figure 1–1 shows Digital terminals linked to a DECnet node in the DECnet environment. Note that this DECnet environment could also be TCP/IP. Notice that the terminal user has access to both DECnet and the Gateway. Users can interact with other systems in the Digital network through the DECnet link. Conversely, users can interactively communicate with IBM systems in the SNA network through the Digital SNA Gateway link.

Note

The TCP/IP transport cannot be used with the Digital SNA Gateway-CT or with the Digital SNA Gateway-ST.

Figure 1–1 3270 Terminal Emulator Environment



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In this environment, a terminal user connected to an OpenVMS system can use the TE to access an IBM application. The Digital system manager installs the TE on the OpenVMS node according to procedures documented in the manual *Digital SNA 3270 Terminal Emulator for OpenVMS Installation*. Once you install the TE, you can use it by issuing a single command.

1.2 The 3270 Terminal Emulator Keyboard

The TE software alters your terminal's keyboard functions by assigning the IBM 3270 IDS functions to the keys on your keyboard. This provides a different set of functions for some keys on your terminal and defines the cursor and edit input functions that let you communicate with an IBM application program.

Figure 1–2 illustrates the TE key functions as they correspond to the VT200 keyboard. Figure 1–3 illustrates the TE key functions as they correspond to the VT100 keyboard. Compare your keyboard with the appropriate illustration.

You can change the way the TE functions correspond to the keys on your VT100, VT200 or VT300-series keyboard by redefining keys. Refer to Appendix D for detailed instructions on how to customize the 3270 layout to fit your specific requirements.

Figure 1–2 VT200 Keyboard Highlighting the 3270 Keys

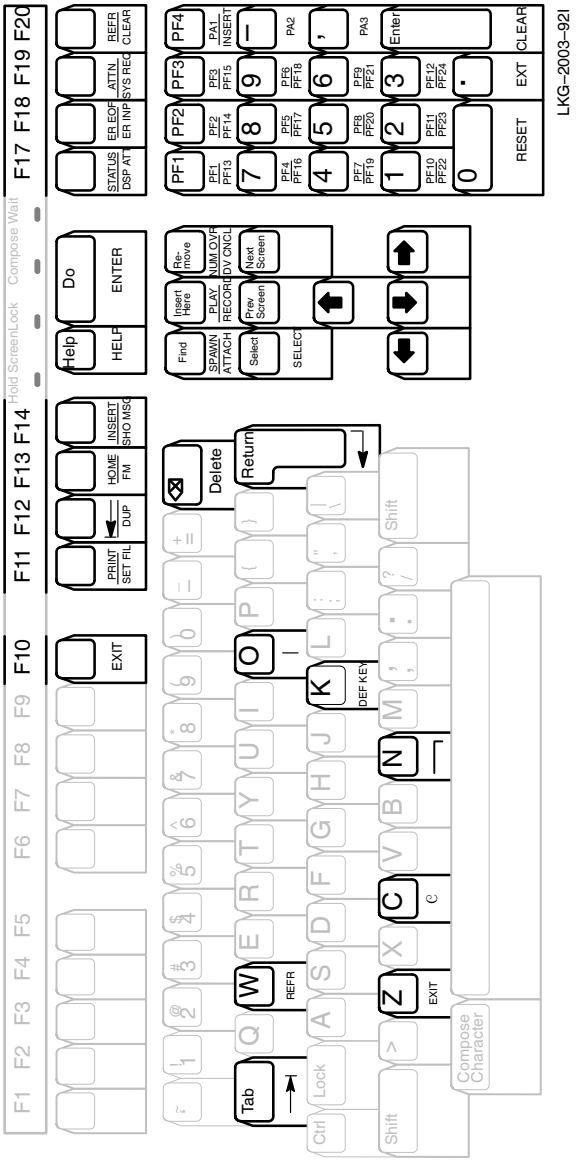
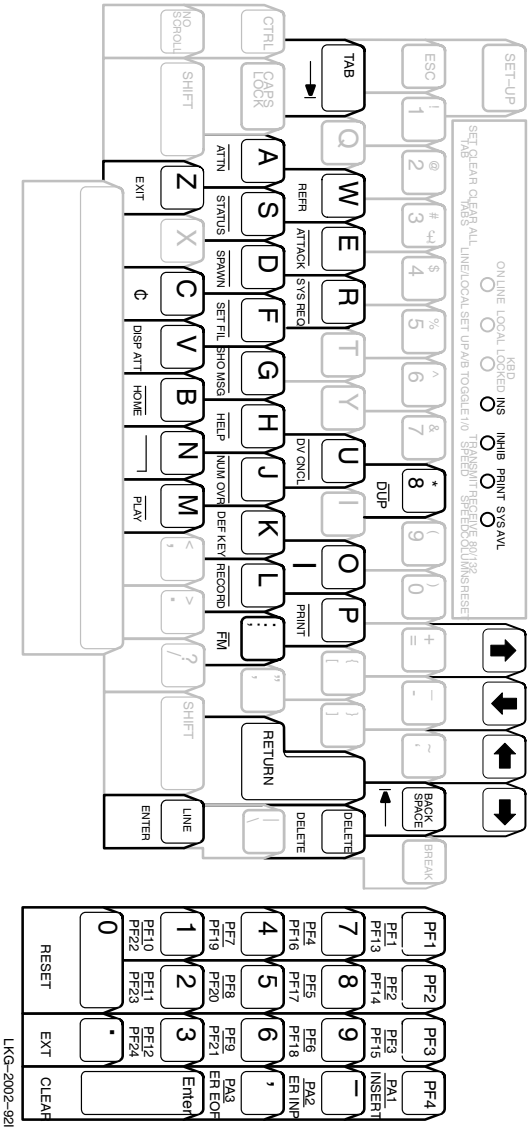


Figure 1–3 VT100 Keyboard Highlighting the 3270 Keys



IMPORTANT

All illustrations, instructions, and TE key function descriptions in this manual refer to the keyboard layout as provided by the TE for VT200- or VT300-series keyboards.

You access TE functions by pressing a key or combination of keys on your keyboard that correspond to a 3270 IDS function. Some TE functions are accessed using an EXT key sequence. This means that you execute the function by pressing the EXT key (KP.) and the appropriate function or character key. In text, this action is represented by the notation EXT + *x*, where *x* represents the function or character key. Some functions are accessed by pressing the Ctrl key and an appropriate second key simultaneously. The notation Ctrl/*x* represents the action, where *x* represents the second key.

Table 1–1 lists the 3270 key functions and the corresponding VT200 and VT100 key or key combination you use to invoke each function. Detailed descriptions of the key functions are presented in alphabetical order in Chapter 3.

Table 1–1 3270 Terminal Emulator Key Functions

To Implement This Function	Press This VT200 Key or Key Combination	Press This VT100 Key or Key Combination
ATTACH	EXT + Find	EXT + E
ATTN	F19	EXT + A
| ← (back tab)	F12	BACKSPACE
¢(cent)	EXT + C	EXT + C
CLEAR	EXT + F20	EXT + ENTER
DEF KEY	Ctrl/K	Ctrl/K
DELETE	<X]	DELETE
DSP ATT	EXT + F17	Ctrl/V
DUP	EXT + F12	EXT + *
DV CNCL	EXT + Remove	EXT + U
ENTER	Do or Enter	LINE FEED or ENTER
ER EOF	F18	EXT + KP,
ER INP	EXT + F18	EXT + KP-

(continued on next page)

Table 1–1 (Cont.) 3270 Terminal Emulator Key Functions

To Implement This Function	Press This VT200 Key or Key Combination	Press This VT100 Key or Key Combination
EXIT	F10 or Ctrl/Z	Ctrl/Z
EXT	KP.	KP.
FM	EXT + F13	EXT + ;
HELP	HELP	EXT + H
HOME	F13	EXT + B
HORIZONTAL CONTROL	← or →	← or →
INSERT	F14	EXT + PF4
¬ (Logical NOT)	EXT + N	EXT + N
| (Logical OR)	EXT + O	EXT + O
↩ (new line)	Return	RETURN
NUM OVR	Remove	EXT + J
PA1	PF4	PF4
PA2	KP-	KP-
PA3	KP,	KP,
PF1	PF1	PF1
PF2	PF2	PF2
PF3	PF3	PF3
PF4	KP7	KP7
PF5	KP8	KP8
PF6	KP9	KP9
PF7	KP4	KP4
PF8	KP5	KP5
PF9	KP6	KP6
PF10	KP1	KP1
PF11	KP2	KP2
PF12	KP3	KP3
PF13	EXT + PF1	EXT + PF1
PF14	EXT + PF2	EXT + PF2

(continued on next page)

Table 1–1 (Cont.) 3270 Terminal Emulator Key Functions

To Implement This Function	Press This VT200 Key or Key Combination	Press This VT100 Key or Key Combination
PF15	EXT + PF3	EXT + PF3
PF16	EXT + KP7	EXT + KP7
PF17	EXT + KP8	EXT + KP8
PF18	EXT + KP9	EXT + KP9
PF19	EXT + KP4	EXT + KP4
PF20	EXT + KP5	EXT + KP5
PF21	EXT + KP6	EXT + KP6
PF22	EXT + KP1	EXT + KP1
PF23	EXT + KP2	EXT + KP2
PF24	EXT + KP3	EXT + KP3
PLAY	Insert Here	EXT + M
PRINT	F11	EXT + P
RECORD	EXT + Insert Here	EXT + L
REFR	F20 or Ctrl/W	Ctrl/W
RESET	KP0	KP0
SELECT	Select	EXT + K
SET FIL	EXT + F11	EXT + F or Ctrl/F
SHO MSG	EXT + F14	EXT + G
SPAWN	Find	EXT + D
STATUS	F17	EXT + S
SYS REQ	EXT + F19	EXT + R
→ | (tab)	Tab	TAB
VERTICAL CONTROL	↑ or ↓	↑ or ↓

To use the rest of the TE functions, use the keyboard as you would normally use a typewriter: either press a function key or press the left or right SHIFT and the function key at the same time. The emulator uses and accepts both uppercase and lowercase letters. Also, the autorepeat keys still function in the emulator mode as they do for the terminal you are using. Refer to the user's guide for your terminal to determine which keys you can use as autorepeat keys.

1.3 The 3270 Terminal Emulator Screen

Because the TE emulates a block mode terminal (the IBM 3270 Information Display System terminal), the TE produces a screen display that may differ from the conventional Digital terminal screen display. When the TE software is running, your Digital terminal does not process information line by line. Instead, it requests and processes data one screen (or one block) at a time. This is known as block-mode operation. This section describes the characteristics of a block mode terminal. It also provides general terms and concepts you should know to use your terminal's functions.

The TE screen display can be either formatted or unformatted. An unformatted screen has no fields, whereas a formatted screen has one or more fields in it. (A field is a group of characters, blanks, or nulls that are treated as a unit by the application program. A field is preceded by an attribute character that indicates the type of display and the type of information needed by the field.) The type of display that appears on the screen depends on the application program running on the IBM host. Before you use an application, see the appropriate IBM documentation for more information about the screen display the application uses.

1.3.1 Unformatted Screens

An unformatted screen has no fields. There are no labels, headers, or titles that indicate the type of data you must enter. Data entry onto an unformatted screen depends on the application program you are using. Your IBM application program user's guide gives you instructions for using unformatted screens. Figure 1–4 illustrates an unformatted screen.

1.3.2 Formatted Screens

A formatted screen resembles a printed form and contains two types of fields: protected and unprotected. Protected fields are headers or labels and unprotected fields are blank fields.

Because you are more likely to encounter formatted screen displays than unformatted screen displays, the following paragraphs offer some additional information on fields.

- **Protected fields.** The protected fields of a formatted screen are analogous to the labeled boxes on a blank form that ask you for information. You cannot alter or add to the text in a protected field. (If you try to enter data into a protected field, the keyboard locks, the terminal bell rings, and the

Figure 1–4 Unformatted Screen Display

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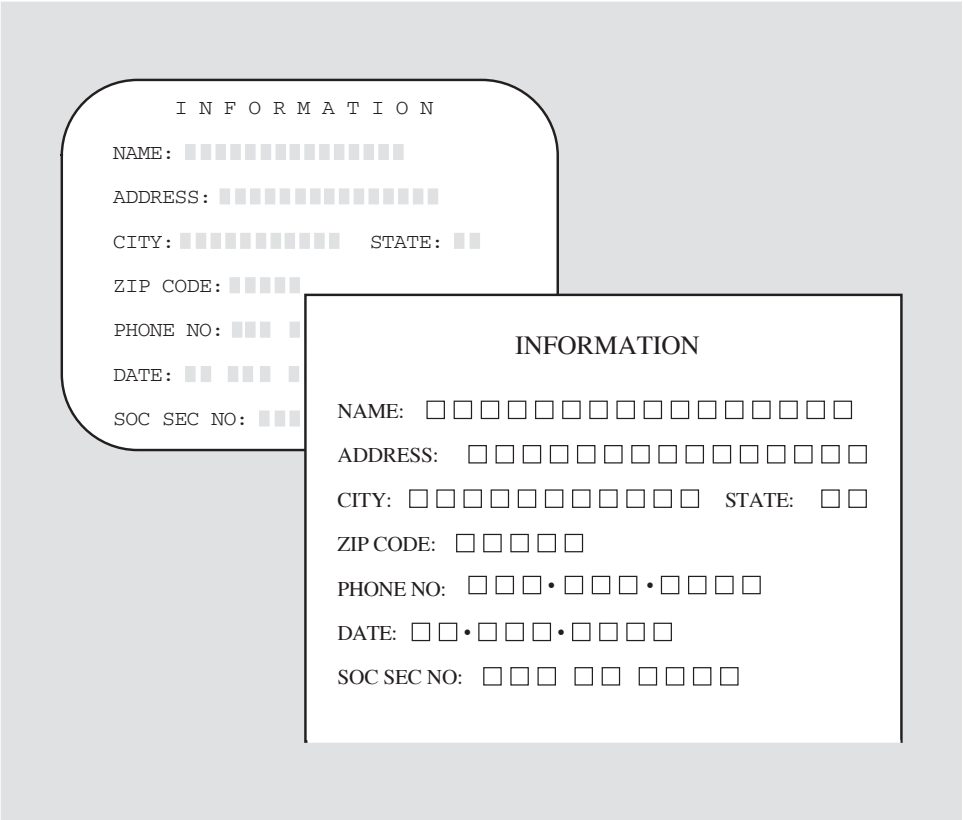
word Inhib appears on the status line. To unlock the keyboard so that you can continue, press RESET (KP0) and resume entering data.)

- **Unprotected fields.** Unprotected fields are analogous to the blank spaces on a form into which you enter the required data. They can contain nulls (spaces devoid of characters) and characters (including blanks). When an application program displays a formatted screen, the program normally places the cursor at the first empty position in the unprotected field. You then type data into this field, continuing until the field is full, or until you press → | (tab) or RETURN. Either action will cause the cursor to move to the start of the next unprotected field.

Figure 1–5 illustrates a formatted screen with 16 fields. Of the 16 fields on this form, 8 are protected and 8 are unprotected. In this figure the protected fields are as follows: NAME:, ADDRESS:, CITY:, STATE:, ZIP CODE:, PHONE NO:, DATE:, and SOC SEC NO:. You cannot alter or modify these or any other protected fields. The unprotected fields follow the protected fields. They are

represented by the blank spaces on the form. You must type the requested data into these blank fields.

Figure 1–5 A Sample Formatted Screen



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1.3.3 Display Types

The IBM application program controls the intensity of the fields displayed in a formatted screen. Three types of field displays are possible:

- High-intensity display
- Normal-intensity display
- Nondisplay

Refer to your IBM application program user's guide for a description of the field displays you can expect to see on your screen.

1.3.4 Allowed Data Types

Each unprotected field on a TE screen accepts only a particular type of data. Some fields accept any type of character while others accept only numeric characters. Numeric characters are characters 0-9, period (.), minus sign (−), comma (,), and DUP. In the blank form, for example, the field following NAME: may accept alphanumeric data, while the field following SOC SEC NO: may accept only numeric data. Your IBM application program user's guide describes the types of data accepted for each field.

If you try to enter a nonnumeric character into a numeric field, the keyboard locks, the terminal bell rings, and the word Inhib appears on the status line. To unlock the keyboard, press RESET (KP0) and begin again. To enter nonnumeric characters in a numeric field, use the NUM OVR (numeric lock override) function.

1.3.5 Large Screen Displays

The TE emulates IBM terminals that display screen sizes larger than the 24-row by 80-column physical terminal. When the IBM application sends a display size larger than the physical terminal, only a portion of the screen will be visible at a given time. The TE compensates for this limitation by adjusting the display so that the cursor is always visible on the screen. If the screen size is greater than 80 columns but less than 132 columns wide, the TE changes the display to 132-column mode. When the display is only partially visible, information displayed on the status line identifies the row and column range visible on the screen.

The keys that control cursor movement (arrow keys, Home, tab, back tab, and new line) enable you to position the text on the screen and move through the display. With a typical IBM display, these keys cause the cursor to wrap to the opposite side when the cursor reaches the edge of a display. The TE causes these keys to behave differently to prevent accidental screen wrapping. When you reach the edge of a display, you must use the key sequence EXT + Cursor Key to wrap over to the opposite edge of the screen. For example, if you use the down arrow key (↓) to move the cursor toward the bottom of the screen, the display will scroll up, revealing the previously hidden text. When you reach the bottom of the screen, press EXT + ↓ to wrap over the edge of the screen. The cursor will now be positioned at the top of your screen.

1.4 Understanding Basic IBM SNA Terms

IBM's terminology differs from Digital's when describing relationships between network components. The following definitions introduce IBM SNA terminology.

Sessions. An IBM system perceives all communications with DECnet or TCP/IP systems in terms of sessions. A session is a logical connection between two software components. In the case of the TE, a session begins when the TE successfully connects to an IBM application. A session is similar to a DECnet or TCP/IP logical link.

System services control point. The software component that controls and manages a network domain is a System Services Control Point (SSCP). The functions of an SSCP include bringing up the network and establishing sessions. In activating the network, the SSCP establishes a session with each logical unit and physical unit in its domain.

Logical units. Software components that provide users with access to the network are logical units (LUs). For example, when the TE software on the DECnet- or TCP/IP- OpenVMS node communicates with an application program running on an IBM node, both programs are referred to as LUs.

When an LU-LU session is first established, each LU is assigned the status of either primary logical unit (PLU) or secondary logical unit (SLU). PLU status is assigned to the logical unit that controls the session. SLU status is assigned to the logical unit not in control. During communications between the TE and IBM components, the TE is always the SLU; the logical unit on the IBM side of the communication link is always the PLU.

Physical units. Software components in the interconnect system that route messages for interconnected LUs and provide services for the IBM node are physical units (PUs).

With the Digital SNA OpenVMS software, each PU is assigned to a particular circuit. Each PU/circuit can transmit and receive information from terminals running the TE or other Digital SNA OpenVMS software. To differentiate between these terminals, each one must have a unique LU address.

LU addresses. A list of LU addresses is maintained on the IBM system to identify LUs with which it can communicate. For example, LU addresses 4-9 might be assigned to CICS terminals.

For detailed SNA discussions, see the following IBM manuals:

- *Systems Network Architecture Concepts and Products*, Order No. GC30-3072
- *Systems Network Architecture Technical Overview*, Order No. GC30-3073

2
Using the Terminal Emulator

This chapter describes how to use the Digital SNA 3270 Terminal Emulator (TE) for OpenVMS. If you are a new user, you may want to read this whole chapter. If you are a more experienced user, you may only need to review the startup and shutdown procedures. Note that in this chapter the term Gateway refers to the Digital SNA Gateway.

This chapter covers the following topics on the use of the 3270 Terminal Emulator:

- Setting up your terminal
- Installing the TE software
- Starting the TE
- Working with the TE
- Recording your work sessions
- Ending a TE session

2.1 Setting Up Your Terminal

Before you can invoke the TE, you must set up your terminal. How you set it up depends on the type of terminal you are using. These details are described in Appendix C along with other terminal-dependent characteristics.

2.2 Installing the TE

Your system manager installs the TE software on the OpenVMS system by following the steps outlined in the manual *Digital SNA 3270 Terminal Emulator for OpenVMS Installation*. Your IBM system programmer should refer to the *Digital SNA Guide to IBM Parameters* when defining the IBM SNA environment. That manual provides the VTAM macro definition values that must be specified to enable communication with the TE.

2.3 Starting the TE

You only need one command line (see Section 2.3.1) to start the TE and establish a session with the IBM host. The command line indicates the Digital SNA Gateway you want to use and specifies the qualifiers you need to initiate a session with an IBM application.

IMPORTANT

Use the /WAIT qualifier on the SET HOST command line if you want to start your TE session on the IBM system with an Unformatted System Services (USS) screen.

Your system manager will provide you with the information suitable for your purposes. Use the form in Figure 2–1 to record the values you use most often. Note that DECnet can also be TCP/IP.

Figure 2–1 Form for Access Name Information

ACCESS NAME INFORMATION

DECnet SNA
VMS 3270 Terminal Emulator

FILL IN THE INFORMATION YOU REQUIRE.
USE MORE THAN ONE FORM IF NECESSARY

DATE: _____

GATEWAY NODE NAME	DECnet HOST NODE NAME
GATEWAY NODE ADDRESS	DECnet HOST NODE ADDRESS

ACCESS NAME	APPLICATION NAME	GATEWAY CIRCUIT ID	SESSION ADDRESS LIST	LOGON MODE NAME	DATA

Application name. Application name specifies the IBM application you want to communicate with. It is defined in the VTAM APPL statement.

Gateway circuit ID. The circuit ID is the DECnet name of the physical link from the Gateway to IBM.

Session address list. Values for the session address list are determined by the values given in the LOCADDR operand on the NCP LU macro for logical units on nonswitched lines and on the VTAM LU macro for the logical units on switched lines.

Logon mode name. Logon mode name specifies the name of the logon mode table entry that contains the session protocol requested for communication between IBM and the Gateway. This value is chosen from the set of values specified for LOGMODE in the associated MODETAB operand on the VTAM LU macro.

Data. Data identifies user data to be sent to the IBM system as a part of the SNA INITS (initiate self) logon request.

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You must obtain the following information from your system manager:

- Name of the Gateway or the TCP/IP transport node
- Name specifying the IBM application program

Note

An access name is supplied with an /ACCESS_NAME qualifier and is similar to an OpenVMS logical name: It points to a table of values that define access characteristics. Access names are set up by the Gateway manager when installing the Gateway management software. (Figure 2–1 provides a form for recording access name information.) If you do not use an access name, you must specify values for the following qualifiers for PU Type 2 Gateways:

- /APPLICATION_NAME
- /PU and /SESSION_ADDRESS

Or, you must specify values for the following qualifiers for the Peer Server and Domain Gateways:

- /APPLICATION_NAME
- /LU

- Whether or not you need to specify /WAIT

2.3.1 Command Format

Invoke the TE by using OpenVMS Digital Command Language (DCL) conventions.

```
$ SET HOST/SNA node-spec[qualifier(s)]
```

or

```
$ SNATERM node-spec[qualifier(s)]
```

where

node-spec	is a DECnet or TCP/IP parameter that identifies the Gateway to use. The *node-spec* is either the node name or the node address of the Gateway.

qualifier(s) is an optional qualifier. (Note: The /SNA qualifier must be specified on the command line before any other qualifier.) You can abbreviate DCL qualifiers to the first four letters.

Prompt

_Node: *node-spec*[*qualifier(s)*]

Table 2–1 shows the valid command qualifiers available to you.

Table 2–1 SET HOST/SNA or SNATERM Command Qualifiers

Command Qualifier	Default Value
/ACCESS_NAME=*access-name*	None
/APPLICATION_NAME=*application-name*	None
/AUTHORIZATION_PASSWORD=*authorization-password*	None
/CHARACTER_SET=*file-spec*	ORIGINAL
/LU=*lu-name*	None
/PU=*pu-name*	None
/DATA=*data*	None
/KEY_DEFINITIONS=*file-spec*	None
/LOGON_MODE=*mode-entry*	None
/NATIONAL_CHARACTERS=*character-set*	MULTINATIONAL (8-bit) US_ASCII (7-bit)
/PRINTER=*file-spec*	SNATPRINT.LIS
/SESSION_ADDRESS=*session-address*	None
/STATUS=[ON | OFF | AUTOMATIC]	AUTOMATIC
/WAIT	NOWAIT

Command Qualifiers

Command qualifiers may be specified anywhere on the command line following the command or the *node-spec* information. The following are detailed descriptions of the SET HOST/SNA or the SNATERM command qualifiers.

/ACCESS_NAME=*access-name*

Identifies the name of the entry in the Gateway access name table to use when connecting to the SNA network. Access names are set up on the DECnet node or TCP/IP host defined as the host node for the Gateway (see the appropriate management guide). *access-name* is an alphanumeric string consisting of 1 to

8 characters chosen from the set of A-Z, 0-9, period (.), dollar sign ($), at sign (@), and pound sign (#).

An access name can identify values for the following qualifiers:

/APPLICATION_NAME
/DATA
/KEY_DEFINITION
/LOGON_MODE
/NATIONAL_CHARACTERS
/LU
/PU
/SESSION_ADDRESS
/STATUS

If you use other qualifiers along with an access name, the values for those other qualifiers override any existing values found in the access name table you specified.

Example:

/ACCESS_NAME=PAYROLL

/APPLICATION_NAME=*application-name*
Identifies the IBM application that will be the primary logical unit (PLU). The value for /APPLICATION_NAME is given to the Gateway manager by the IBM VTAM programmer and is defined in the VTAM APPL statement. *application-name* is an alphanumeric string consisting of 1 to 8 characters from the set of A-Z, 0-9, period (.), dollar sign ($), at sign (@), and pound sign (#).

Example:

/APPLICATION_NAME=CICS

/AUTHORIZATION_PASSWORD=*authorization-password*
Used by the Gateway manager to control access to logical units (LUs). Ask your system manager for the value of *authorization-password*, if you need to specify this qualifier. *authorization-password* is an alphanumeric string consisting of up to 32 characters from the set of A-Z, 0-9, period (.), dollar sign ($), at sign (@), and pound sign (#).

Example:

/AUTHORIZATION_PASSWORD=645312

/CHARACTER_SET=[*file-spec*]

/CHARACTER_SET=ORIGINAL
Identifies the name of the file containing the EBCDIC-to-DMCS (Digital Multinational Character Set) translation table and the DMCS-to-EBCDIC translation table.

You must specify a translation table that translates the DMCS characters you generate to the EBCDIC character set that your IBM application uses. The translation table then translates the EBCDIC character generated by the IBM application back into the appropriate DMCS character.

If you do not specify /CHARACTER_SET, the TE software uses the translation table named by the default file SYS$LIBRARY:SNATEDEF.TBL, if your system manager has created it.

If you do not specify this qualifier and SNATEDEF.TBL does not exist, the TE software uses its own translation table, which maps the US EBCDIC set to the equivalent DMCS characters. You can force the TE software to use its built-in translation table by specifying the following qualifier in the command line:

/CHARACTER_SET=ORIGINAL

The default value ORIGINAL causes the TE software to use its built-in translation table even if the SNATEDEF.TBL file is present.

Note

Do not abbreviate the word ORIGINAL.

If none of these translation tables meets your needs, the VAX system manager can produce a translation table for you by using the information provided in the *Digital SNA Gateway Management Guide*.

Example:

/CHARACTER_SET=IBMFRENCH.TBL

/DATA=*data*
Identifies user data to be sent to the IBM system as part of the SNA INIT-SELF (initiate self) log-on request. *data* is a string of ASCII characters up to 128 characters long. Quotation marks are necessary to preserve spaces, tabs, or lowercase letters in the string.

Some IBM subsystems use values for the /DATA qualifier at TE startup time to speed the log-in process. TE users who want to connect to TSO can use the /DATA qualifier, if allowed, to provide specific information. For TSO/VTAM, the value for /DATA must use the following format:

/DATA=*user-id*

Example:

/DATA=CBLISS

/KEY_DEFINITIONS=*file-spec*
Identifies the keyboard definition file used to redefine the way the 3270 key functions correspond to the keyboard layout. This file holds the definitions for alternative keyboard mapping. The value for *file-spec* is the file name of the definition file. You can specify a file you create or use the numeric keypad definition file SNATE$NUMPAD.FIL found in SYS$EXAMPLES:.

If the /KEY_DEFINITIONS qualifier is not specified, the TE will use the default keyboard layout. See Appendix D for instructions on creating and using a keyboard definition file.

Example:

/KEY_DEFINITIONS=NUM_KEYPAD.COM

/LOGON_MODE=*mode-entry*
Identifies the name of an entry in the logon mode table defined by the host IBM system. This entry specifies a selected set of SNA protocol options. The value for *mode-entry* is given to the Gateway manager by the IBM VTAM programmer and is defined in the VTAM MODEENT macro. *mode-entry* is an alphanumeric string consisting of 1 to 8 characters chosen from the set of A-Z, 0-9, period (.), dollar sign ($), at sign (@), and pound sign (#).

Example:

/LOGON_MODE=TYPLU2

/LU=*lu-name*
Identifies the name of a logical unit defined in a Digital SNA Domain Gateway or Digital SNA Peer Server. This qualifier supersedes the /PU and /SESSION_ADDRESS qualifiers for these types of gateways. If this qualifier is used when connecting through a Digital SNA Gateway (the PU Type 2 gateways), this qualifier is interpreted as if it were the /PU qualifier.

Note

This qualifier can only be used with the SNATERM command. It is not supported with the SET HOST/SNA command. This qualifier cannot be used in conjunction with either the /PU or /SESSION_ADDRESS qualifier.

Example:

/LU=H0104002

/NATIONAL_CHARACTERS=*character-set*

Identifies to the TE software the name of the national replacement character set (NRCS), for which your Digital terminal is configured. The value for *character-set* must be one of the following:

Canadian
DUtch
FInnish
FRench
German
Italian
Japanese
Multinational
Norwegian
SPanish
SWEdish
SWIss
UK_ASCII
US_ASCII

The default value is MULTINATIONAL for 8-bit terminals and US_ASCII for 7-bit terminals.

Example:

/NATIONAL_CHARACTERS=GERMAN

/PRINTER=*file-spec*

/PRINTER=SNATPRINT.LIS

Identifies the name of a file that records the contents of the screen when the PRINT function key is pressed. *file-spec* is a file name formatted according to the OpenVMS conventions for naming files described in the *Introduction to OpenVMS*.

It is recommended that you use the /PRINTER qualifier to direct printer output to a disk file or to a spooled printer only. Using this qualifier to direct output to a physical printer or to a slow terminal may cause your terminal to hang when you press PRINT, particularly if the output device has dropped off line.

If you do not specify this qualifier, the default file name that records screen contents is SNATPRINT.LIS. Also, if you do not specify a file type, the default is .LIS.

Note

The file name you specify with /PRINTER or that is implied when you take the default value can be changed when the TE software is running. To supply a new file name, use the SET FIL function.

Examples:

/PRINTER=LPA0:
/PRINTER=WORKRCORD.LIS

/PU=*pu-name*

Identifies the name of a particular physical unit from the Gateway to the IBM host. Ask the Gateway manager for the name of the appropriate PU to use as the value for /PU. This qualifier is superseded by the /LU qualifier when connecting to a SNA Domain Gateway or SNA Peer Server. If this qualifier is specified when connecting to a SNA Domain Gateway or SNA Peer Server, it will be interpreted as if it were the /LU qualifier. This qualifier cannot be specified with the /LU qualifier.

Example:

/PU=SNA-0

/SESSION_ADDRESS=*session-address*

Identifies the IBM session address to use to communicate with the IBM host. The value for *session-address* is given to the Gateway manager by the IBM systems programmer and is defined by the LOCADDR operand on either the ACF/NCP LU macro or the VTAM LU macro. *session-address* is a decimal number from 1 through 255. This qualifier is superseded by the /LU qualifier when connecting to a SNA Domain Gateway or SNA Peer Server. This qualifier cannot be specified with the /LU qualifier.

Example:

/SESSION_ADDRESS=42

/STATUS=[ON | OFF | AUTOMATIC]

/STATUS=AUTOMATIC

Identifies how the status line operates at TE startup. /STATUS= AUTOMATIC is the default. AUTOMATIC causes the status line to be displayed at TE startup and during the session. The status line is automatically disabled if the IBM application writes data to the area under the status line or if the user types in that space. The status line is automatically restored when the data

is erased. You can use the STATUS (F17) key to change between the ON and OFF states.

ON causes the status line to be displayed at TE startup and during the session. Use the STATUS (F17) key to shift between the ON and OFF states.

OFF suppresses the status line display at TE startup. Use the STATUS (F17) key to change between the ON and OFF states.

Example:

/STATUS=OFF

/WAIT
/NOWAIT
Causes the TE to wait for an IBM application (PLU) to initiate a session. It does not have a value as the other qualifiers do. When you specify /WAIT, you cannot specify values for the following qualifiers:

/APPLICATION_NAME
/DATA
/LOGON_MODE

/NOWAIT is the default. /NOWAIT indicates that this session starts with the TE sending an INIT-SELF (initiate self) command to the IBM host requesting a session for the specified application (PLU). If you specify /NOWAIT on the command line, you must specify values for the /APPLICATION_NAME and /PU qualifiers (explicitly or as part of an access name).

Note

When used with the VT3xx, unless status is turned off by using /STATUS=OFF, the TE forces the status line to "host-writable" during the session and restores it to "indicator" setting, upon exiting. Thus, if you have the status display set to either "host-writable" or "none", after using the TE, your status line will be set to "indicator".

2.3.2 Required Qualifiers for SET HOST/SNA or SNATERM Commands

To start up a session with an IBM application using the TE, you must specify a PU or LU, either with the /PU or /LU qualifier or as part of an access name. If you do not specify /WAIT on the command line, or if you do specify /NOWAIT (explicitly or by default), you must also specify an application name with the /APPLICATION_NAME qualifier, or as part of an access name. See the examples in the following section.

2.3.3 Command Examples

This section provides sample startup commands.

Example 1:

```
$ SET HOST/SNA LIVY/APPLICATION_NAME=CICS/PU=SNA-0/SESSION_ADDR=9
```

or

```
$ SNATERM LIVY/APPLICATION_NAME=CICS/PU=SNA-0/SESS=9
```

Either command connects your system through the Gateway node called LIVY to the IBM application called CICS using PU SNA-0.

Example 2:

```
$ SET HOST/SNA ORION/ACCESS_NAME=CICS22/PU=SNA-0/PRINTER=LPA0:
```

This command connects your system through the Gateway called ORION using the information supplied by the access name CICS22. The connection is made over PU SNA-0, however, since that PU is specified in addition to /ACCESS_ NAME. The qualifier PRINTER=LPA0: records the screen contents each time PRINT is pressed.

Example 3:

```
$ SNATERM ALACK/ACCESS_NAME=TSO/LU=T21E001
```

This command connects your system through the Gateway called ALACK using the information supplied by the access name TSO. The connection is made over LU services name T21E001.

Example 4:

```
$ SET HOST/SNA LIVY/APPLIC=CICS1/NATIONAL_CHARACTERS=FRENCH
```

or

```
$ SNATERM LIVY/APPLIC=CICS1/NATIONAL_CHARACTERS=FRENCH
```

This command connects your system through the Gateway called LIVY to the IBM application called CICS1. The /NATIONAL_CHARACTERS qualifier specifies that you are using the French NRCS.

Example 5:

```
$ SET HOST/SNA LIVY/PU=SNA-1/WAIT
```

or

```
$ SNATERM PEER1/LU=T12E1201/WAIT
```

This command causes the TE to wait for an IBM application to initiate the session. Note that the /APPLICATION_NAME qualifier is not allowed with /WAIT.

Example 6:

```
$ SET HOST/SNA 0/PU=SNA-0/APPLIC=CICS1/KEY_DEFINITION=NUM_KEYPAD.COM
```

This command connects your system through VMS/SNA to the IBM application CICS1 by way of PU SNA-0. The /KEY_DEFINITION qualifier specifies the keyboard definition file you have created to define an alternate layout for the numeric keypad.

Example 7:

```
$ SET HOST/SNA "FOO.BAR.COMPANY.COM:"/ACCESS=TSO
```

or

```
$ SNATERM "FOO:"/ACCESS=TSO
```

This command connects your system through the Gateway called FOO via TCP/IP transport using the information supplied by the access name TSO.

Example 8:

```
$ SET HOST/SNA "GATE1::"/PU=T12E1201/APPLICATION=CICS1/LOGON_MODE=TYLU2
```

or

```
$ SNATERM "GATE1::"/LU=T12E1201/APPLICATION=CICS1/LOGON_MODE=TYLU2
```

This command connects your system through the Gateway called GATE1 via DECnet transport to the IBM application CICS1 using LU services name T12E1201 and IBM logon mode table TYLU2.

2.4 Using the TE

Once you invoke the TE and establish a session, your screen clears and output (for example, the IBM target application's logo) appears on the screen. At this point, you should consult the user's guide for the IBM application program you are using. That guide provides the application-dependent information you will need, including:

- Additional command string (transaction identifier)
- Screen display (formatted or unformatted)
- Data type allowed in each field
- Instructions on what to type

2.4.1 Checking Your Session's Status

The status line indicator at the bottom of your screen enables you to monitor your session with the IBM system. When STATUS is enabled during a session, a reverse video strip displays status and informational messages.

2.4.1.1 Controlling the Status Line Display

You can control the way the status line operates by specifying the /STATUS qualifier in the TE startup command line as follows:

- The /STATUS=AUTOMATIC option causes the status line to display automatically at TE startup. AUTOMATIC is the default value for the /STATUS qualifier. The status line becomes suspended if the IBM application writes data to the last line on the screen or if the user enters data in that space. You can restore the status line by erasing data or by pressing the STATUS (F17) key. The status line is also restored when the IBM application clears the screen or when you begin to send data.
- The /STATUS=OFF option disables the status line at TE startup. You can enable and disable the status line display by pressing the STATUS (F17) key. In this mode, the status line conceals any output that occupies the last line on the screen. If this occurs, the word Hidden shows on the status display. To see the hidden data, you must disable the status line display.
- The /STATUS=ON option displays the status line at TE startup. You can enable and disable the status line thereafter by pressing the STATUS (F17) key. In this mode, the status line conceals any output that occupies the last line on the screen. If this occurs, the word Hidden shows on the status display. To see the hidden data, you must disable the status line display.

2.4.1.2 Understanding Status Line Messages

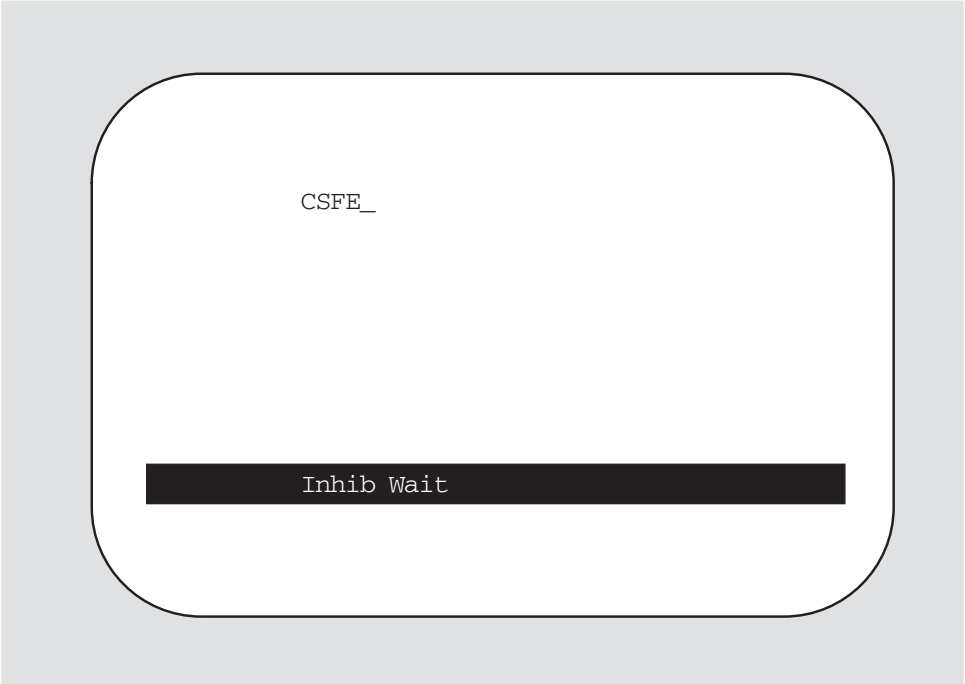
When enabled, the status line can display the following messages:

- Appl—you are in an LU-LU session.
- "Ext"—you have pressed the "Ext" function.
- Hidden—the status line is obscuring some data on the screen that you have not yet seen. This indicator is turned off when you enable the status display after viewing the hidden message.
- Insert—your terminal is in insert mode.
- Inhib—the software suspended input from your keyboard. This occurs in the following circumstances:
  - When you try to enter data into a protected field
  - When you try to enter the wrong type of data into a field

    - When the TE communicates with the IBM software after you press a key such as ENTER
- Msg—broadcast messages are being collected on a separate screen. This indicator is turned off when you use the SHO MSG function to view the messages.
- O—you are using the numeric lock override function. This indicator is turned off when you press the NUM OVR function again.
- P—your terminal is in play mode. A key sequence is being recalled using the PLAY key function.
- Print—the contents of your screen are being either appended to a file or copied out to the printer you specified at startup or through the SET FIL function. The indicator remains displayed for the duration of the process; the screen is refreshed when the process completes.
- R—your terminal is in record mode. A key sequence is being recorded using the RECORD key function.
- SSCP—you are in the SSCP-LU session.
- SysAvl—you are successfully communicating with the IBM system and can initiate transmission. SysAvl turns off while the TE transmits data to the IBM host.
- Wait—the IBM system is not available for input. If STATUS is enabled, Wait is displayed when SysAvl is off.

Figure 2–2 illustrates a typical status display.

Figure 2–2 Sample Status Display Line



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2.4.2 Reading Error Messages

The TE also displays error messages in a bordered display at the bottom of your screen. This error message display overwrites the status display and remains visible until you either press REFR (Ctrl/W) or invoke HELP, SET FIL, or DEF KEY. Refer to Appendix A for a list of messages you may receive from the TE.

2.4.3 Entering Data

When you are ready to enter data, type the necessary information into the fields indicated by the cursor.

Unformatted screens. If the IBM program displays an unformatted screen, use the FM key to separate entries. The guide to your IBM application program explains when and how to use this key.

Formatted screens. When the IBM program displays a formatted screen, enter and edit data in the unprotected fields only. When you fill an unprotected field with data, the cursor automatically skips to the start of the next protected or unprotected field, depending on the application. You can also move the cursor using the following TE key functions: ↑ (up arrow), ↓ (down arrow), → (right arrow), ← (left arrow), → | (tab), | ← (back tab), HOME, and ↩ (new line).

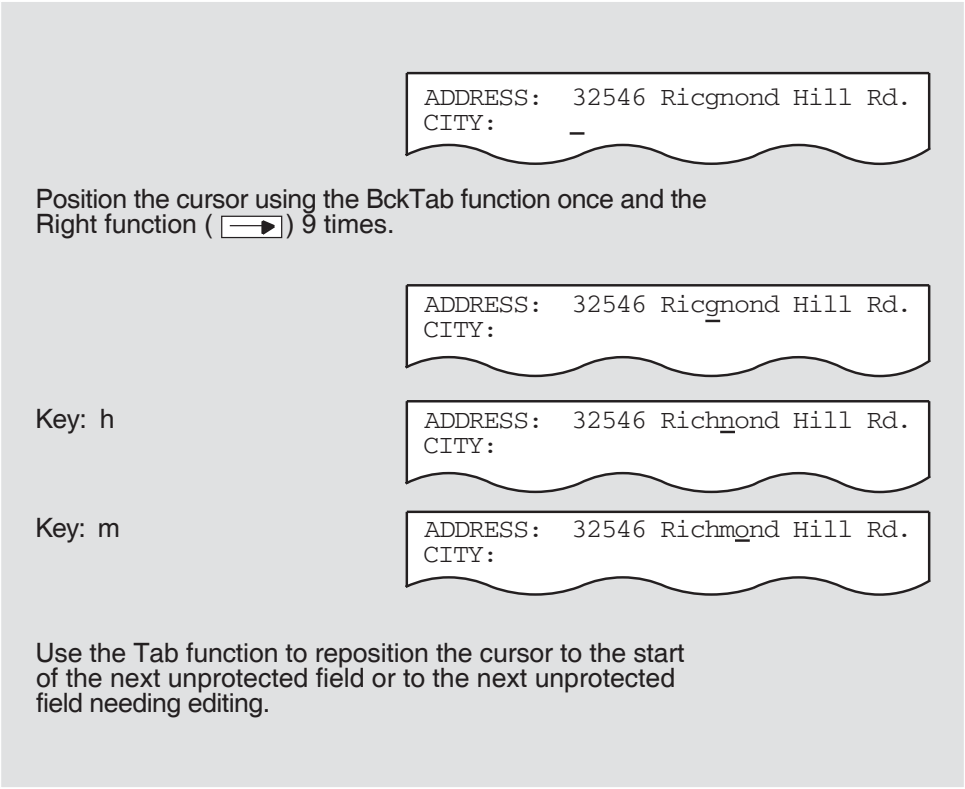
2.4.4 Editing Data

When using the TE, you can edit data entered in unprotected fields by typing new data over the old data (normal mode) or inserting new data into partially filled fields (insert mode). You can also use the key functions DELETE, ER EOF, and ER INP to change the contents of unprotected fields. When you edit, choose the method best suited to your needs at the time.

2.4.4.1 Using Normal Mode

Normal mode allows you to input data or edit existing data. When you enter data, the character you type either fills in an empty (null) position or replaces a character previously displayed in that position. (Note: Remember that a space or a blank is a character.) The cursor then moves to the next position. For example, in Figure 2–3 you see that “Richmond” is spelled incorrectly as “Ricgnond”. To correct the spelling you must position the cursor under the “g” and type “hm”. The “h” will replace the “g” and the “m” will replace the “n”.

Figure 2–3 Using Normal Mode



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2.4.4.2 Using Insert Mode

The TE also supports entering and editing data in insert mode. Insert mode allows a user to enter new characters in an unprotected field between existing characters.

You press the INSERT (F14) key to activate insert mode. When operating in insert mode, position the cursor under the character to the right of the place where you want to insert text. Any character you type is inserted between the cursor and the text to its left. As text is inserted, the character at the cursor location and all the characters to the right of the cursor in the field move one position to the right. You can insert characters into an unprotected field until it is full. If you try to insert text after the field is full, the keyboard locks, the terminal bell rings, and Inhib is displayed on the STATUS line. Press RESET

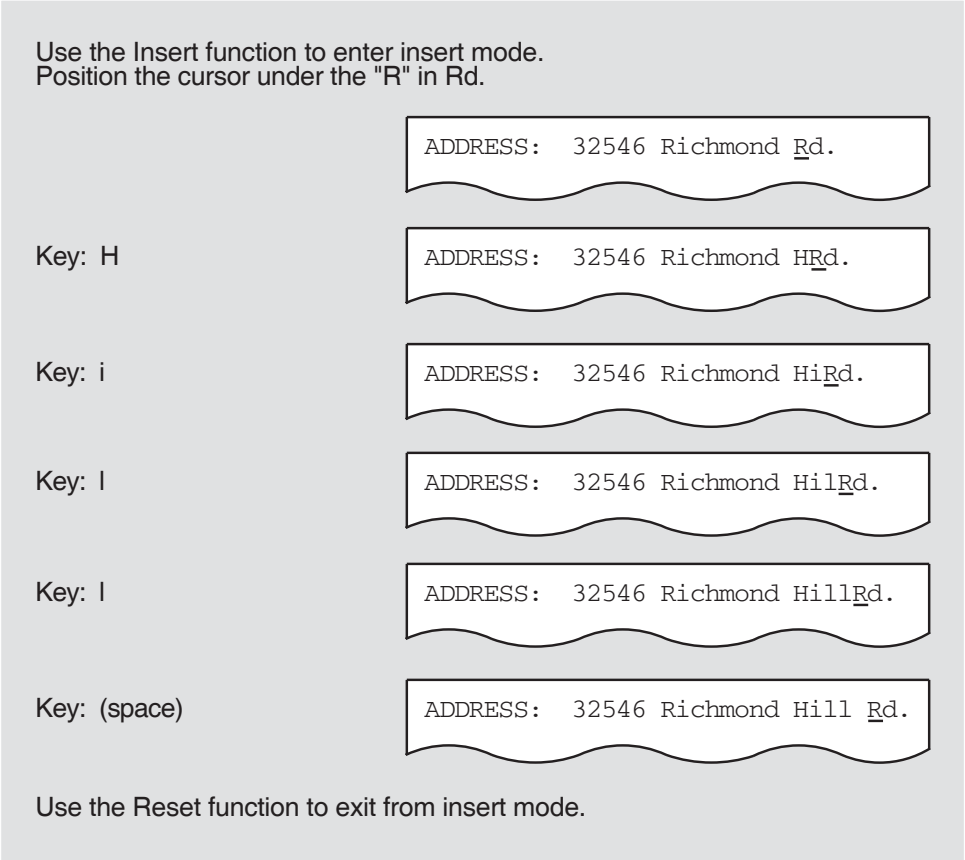
to exit insert mode and to return your terminal to normal mode. Insert mode is also terminated by the ENTER, CLEAR, or any PA or PF key.

Note

While a field may appear to have room for additional data, it may contain one or more trailing blank characters that do not display but cause the field to fill.

Figure 2–4 shows how to insert text. An unprotected field must contain the correct street address: 32546 Richmond Hill Rd. The word “Hill” has been omitted. To make the correction, press the INSERT key, position the cursor where you want “Hill” to appear, and then type the word “Hill” followed by a space. The figure shows the protected and unprotected fields, the keys you press to fix the error, and the changes in the line of text as the characters are entered.

Figure 2–4 Using Insert Mode



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2.5 Recording Work Sessions

The PRINT function enables you to make a permanent copy of the data on your screen. Press PRINT to record the contents of your screen. Do this before you press the ENTER key or any key that will transmit your screen contents to the IBM application. When you press PRINT, the screen contents are recorded in an operating system file in a compressed state: null lines (lines consisting entirely of nulls and/or attribute characters) do not appear.

2.5.1 Specifying an Output File

Each time you run the TE, the file SNATPRINT.LIS is opened the first time you press PRINT. Successive uses of PRINT in one run of the TE cause the new output from the screen to be appended at the end of the file named SNATPRINT.LIS.

You can specify another file to receive your data by using /PRINTER=*file-spec* in the TE startup command line. If you use the default file, successive versions of SNATPRINT.LIS are created each time you run the TE and use PRINT. You can also name a printer as the output file. If the printer is a spooled printer, successive uses of PRINT create separate entries in the printer's queue.

2.5.2 Changing an Output File During a Session

During a session with an IBM application program, you can change the file that receives output when you press PRINT. Do this by using the SET FIL function from your terminal (press the SET FIL key combination). After you press SET FIL, the TE software prompts you for a new file name. Type the new file name for the printer file and terminate your input by pressing the new line key. This new file is used each subsequent time you press PRINT during that session. If you specify the same name that is already in use, subsequent PRINT operations direct output to a new version of the same file.

2.6 Finding Help

On-line help is available to you before you start up the TE or during a session.

2.6.1 OpenVMS Help Files

Before you start the TE, you can access the OpenVMS system HELP for information about TE commands. To access the HELP library, type HELP after the DCL dollar ($) prompt:

```
$ HELP Return
```

This action causes a list of topics to be displayed on your terminal. You can receive information about any topic listed by typing the name of the topic after the "Topic?" prompt.

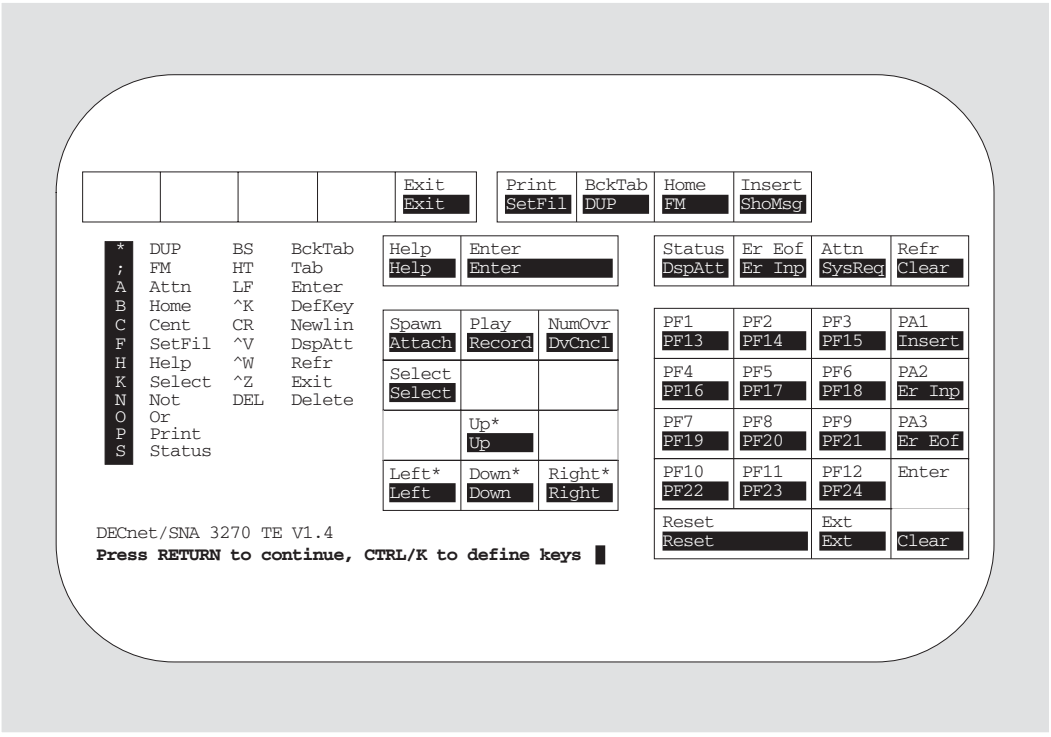
```
$ HELP
   .
   .
   .
Topic?   SNA_Terminals Return
```

The HELP file shows the startup command, its parameters, and its qualifiers. For more details, type a parameter or qualifier name after the "Subtopic?" prompt.

2.6.2 TE Help Screen

You can access on-line help during a session by pressing Help. The HELP screen illustrates the TE functions as they correspond to the keys on your physical keyboard. This diagram illustrates the top-row function keys, editing keypad, application keypad, and up to 32 control or extend character definitions. This HELP screen will always reflect the current keyboard layout – whether you use the default keyboard layout or define your own. Figure 2–5 illustrates the HELP screen you will encounter when using the TE with its default keyboard layout.

Figure 2–5 The TE HELP Screen



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You access the keys and functions highlighted in reverse video by using the EXT + *x* key sequence. The symbol ^ represents the control (Ctrl) key.

2.7 Shutting Down the TE

When you are ready to shut down the TE, you must send a disconnect request to the IBM host. See the user's guide for the IBM application you are communicating with for the appropriate log-off command string (transaction identifier). You will be returned to the DCL prompt after the TE receives a message indicating that the session has ended.

Note

If you specified /WAIT in your command line, you must press EXIT (Ctrl/Z) to return to the DCL prompt because the disconnect request will return you to the Unformatted System Services (USS) screen.

3
Keyboard Functions

This chapter defines the keyboard functions performed by the 3270 Terminal Emulator (TE) and illustrates the key or key combinations you must press to enable those functions. Please note that the illustrations in this chapter refer to VT200- and VT300-series keyboards. If you are using a VT100-series keyboard, refer to Table 1–1 for the VT100-specific keys. For easy reference, the functions are presented in alphabetical order.

Table 1–1 provides a list of the functions provided by the TE software and shows which terminal key or key combinations you must press to enable them. For more help, you can access a special function called HELP during a session with an IBM application. Press the HELP key to invoke HELP. This causes a picture of the keypad to be displayed, along with a list of TE functions and the key combinations you must press to enable them.

Note

Improper use of some keys causes the keyboard to lock in order to prevent input to protected fields. If the keyboard locks, you cannot use any keys to enter data. The terminal bell rings, and the word Inhib appears on the status line. Press RESET (KP0) to unlock the keyboard and to resume using it.

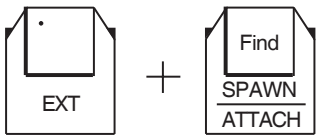
The following keys cause the keyboard to lock if they are used when the cursor is in a protected field:

- DELETE
- DUP
- ER EOF
- FM
- Any graphic character

If you need additional information about the TE key functions, refer to these IBM documents:

- *IBM 3270 Information Display System*, Order No. GA23-0060
- *IBM 3270 Information Display System: Operator's Guide*, Order No. GA27-2742
- *IBM 3270 Information Display System: 3278 Display Station Operator's Guide*, Order No. GA27-2890-4

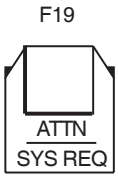
Figure 3–1 ATTACH



The ATTACH function switches control from your current process to another process in your job. Use ATTACH to change control from one subprocess to another subprocess or to the parent process. When you press the ATTACH key combination, the TE uses the name of the last process that you attached to as the default process name. If you wish to attach to a different process, press Ctrl/U to erase the default process name. You can then enter the process name of your choice at the prompt.

The process name can be a quoted string. The quotation marks are used to preserve spaces, tabs, or lowercase letters in strings.

Figure 3–2 ATTN

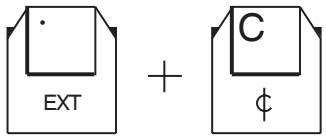


The ATTN function provides a way to get the attention of the IBM application program that you are running. It causes an IBM SIGNAL RU command to be sent to the IBM application. Refer to the user's guide for the particular IBM application program to learn what response the program gives when you use this key.

Figure 3–3 |← (back tab)

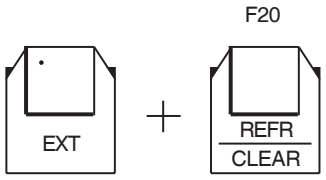
The |← (back tab) key moves the cursor. When you press this key in a formatted screen, the cursor moves either to the beginning of the unprotected field that it is in or back to the beginning of the preceding unprotected field, depending on where the cursor is located when you press this key. When you press the |← (back tab) key in an unformatted screen, the cursor returns to the first position on the screen. If the |← (back tab) key is pressed while the cursor is in the first position of the first unprotected field on the formatted screen, the cursor moves to the first position of the last unprotected field on the screen.

Figure 3–4 ¢ (cent)



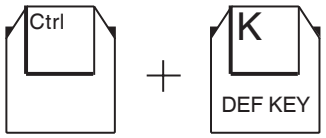
The ¢ (cent) key allows you to enter a cent sign. If your terminal does not have a cent sign, your screen displays a hyphen (-) instead.

Figure 3–5 CLEAR



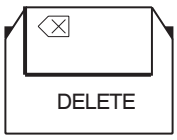
The CLEAR function clears the screen of its contents and moves the cursor to the first position on the screen. When you press the CLEAR key combination, the software notifies the application program that this function has been used.

Figure 3–6 DEF KEY



The DEF KEY (define key) function allows you to define or redefine a key during an active TE session. When you press the DEF KEY function, the TE prompts you for the name of the key you wish to define and for a function you wish to assign to that key. Refer to Appendix D for more information on using the DEF KEY function.

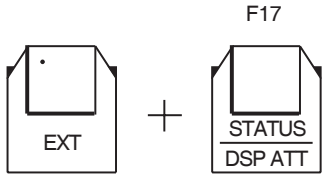
Figure 3–7 DELETE



The DELETE key deletes the current character (that is, the character at the cursor). The cursor remains where it is, and the other characters to the right of the cursor in the same field move one position to the left. The end of the field fills with blanks.

Note that the DELETE key normally does not operate this way on a Digital terminal.

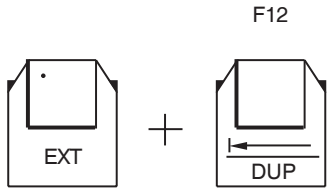
Figure 3–8 DSP ATT



The DSP ATT (display attributes) function enables and disables the visible attribute mode. This mode of operation forces display of the attribute characters; that is, the characters at the start of a field that indicate the display and data type of that field.

Visible attribute mode is a tool used by application programmers to debug application programs that can be accessed by the TE. See Appendix B for further information.

Figure 3–9 DUP

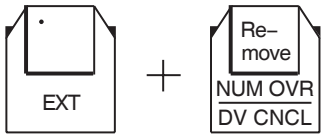


The DUP (duplicate) key enables you to enter a value in the same field in several forms without having to repeat the entry for each form. After entering the data in the field on the first form, press the DUP key when you come to this same field on the succeeding forms. The application program makes the necessary translation, filling in these fields with the same value. Refer to the

user's guide for the particular application program for details about the use of this key.

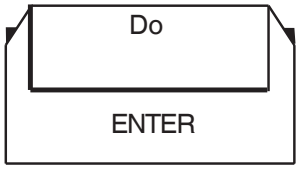
The DUP key has a special display: the screen displays an asterisk * when you use this function.

Figure 3–10 DV CNCL



The DV CNCL (device cancel) function cancels the RECORD function. If you begin using the RECORD function and then decide you want to stop, press the DV CNCL key combination. If you want to delete a sequence that has already been recorded on a PF key, then press the RECORD function, the PF key, and then the DV CNCL function.

Figure 3–11 ENTER

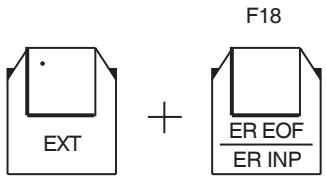


Each use of the ENTER key sends the data you type on your screen to the application program running in the IBM host. While this communication with the computer is active, the keyboard locks and the word Inhib appears on the status line. Usually the application program releases the keyboard when it has finished processing your input.

Figure 3–12 ER EOF

The ER EOF (erase to the end of the field) function key erases the contents of the current field, from the location of the cursor to the end of the field. The cursor remains in the same location.

Figure 3–13 ER INP

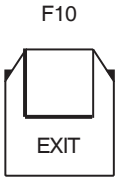


The ER INP (erase input) function key clears all the data in the unprotected fields on your screen and moves the cursor to the first position in the first unprotected field on the screen.

You can also use this function to clear all the data on an unformatted screen. The cursor then moves to the first position on the screen.

The ER INP function can also be used to remove all previously recorded key sequences by pressing the RECORD function and then the ER INP function.

Figure 3–14 EXIT



The EXIT function terminates the TE. When you press this key combination, the screen clears and the terminal returns to its original mode. The communications session with the IBM host also terminates when you use EXIT; any exchange of data that is in progress between IBM and the TE is aborted.

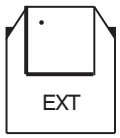
Note

Using CTRL-Z or EXIT key to terminate an IBM session may result in improper termination of the session and as a consequence, you may not be able to log into the transaction thus terminated. Always use the proper sign-off sequence to terminate your IBM session.

It may be convenient to disable the EXIT and CTRL-Z keys by using the keyboard redefinition facility and record the sign-off sequence into one of the PF keys. Thus, proper termination of the IBM session just involves pressing the PLAYBACK key followed by the PF key in which the sign-off sequence is recorded.

If you however had to leave the session by using the EXIT key, have your system manager help you get back on the same session so you can sign-off properly.

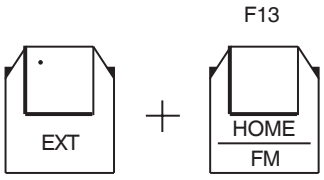
Figure 3–15 EXT



The EXT (extended function) key, when used in conjunction with another keyboard key, allows an extended function to be accessed for that key. You must press EXT and then the second key to access the TE function for that key. Note that if you press EXT accidentally, you can press RESET to cancel its effect.

If the status display is enabled when you press EXT, the word Extend appears on the status line.

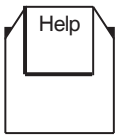
Figure 3–16 FM



The FM (field mark) key denotes the end of a field on an unformatted screen or the end of part of an unprotected field on a formatted screen. Refer to the IBM user's guide for your application program for specific use of this key.

The FM key has a special display. Your screen displays a semicolon (;) when you use this function.

Figure 3–17 HELP

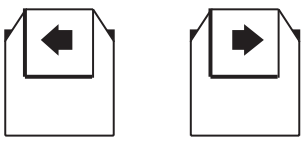


You can access on-line help during a TE session by pressing HELP Help. This action causes an illustration of the TE keyboard to be displayed. This HELP screen illustrates the TE functions as they correspond to the keys on your physical keyboard. The HELP screen always reflects the current keyboard layout.

Figure 3–18 HOME

The HOME function repositions the cursor to the first position in the first unprotected field on the screen (that is, to the beginning of the input area on the screen).

Figure 3–19 Horizontal Control



The ⟶ (right arrow) and the ⟵ (left arrow) keys enable you to move the cursor horizontally across your screen without changing data you have already entered.

If you press the ⟶ (right arrow) when the cursor is at the end of a line, the cursor automatically moves to the start of the next line. If you press the ⟵ (left arrow) when the cursor is at the beginning of a line, the cursor automatically moves to the end of the previous line.

If the screen display you receive is larger than 80 columns wide, you can use the ⟶ (right arrow) and the ⟵ (left arrow) keys to move through the display. These keys cause the screen display to scroll to the left or right, allowing you to read previously hidden text. Use the key sequence EXT+⟶ (right arrow) or EXT+⟵ (left arrow) if you want the cursor to wrap to the opposite edge of the display.

Figure 3–20 INSERT

The INSERT function enables insert mode. Insert mode allows you to edit the data you typed onto your screen (see Section 2.4.4.2). If the status display is enabled when you press INSERT, the word Insert appears on the status line.

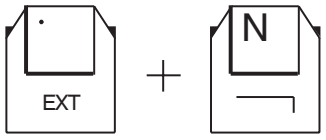
After you activate insert mode, you can type characters onto your screen, inserting them between characters already entered. A character that you type into an unprotected field is displayed to the left of the cursor, causing the cursor and the character at the cursor location, along with all the characters to the right of the cursor in the field, to move one position to the right. Figure 2-4 shows how to insert text.

You can insert characters into an unformatted screen, or you can insert characters into an unprotected field on a formatted screen until it is full. If you attempt to insert characters after the field is full, the keyboard locks, the terminal bell rings, and the word Inhib appears on the status line.

Press RESET to return your screen to the normal mode of entry after using insert mode. Pressing CLEAR, ENTER, or any PA or PF key also returns your screen to normal mode.

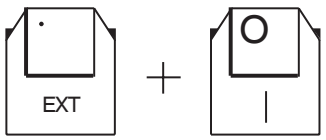
If the keyboard locks when you try to insert characters into a field that looks empty, there may be trailing spaces in that field. Use the ER EOF function to erase these spaces.

Figure 3–21 ¬ (Logical NOT)



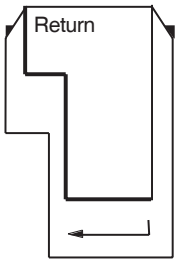
This key (¬) represents the IBM symbol for a logical not. It is displayed as a circumflex (∧) on Digital terminals.

Figure 3–22 | (Logical OR)



The vertical bar (|) represents the IBM symbol for a logical or. It is displayed as a solid vertical line from the terminal's graphics set. Press EXT + O if the vertical bar is not available on your keyboard.

Figure 3–23 ⟵ (new line)

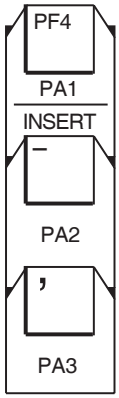


The ⟵ (new line) key moves the cursor to the first unprotected position on the next line of your screen. If there are no unprotected fields on the screen when you press ⟵ (new line), the cursor moves to the first location on the screen. If the screen has no fields, ⟵ (new line) works like the Digital terminal's RETURN key, moving the cursor to the beginning of the next line.

Figure 3–24 NUM OVR

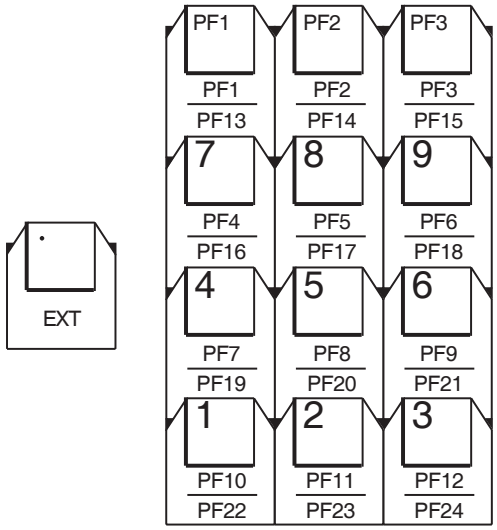
The NUM OVR (numeric lock override) function allows you to enter nonnumeric characters into numeric fields. Once this function is enabled, you must press NUM OVR to disable it. If you do not disable the numeric lock override, it will remain enabled even after you exit from the TE. If the status display is enabled, the letter O will appear on the status line to indicate that the numeric lock override is in effect.

Figure 3–25 PA1 through PA3



The program access keys, numbered PA1 through PA3, are defined by the particular program you are using. These keys request attention from the IBM application program without sending any data. You should refer to the user's guide for your application program to learn how the PA keys are defined.

Figure 3–26 PF1 through PF24



The program function keys, numbered PF1 through PF24, are also defined by the particular IBM application program you are using. They request attention from the application program and send the data entered to the host. The PF keys are coded by the application program to perform functions relating to the application. A particular PF key may be coded differently from one application to another. The user's guide for the IBM application program usually defines the specific PF key assignments for that application program.

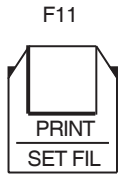
Figure 3–27 PLAY

The PLAY function lets you recall keystroke sequences that have been stored on a specific PF key using the RECORD function. To use the PLAY function, press the PLAY key and then the PF key on which the desired key sequence is stored. The PLAY function executes all commands included in the keystroke sequence.

Note that if the HELP utility is invoked in your key sequence, the PLAY function will not continue until you exit from the HELP utility. Also, if you use functions that require you to respond to prompts (such as ATTACH, DEF KEY, SET FIL, or SPAWN), the information you type at the prompt is not recorded. When you recall the sequence, you will be prompted for this information again.

When you use the PLAY function, the letter P appears on the status line if the status display is enabled.

Figure 3–28 PRINT

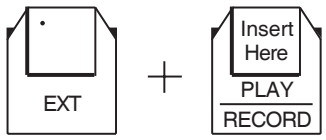


Use PRINT to record the contents of your screen in a file or at a printer. (This is a local print feature.) If the status display is enabled when you press PRINT, the word Print appears on the status line. Your screen is refreshed when the print process completes.

The first use of PRINT in a given run of the TE creates a new version of the output file. Successive uses of PRINT in the same program cause the screen contents to append to the existing file. If the output is directed to a printer, each use of PRINT creates a separate entry in the printer queue. If the printer is a spooled printer, the output is released for printing immediately.

Use the command qualifier /PRINTER=*file-spec* to specify where to direct the output file. Section 2.3.1 contains a description of this qualifier; Section 2.5 describes how to record your work sessions.

Figure 3–29 RECORD



Use the RECORD function to save a keystroke sequence on a specific PF key. Press the RECORD key, the PF key as prompted, the keystroke sequence, and then the RECORD key again. You can save a maximum number of 127 keystrokes on each PF key. If the status display is enabled when you use the RECORD function, the letter R appears on the status line.

To recall the keystroke sequence, use the PLAY function. Use the DV CNCL function to cancel the RECORD function. To erase all previously recorded key sequences, use the ER INP function.

Note

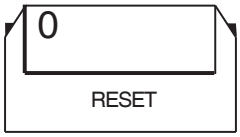
To implement the record/playback feature, the TE stores the recorded key sequences in a file in the user's SYS$LOGIN directory. The file protection of this file is set such that a user running two TE sessions from the same OpenVMS account, cannot use the record and playback features from both these sessions.

Figure 3–30 REFR

Use REFR (refresh) to remove TE error messages, operating system messages, or other messages that appear on your screen. This key function deletes extraneous characters from your screen and causes the fields and data that were on the screen before the interruption to be redisplayed.

This function does not transmit or receive data from IBM; REFR is a local OpenVMS function.

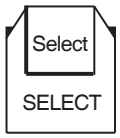
Figure 3–31 RESET



The RESET key returns your keyboard to normal input mode from insert mode. Also, the RESET key returns the keyboard to your control after it locks when you try to enter data into a protected or a full field, or when you try to enter the wrong type of data into a field.

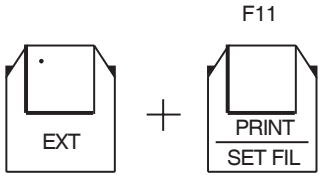
Pressing RESET turns off the Inhib indicator. The cursor remains where it is and the screen remains unchanged.

Figure 3–32 SELECT



The SELECT key allows you to choose items from a menu, table, or list and then notify the program of your selection. Use the arrow keys to position the cursor on the field designator character, then press the SELECT key. Refer to the appropriate IBM manual for more information on using SELECT.

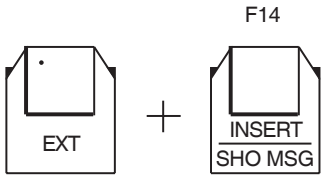
Figure 3–33 SET FIL



The SET FIL (set print file) function allows you to change the name of the file or device that receives output each time you press the PRINT key combination. After you press SET FIL you are prompted for the name of a new output device. In this way, SET FIL emulates IBM's IDENT function.

Note that if you specify the same name that is already in use, subsequent PRINT operations direct output to a new version of the same file.

Figure 3–34 SHO MSG



The SHO MSG function enables you to view the broadcast messages that have been posted on a separate screen. If the status line is enabled, the word Msg appears on the status line to indicate that there are messages on the other screen. If you do not read the messages before they fill up the screen, the messages will begin to scroll up and you will no longer be able to read them. These broadcast messages will not be saved after you have read them or when you exit from the TE.

Figure 3–35 SPAWN

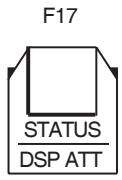
The SPAWN function enables you to create a subprocess of the current process. Use the LOGOUT command to terminate the subprocess. Because a tree of subprocesses can be established using the SPAWN command, you must be careful when terminating any process in the tree. When a process is terminated, all subprocesses below that point in the tree are automatically terminated.

When you create a subprocess, you can specify an optional command string. The command string is executed within the created subprocess and the subprocess is terminated upon completion of the command.

Note

The TE checks the process flags CAPTIVE and RESTRICTED to decide whether or not the process running the TE can use the SPAWN feature.

Figure 3–36 STATUS

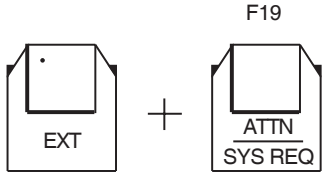


The STATUS function allows you to enable and disable the display of status information. It causes one or more of the following status messages to be displayed in a reverse video strip at the last line of your screen: Appl, Extend, Insert, Inhib, Msg, O, P, Print, R, SSCP, SysAvl, and Wait. This status display emulates the display available on the bottom line of an IBM 3270 Display Station.

When you enable STATUS, the last line on your screen is painted over with a reverse video strip. This strip may conceal IBM system or application information sent to your terminal by the IBM software. If this occurs, the word Hidden will appear in the STATUS strip. See Section 2.4.1 for more information about the display you can expect to see when you use the STATUS function.

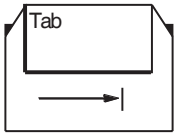
Disable the status display by pressing the STATUS key again.

Figure 3–37 SYS REQ



The SYS REQ (system request) key allows you to shift between the application program (LU-LU session) and the control program (SSCP-LU session). If the status display is enabled, Appl or SSCP appears on the status line to indicate the type of session. Appl appears when you are in an LU-LU session and SSCP appears when you are in the SSCP-LU session. The screen is refreshed when you use the SYS REQ key.

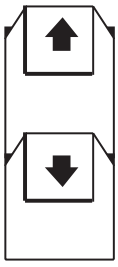
Figure 3–38 →| (tab)



The →| (tab) key moves the cursor to the first character location of the next unprotected field on your screen. If the screen has no fields, the →| (tab) key moves the cursor to the first location on the screen.

If the →| (tab) key is pressed when the cursor is within the last unprotected field on the screen, the cursor moves to the first position of the first unprotected field on the screen.

Figure 3–39 Vertical Control



The ↑ (up arrow) and the ↓ (down arrow) keys enable you to move the cursor vertically on your screen without altering the data that you have already entered.

If the cursor is at the top of the screen when you press the up arrow, the cursor will appear in the same column at the bottom of the screen. Similarly, if the cursor is at the bottom of the screen and you press the down arrow, the cursor will appear in the same column at the top of the screen.

If the screen display you receive is larger than 24 rows deep, you can use the ↑ (up arrow) and the ↓ (down arrow) keys to move through the display. These keys cause the screen display to scroll up or down, allowing you to read previously hidden text. Use the key sequence EXT+↑ (up arrow) or EXT+↓ (down arrow) if you want the cursor to wrap to the opposite edge of the display.

A

3270 Terminal Emulator Status Messages

A.1 Status Messages

Three major groups of status messages can be returned to you during 3270 Terminal Emulator (TE) operations:

- Messages preceded by %SNATERM:

  %SNATERM-*l-ident*, *text*

- Messages preceded by -SNA:

  -SNA-*l-ident*, *text*

- Messages preceded by a prefix characteristic of OpenVMS system messages:

  -*message-code-l-ident*, *text*

where

l is the severity level indicator. It has one of the following values:

S indicates success messages.

I indicates information messages.

W indicates warning messages. Warning messages occur if a command completes successfully under extraordinary circumstances that may imply an error condition.

E indicates error messages. Error messages reflect conditions that prevent a command from completing successfully. In most cases, you can correct the error and reissue the command.

F indicates fatal messages. Fatal messages reflect conditions that prevent the TE from operating successfully. In most cases you have to reinvoke the TE before you can reissue the command.

message-code	is an abbreviation of the OpenVMS facility or component name. Refer to the *OpenVMS System Messages and Recovery Procedures Reference Manual* for explanations of these messages.
ident	is an abbreviation of the message text.
text	is the explanation of the message.

Messages are listed in this appendix alphabetically by *ident*. The prefix (%SNATERM or -SNA) and the severity level indicator have been removed from the messages listed.

Note that the appearance of any error messages with a severity level indicator of F implies that the TE software is operating abnormally. Copy all the error messages that appear on your screen and take them to your system manager, who can decide what corrective action to take. If you are the system manager, consult the *Digital SNA Gateway Problem Determination Guide* or the *VMS/SNA Problem Determination Guide*.

IMPORTANT

Unless otherwise stated, the term Gateway refers to the Digital SNA Gateway.

A.1.1 TE Status Messages

The TE produces the following error messages:

ABNSESTER, session terminated abnormally

Explanation: Either the link between the Gateway and IBM was lost or IBM deactivated the physical unit (PU) or the line leading to the Gateway.

User Action: Determine why the link was lost. Try again when the connection to IBM returns.

ACCROUFAI, error from Gateway access routine, gateway unknown or unreachable

Explanation: SNA Gateway is unknown or unreachable; Transport list (defined by SNA_TRANSPORT_ORDER logical) is defined incorrectly or Gateway/Host Name specified does not support transport selected; or TCP/IP Port (defined by SNA_TCP_PORT logical) does not match the remote connection TCP/IP Port.

User Action: Check the SNA Gateway, the SNA_TRANSPORT_ORDER logical, or the SNA_TCP_PORT logical.

ACCTOOLON, access name is too long

Explanation: The access name must be no longer than 8 characters.

User Action: Try again, specifying the corrected access name.

ACNTERR, not allowed from a CAPTIVE account

Explanation: You are not allowed to do this operation from this account.

User Action: Try again, using the appropriate account.

ALTSIZEXC, alternate screen size *number* x *number* is too big

Explanation: The alternate screen size specified by the IBM application in the BIND image is larger than 27 lines by 132 columns or 43 lines by 80 columns.

User Action: Check the *Digital SNA Gateway Problem Determination Guide* for information on how to handle this problem.

AMBIG, ambiguous abbreviation *xxx*

Explanation: You supplied an ambiguous abbreviation for the function parameter in the DEFINE KEY command line.

User Action: Reenter command using a unique abbreviation or the full function name.

APPNOTSPE, IBM application name was not specified

Explanation: You did not specify the name of the IBM application with which you want to connect. A value is required for the /APPLICATION_NAME qualifier unless /WAIT is specified on the command line (see Section 2.3.2).

User Action: Reenter the SET HOST SNA command and specify a value for the /APPLICATION_NAME qualifier.

APPTOOLON, application name is too long

Explanation: The application name must be no longer than 8 characters.

User Action: Try again.

ATTPRCFAI, error attaching to process

Explanation: Some error prevents access to this process.

User Action: Copy any error messages that appear and bring them to your system manager when reporting the problem. If you are the system manager, refer to the *OpenVMS System Messages and Recovery Procedures Reference Manual*.

BADRECKEY, you cannot record that key

Explanation: You cannot save a key sequence on this key.

User Action: Use an appropriate key. Keys PF1-PF24 can be used for storing recorded key sequences.

BADSEQF, bad key sequences file

Explanation: The key sequences file you are using is corrupt.

User Action: Report this problem to your system manager. If you are the system manager, correct this problem by deleting the key sequences file SYS$LOGIN:SNATE$RECSEQ.DAT. The user will have to record again all the key sequences that were stored on the PF keys.

BADTERDAT, bad terminal data RU, sense code is *IBM-sense-code*

Explanation: You may have supplied an incorrect logon mode entry.

User Action: Examine subsequent messages for more information.

BINSPEUNA, the BIND image specified unacceptable values

Explanation: The Gateway rejected the BIND image.

User Action: Run a trace to find out why. The IBM application could be specifying too large an outbound RU, or an illegal FM or TS profile, or it sent a pacing value that was out of bounds (see the *Digital SNA Guide to IBM Parameters* for more information).

CONFQUAL, conflicting qualifiers

Explanation: You specified conflicting qualifiers on the initial command line. If you specify /WAIT, you cannot specify the application name, logon mode name, or data qualifiers.

User Action: Check the command line you used and reenter the correct command line.

CONREQREJ, connect request rejected by IBM host, sense code *IBM-sense-code*

Explanation: The IBM host rejected the connect request, showing the given sense code.

User Action: Determine the meaning of the sense code from the IBM documentation and take appropriate action.

CRESEQF, error creating sequence file *file-spec*

Explanation: A problem is preventing the creation of this file.

User Action: Copy any error messages displayed on your screen and bring them to your system manager when reporting the problem.

DATTOOLON, too much user data specified

Explanation: The user data you can specify must be less than 128 bytes.

User Action: Try again.

DUFFDEF, you are not allowed to define that key

Explanation: You tried to redefine a key that cannot be defined.

User Action: Choose one of the keys available for redefinition and reenter the command line.

DUFFDEFK, you are not allowed to define that key

Explanation: You tried to redefine a key in the key definition file that cannot be defined.

User Action: Edit the key definition file, supplying the valid key definition statement. Reenter the command line.

ERCRMPSC, error accessing recorded key sequence

Explanation: The TE failed to access the recorded key sequence.

User Action: Copy any error messages displayed on your screen and bring them to your system manager when reporting the problem.

ERRALLBUF, error allocating dynamic buffer

Explanation: The TE failed to allocate a buffer.

User Action: Examine the subsequent system messages. If they indicate that there is insufficient virtual memory available, ask your system manager to increase the relevant quotas. Otherwise, this error indicates an internal error in the TE. Report the problem to your system manager.

ERRCOPSCR, error copying screen to *file-spec*

Explanation: The TE failed to copy the screen when you pressed the PRINT key function to the file you specified.

User Action: Examine the subsequent secondary error messages to find the reason.

ERUPDSEQ, error updating recorded key sequence

Explanation: The TE failed to update the recorded key sequence.

User Action: Copy any error messages displayed on your screen and bring them to your system manager when reporting the problem.

EXIT, Gateway server task terminated

Explanation: The Gateway server task terminated abnormally. This is a Gateway problem only.

User Action: Locate a message on the system console beginning with the following words: TASK "GAS..." TERMINATED

Submit the log of events up to that point with an SPR or give the log to your system manager when you report the problem.

FAIASSCHA, failed to assign a DECnet or TCP/IP channel

Explanation: This error indicates an abnormal internal condition.

User Action: Examine the subsequent DECnet or TCP/IP error messages and report the problem to your system manager.

FAICREMBX, failed to create a mailbox

Explanation: A mailbox could not be created for communication with the Gateway. The most likely reason is that you do not have sufficient privileges for what you are trying to do.

User Action: Examine the subsequent error messages to determine the actual reason. If you do not have sufficient privileges, have your system manager give you the TMPMBX privilege.

FAIESTLIN, failed to establish a DECnet or TCP/IP link to the Gateway

Explanation: The TE cannot connect to the Gateway.

User Action: Examine the subsequent DECnet or TCP/IP error messages and take appropriate action.

FAIESTSES, failed to establish session

Explanation: The terminal emulator failed to establish a session with the IBM application. The subsequent error messages will give the reason why the session could not be established.

User Action: Correct the problem and restart the TE.

FAIRE_EST, failed to re-establish session

Explanation: The initial IBM application sent an UNBIND, BIND FORTHCOMING command. The TE was unable to establish a new session with a subsequent application.

User Action: Examine the subsequent -SNA error messages to find the reason.

FATINTERR, internal error in Gateway access routines

Explanation: A fatal error has occurred. Subsequent error messages will provide more information.

User Action: Write down all the messages that appear on your screen at this time and report the problem to your system manager.

FILCLO, error closing file *file-spec*

Explanation: An error occurred closing the key redefinition file.

User Action: Examine subsequent -SNA messages for more information. Then restart the TE.

FILEIP, error opening file *file-spec* as input

Explanation: An error occurred opening the keyboard redefinition file for input.

User Action: Examine subsequent -SNA messages for more information. Then restart the TE.

FILEOP, error opening file *file-spec* as output

Explanation: An error occurred when you used the PRINT key function to open the indicated file. The same error may occur when the IBM host initiates a PRINT command.

User Action: Check the name of the file or printer you specified with the /PRINTER qualifier. Check the command line you used and reenter the command using a proper file specification.

FILREA, error reading from file *file-spec*

Explanation: An error occurred reading the key redefinition file.

User Action: Examine subsequent -SNA messages for more information. Then restart the TE.

FILWRT, error writing to file *file-spec*

Explanation: An error occurred when the TE tried to record the screen contents in the named file.

User Action: Check the name of the file you specified with the /PRINTER qualifier. Check the command line you used and reenter the command using the proper file specification.

GATCOMERR, error communicating with Gateway node

Explanation: There is a problem with a link in your DECnet or TCP/IP network. This is a Gateway problem only.

User Action: Examine the subsequent DECnet or TCP/IP error messages and take appropriate action. Refer to the *OpenVMS VAX System Manager's Guide* for information on the DECnet or TCP/IP messages. When the Gateway becomes reachable, try the SET HOST/SNA command again.

GATINTERR, internal error in Gateway node, code *number*, subcode *number*

Explanation: This is a fatal internal error.

User Action: Copy this message with the codes it indicates and any other messages that are displayed. Report the errors and the conditions that caused them to your Gateway manager.

HELPLESS, help not available for this terminal type

Explanation: Help is not available for this terminal type.

User Action: Refer to your *Software Product Description* (SPD) for a list of supported terminals.

HLP2BIG, help display needs screen size of at least 24 x 80

Explanation: The TE cannot display the help screen on a terminal smaller than 24 rows by 80 columns.

User Action: Use the TE only on a supported Digital terminal.

INCMPSEQF, incompatible key sequences file

Explanation: The key sequences file that you are using is incompatible with this version of the TE.

User Action: Report this problem to your system manager. If you are the system manager, correct this problem by deleting the key sequences file SYS$LOGIN:SNATE$RECSEQ.DAT. The user will have to record again all the key sequences that were stored on the PF keys.

INCVERNUM, Gateway access routines are incompatible with the Gateway

Explanation: The software on the Gateway is incompatible with the SNA software on the local DECnet node or TCP/IP host.

User Action: Make sure that the correct versions of the software are installed on both the Gateway and the DECnet node or TCP/IP host.

INSGATRES, insufficient Gateway resources for session establishment

Explanation: The Gateway has insufficient resources for establishing a session. The active sessions currently in the Gateway are using the total resources available.

User Action: Wait until some of the sessions have finished then try again.

INVASYEVT, invalid asynchronous event occurred, code *code*

Explanation: The TE detected an illegal internal event.

User Action: Report the problem to your system manager and have the system manager submit an SPR (if you subscribe to that service).

INVLU, the gateway LU name specified (DESTMOD) is invalid

Explanation: The information supplied on the command line, the /PU (/CIRCUIT) or the /session_address, was used to attempt to select an LU in the gateway using the old style of LU name (for example, /session_address=2/PU/(/CIRCUIT)=SNA-1 for LU specified by SNA-1.2). The Digital SNA Domain Gateway and the Digital SNA Peer Server Gateway do not support the old style of LU names. Refer to the section describing the /LU qualifier in the Use Guide for more information.

User Action: Use the /LU qualifier (or /PU(/CIRCUIT) qualifier as described in the documentation) to specify the new sytle LU name used by the Digital SNA Domain Gateway and the Digital SNA Peer Server Gateway.

INVRECLOG, SNA$DEF_NUMREC is incorrectly defined

Explanation: This internal logical name is improperly set up.

User Action: Report the problem to your system manager.

INVSEQNUM, RU received with an invalid sequence number, rejected with sense code *IBM-sense-code*

Explanation: A protocol error has occurred.

User Action: Report the problem to your system manager and have the system manager submit an SPR with an LU trace (if you subscribe to that service).

KEYDEFERR, error processing key definition

Explanation: An error has occurred in the key definition file (used to redefine the keyboard layout).

User Action: Examine subsequent messages for more information. Restart the TE after correcting the error.

KEYNODEL, key *xx* definition cannot be deleted

Explanation: The definition mapped to this key cannot be deleted or redefined.

User Action: Refer to Appendix D for a list of definable keys. Reenter the command, specifying a valid key.

KEYNODEX, key *xx* "extended" definition cannot be deleted

Explanation: The extended definition mapped to this key cannot be deleted or redefined.

User Action: Refer to Appendix D for a list of definable keys. Reenter the command, specifying a valid key.

KEYNOSTA, key *xx* cannot be defined with /STATE=EXTEND

Explanation: The key you selected cannot be defined as part of a nongraphic EXTEND key sequence.

User Action: Refer to Appendix D for a list of definable keys. Reenter the command, specifying a valid key.

KEYRQSTA, key *xx* can only be defined with /STATE=EXTEND

Explanation: The key you selected can only be defined as part of a graphic EXTEND key sequence.

User Action: Reenter the command specifying a valid key.

LENTOOLON, transmit byte count exceeds buffer length

Explanation: This is a fatal internal error.

User Action: Copy the messages that are displayed on your terminal. Report the errors and the conditions that caused them to your system manager.

LMTTOOLON, logon mode name is too long

Explanation: The logon mode name must be no longer than 8 characters.

User Action: Try again.

LOGUNIDEA, SSCP has deactivated the session

Explanation: The IBM SSCP has deactivated the session by sending a DACTLU command. Some applications deactivate sessions by deactivating the logical unit rather than by sending an UNBIND command.

User Action: If this is normal for the IBM application you are using, ignore the message and press EXIT to exit the TE. Otherwise, report the problem to your system manager.

MAISIZEXC, requested screen size *width* x *length* is too big

Explanation: The IBM application specified a screen size greater than 24 lines by 132 columns in the BIND.

User Action: Check the *Digital SNA Gateway Problem Determination Guide* for information on how to handle this problem.

NETSHUT, network node is not accepting connects

Explanation: The local system is shutting down or the Gateway node is not accepting connects because it is in the process of initializing.

User Action: Exit the TE if the local DECnet node or TCP/IP host is shutting down. If the Gateway is initializing, wait for the process to complete before trying again.

NO_SUCACC, access name not recognized by Gateway node

Explanation: You specified a nonexistent access name.

User Action: Check with your system manager to determine which access name you need.

NO_SUCPU, PU name not recognized by Gateway node

Explanation: Either you or the access name you used specified a nonexistent physical unit.

User Action: Check with your system manager to determine which PU name or access name you need.

NO_SUCSES, session address not recognized by Gateway node

Explanation: Either you or the access name you used specified a nonexistent session address.

User Action: Check with your system manager to determine which session address or access name you need.

NOKEYQ, qualifier /KEY required on DEFINE or DELETE command

Explanation: The /KEY qualifier is missing in the DEFINE or DELETE KEY statement.

User Action: Reenter the DEFINE or DELETE statement, making sure to include all necessary qualifiers.

NONPRCH, nonprinting character not allowed in key definition

Explanation: You tried to redefine a nonprinting character in the key definition file.

User Action: Correct the error and restart the TE.

NOSESACTV, no LU-LU session is currently active

Explanation: There are no active LU-LU sessions.

User Action: Establish an LU-LU session before you try this operation again.

NOTNUMSES, session address must be a decimal number

Explanation: You entered the session address incorrectly.

User Action: Check to see that you have the proper session address. Reenter the initial command.

PASTOOLON, password is too long

Explanation: The IBM password must be no longer than 8 characters.

User Action: Try again.

PRINTED, screen contents printed

Explanation: The contents of your screen has been directed to an output file or to a local printer as you specified with the PRINT function.

User Action: No response.

PROUNBREC, IBM application detected a protocol error, sense code *IBM-sense-code*

Explanation: The IBM application sent an UNBIND request with the indicated sense code. It did this because the application detected the protocol error that the sense code indicates.

User Action: Determine the meaning of the sense code from the IBM documentation and take appropriate action.

PUNOTAVA, PU has not been activated

Explanation: The physical unit on the Gateway has not been activated by IBM.

User Action: Ask the VTAM operator to check the line and physical unit from the IBM host and activate them if necessary. If they have been activated, there may be a hardware problem between the Gateway and the IBM host.

PUNOTSPE, PU name was not specified

Explanation: You did not name the physical unit you want to use from the Gateway to IBM. A value is required for the /PU qualifier on the command line.

User Action: Reenter the SET HOST SNA command and specify a value for the /PU qualifier.

PUTOOLON, PU name is too long

Explanation: The physical unit name you specified is too long.

User Action: Try again, specifying the corrected physical unit name.

REQREJECT, invalid data received, rejected with sense code *IBM-sense-code*

Explanation: The TE rejected an RU that it received from the IBM application with the sense code shown.

User Action: Copy the data contained in the error message for your system manager's use. The system manager can determine the meaning of the IBM sense code from the IBM documentation and take appropriate action.

SESIN_USE, session address is already in use

Explanation: Someone else is using this session address.

User Action: Try again using a different session address. If you are unsure of a valid choice, ask your system manager.

SESINUNAC, session address already in use or not activated

Explanation: All session addresses in the range specified by the access name are in use or are not activated.

User Action: Ask the IBM VTAM operator to activate more SLUs, or wait for an active one to become available.

SESNOLACT, session no longer active

Explanation: The session was terminated by the IBM host or the Gateway. Subsequent error messages explain why.

User Action: Respond to the subsequent error messages.

SESNOTAVA, session address has not been activated

Explanation: The SLU has not been activated from the IBM side.

User Action: Ask the VTAM operator to check the logical unit from the IBM host and activate it if necessary.

SESTRANS, UNBIND received, new BIND expected from IBM host

Explanation: Control is being transferred to another IBM application.

User Action: No response.

SPNPRCFAI, error spawning subprocess

Explanation: The TE could not create a subprocess.

User Action: Copy any error messages that appear and bring them to your system manager when reporting the problem. If you are the system manager, refer to the *OpenVMS System Messages and Recovery Procedures Reference Manual*.

SSCPREJ, RU from SSCP rejected with sense code *IBM-sense-code*

Explanation: The IBM host rejected the RU, showing the given sense code.

User Action: Determine the meaning of the sense code from the IBM documentation and take appropriate action.

SYNQUOT, bad syntax for quoted character *xx*

Explanation: An error occurred in redefining a quoted character.

User Action: Correct the error. The correct syntax for a quoted character is "*x*" (for any character) or """ (for the single quote itself).

TERIOERR, terminal I/O error

Explanation: A terminal read or write function failed, probably because of a terminal or terminal interface problem.

User Action: Press REFR to refresh your screen. If the error recurs, have the terminal-to-operating system interface tested.

TRALOAFAI, failed to load translation tables from *file-spec*

Explanation: The TE failed to read translation tables from the specified file.

User Action: Examine the secondary message to discover why the translation tables could not be loaded.

TYPCONZED, type Ctrl/Z to exit

Explanation: Your session is no longer active. A message appears at the bottom of your screen to indicate why the session ended.

User Action: Press EXIT (Ctrl/Z) to return to the operating system prompt. If you want to see what was on the screen before the session ended, press REFR to refresh the screen.

UNABINIMA, unacceptable BIND image, byte *byte-number*, field name *name*

Explanation: This message indicates that the BIND was not acceptable to the TE. The byte number and the IBM bit position pinpoint the field in the BIND that was unacceptable to the TE. The subsequent message, either %SNATERM-E-UNARANGE or %SNATERM-E-UNAVALUE, provides you with further information about the unacceptable values.

User Action: You probably attempted to use a session address that was not configured for TE use. Copy the data contained in this error message and the one that follows for your system manager's use. The BIND information indicates that this session has not been properly configured on

the IBM host. Check the IBM SNA reference manual to determine which field was unacceptable and why.

UNARANGE, needed a value in range %X'*hex-value*' to %X'*hex-value*', received %X'*hex-value*'

Explanation: The BIND is not a valid LU2-type BIND.

User Action: Find out why. It could be that you are not using the correct logon mode entry or that the application has been configured on the IBM system for a session other than an LU2-type session. (All IBM applications can override the logon mode entry used to create a BIND.)

UNAVALUE, expected %X'*hex-value*', received %X'*hex-value*'

Explanation: The BIND is not a valid LU2-type BIND.

User Action: Find out why. It could be that you are not using the correct logon mode entry or that the application has been configured on the IBM system for a session other than an LU2 type session. (All IBM applications can override the logon mode entry used to create a BIND.)

UNKFUNC, unknown function name *xx*

Explanation: The function name you supplied to the TE in the DEFINE KEY statement is invalid.

User Action: Reenter the DEFINE KEY statement, making sure to supply a valid function name.

UNSTERTYP, unsupported terminal type

Explanation: The TE is not supported on your type of terminal.

User Action: Use a terminal that is supported by the TE software (see the *Software Product Description*). If you are using a supported terminal, make sure it is set up properly (see Appendix C).

UNUUNBREC, UNBIND of type *unbind-type* received from IBM application

Explanation: The IBM application sent this type of UNBIND command.

User Action: Determine the meaning of the command from the IBM documentation and take appropriate action.

USETOOLON, user name is too long

Explanation: The user name must be no longer than 8 characters.

User Action: Try again.

A.1.2 OpenVMS System Messages

Messages that appear without the %SNATERM or -SNA prefixes are OpenVMS system messages. See the *OpenVMS System Messages and Recovery Procedures Reference Manual* for additional information if you encounter these messages.

B
Visible Attribute Mode

Visible attribute mode on the 3270 Terminal Emulator provides the IBM application programmer and the Digital Software Services personnel with a means of debugging application programs.

After you use the DSP ATT function to enable visible attribute mode, all attribute characters are visible. Attribute characters are characters that appear at the start of a field to indicate the following information:

- How the field is displayed on the screen: at normal intensity, at high intensity, or invisibly
- What type of data the application expects in the field: numeric, alphabetic, or alphanumeric

This appendix explains how to enter and exit this mode and discusses the screen displays you encounter.

B.1 Entering and Exiting Visible Attribute Mode

By pressing DSP ATT, you can shift the 3270 Terminal Emulator into visible attribute mode. The first time you press this key combination, the following actions occur:

1. The screen is refreshed.
2. The attribute characters are displayed in reverse video or underlined.

Note

The displays described in this appendix rely on your terminal's ability to produce reverse video and bold characters. Appendix C describes the corresponding displays that appear on terminals without this capability.

The second time you press DSP ATT you turn this mode off; the screen is refreshed and restored to normal mode.

B.2 Visible Attribute Mode Displays

In the visible attribute mode, the attribute characters are displayed as reverse video, bold symbols. Attribute characters indicating numeric fields are also underlined. All other characters are displayed normally. Table B-1 lists the attribute characters and their corresponding meanings.

Table B–1 Visible Attribute Mode Displays

Visible Attribute Display	Meaning
n	Unprotected field with normal intensity follows.
N	Protected field with normal intensity follows.
d	Following unprotected field is light pen detectable.
D	Following protected field is light pen detectable.
h	Following unprotected field has high intensity.
H	Following protected field has high intensity.
i	An unprotected nondisplay field follows.
I	A protected nondisplay field follows.

C

Terminal Characteristics

The image displayed on your 3270 Terminal Emulator (TE) screen is determined by the type of Digital terminal you use and the features you set on that terminal. This appendix discusses the terminal features that could cause the TE screen display to differ from the descriptions presented in this manual. This appendix also describes how a user can prepare a terminal for use with the TE.

C.1 Terminal Set-up Features

Most Digital terminals have a feature called SET-UP, which allows you to select various characteristics for your terminal. You can select these characteristics at installation or anytime you want to change a setting. The user's guide for your particular terminal describes how to set up these characteristics.

The TE, as described in this manual, relies on having the following terminal characteristics:

- Dark screen background
- Autorepeat on

If you have a VT100-series terminal, make sure it is set to ANSI mode. If you have a VT200-series terminal, make sure it is set to VT200 mode.

In addition, if you have a terminal that supports national keyboards, make sure that your terminal is set up to correspond to your keyboard type.

C.2 Video Display Features

Another factor that affects screen displays is whether or not your terminal has the features provided by the advanced video option (AVO). The features described throughout this manual are valid for VT100-series and VT200-series terminals with AVO. While most Digital terminals have these features, some VT100s do not, and VT101 terminals never do.

If your terminal is a VT101 or a VT100 without AVO, you can expect the following differences in displays to occur:

- The high-intensity fields specified by the IBM application appear in normal intensity.
- The displays resulting after enabling visible attribute mode (see Chapter 3 and Appendix B) may differ from what you expect:
  - High-intensity fields appear in normal intensity.
  - Underlined and reverse video attributes are displayed alike: either underlined or in reverse video, depending on the cursor style you select.

C.3 Setting Up Your Terminal to Use the 3270 Terminal Emulator Software

For VT100-Series Terminals: To make sure your terminal is correctly set for the TE software, do the following:

1. Set your VT100 terminal to ANSI mode (see the user's guide for your terminal).
2. Enter the following command at the DCL dollar ($) prompt:

   ```
   $ SET TERMINAL/INQUIRE
   ```

   This command causes the physical device (the terminal) to be questioned about its characteristics. The appropriate parameters for the OpenVMS terminal are set up according to the terminal's response.

For VT200-Series Terminals:

To make sure your terminal is correctly set for the TE software, do the following:

1. Set-up directory: Select the keyboard type that corresponds to the keyboard layout you are using (for example, North American, Italian, etc.).
2. Display set-up—select the following:
   - Interpret controls
   - Light text, dark screen
   - Cursor (visible)
3. General set-up:
   - VT200 or VT100 mode—(If VT100 mode, set VT100 ID)
   - 7-bit or 8-bit controls
   - Multinational/national
   - Normal cursor keys
   - No new line
4. Communications set-up:
   - XOFF at 64 or XOFF at 128
   - 8-bit communication line
   - 8-bit (any) parity
   - No local echo
5. Printer set-up—not applicable
6. Keyboard set-up:
   - Warning bell ON
7. Tab set-up—not applicable

Enter the following command at the DCL dollar ($) prompt:

```
$  SET TERMINAL/INQUIRE
```

This command causes the physical device (the terminal) to be questioned about its characteristics. The appropriate parameters for the OpenVMS terminal are set up according to the terminal's response.

If you select national character mode, you must set your terminal to /NOEIGHTBIT. Enter the following command at the DCL dollar ($) prompt:

```
$ SET TERMINAL/NOEIGHTBIT
```

D

Redefining Your Keyboard Layout

The 3270 Terminal Emulator (TE) software maps both 3270 functions (by default) and internal emulator functions to keys on your physical keyboard (VT100 or VT200). You can alter the way these functions correspond to your keyboard layout, thereby customizing the keyboard to fit your specific requirements. This appendix provides the instructions you need for customizing your TE keyboard layout.

D.1 Redefining Your Keyboard Layout

There are two methods for redefining your keyboard layout. You can either provide a key definition file, to be executed at TE startup, or redefine your keyboard interactively with the DEF KEY function. In either case, the keys that you can define include:

- The application keypad of VT1*xx* and VT2*xx* terminals
- The editing keypad and top-row function keys of VT2*xx* terminals
- Ctrl/*x* keys such as Ctrl/Z
- Extended graphic keys such as EXT + H.

Table D-1 provides a complete list of the keys you can redefine.

Note

The following keys are reserved for OpenVMS functions and cannot be redefined:

- Ctrl/Y—Interrupt
- Ctrl/C—Cancel/interrupt
- Ctrl/O—Output off/on
- Ctrl/S—Suspend output
- Ctrl/Q—Resume output

- F1-F5

Table D–1 Keys Available for Definition

Location	Key Name
Function keys	PF1-PF4
Application keypad	KP0-KP9 ENTER MINUS COMMA PERIOD
Top-row function keys	F6-F20 HELP (F15) DO (F16)
Editing keypad (E1-E6)	FIND (E1) INSERT_HERE (E2) REMOVE (E3) SELECT (E4) PREV_SCREEN (E5) NEXT_SCREEN (E6)
Cursor keys	UP DOWN LEFT RIGHT
Control keys	Ctrl/A—Ctrl/Z*, including: Ctrl/H (BS) Ctrl/I (HT) Ctrl/J (LF) Ctrl/M (CR)

* See note preceding this table.

The functions you can assign to physical keys include all of the emulated IBM functions, graphic characters such as the alphanumeric characters, and most TE functions such as REFR. Table D-2 provides a complete list of the functions you can assign to physical keys.

Table D–2 3270 Functions You Can Assign

Key Type	Assignable Function
Cursor movement and field keys	TAB BACK_TAB HOME NEWLINE UP DOWN LEFT RIGHT UP_NOWRAP DOWN_NOWRAP LEFT_NOWRAP RIGHT_NOWRAP SELECT
Input control and erase keys	INSERT_MODE DUP FM ERASE_EOF ERASE_INPUT DELETE RESET DVCNCL NUMOVR
AID-generating keys	PF1-PF24 PA1-PA3 CLEAR ENTER ATTENTION

(continued on next page)

Table D–2 (Cont.) 3270 Functions You Can Assign

Key Type	Assignable Function
Local TE functions	PRINT SET_PRINTFILE REFRESH DISPLAY_ATTRIBUTES EXTEND EXIT STATUS HELP DEFINE_KEY ATTACH PLAY RECORD SHOW_MESSAGE SPAWN SYS_REQUEST

D.1.1 Using a Key Definition File

You can redefine the keyboard layout by creating a key definition file or by supplying the numeric keypad definition file supplied with the TE software kit (SYS$EXAMPLES:SNATE$NUMPAD.FIL).

A key definition file is a text file consisting of individual key definitions in the form of DEFINE/KEY and/or DELETE/KEY statements that respectively supply or remove key definitions to the TE.

You supply the name of this file to the TE by specifying the /KEY_DEFINITION= *file-spec* qualifier on the startup command line. The key definition file is processed at TE startup as DEC multinational text. No national character set conversions are applied.

Example:

```
$ SET HOST/SNA.../KEY_DEFINITION=MY_FILE.FIL
```

At startup, the TE will open the specified file MY_FILE.FIL and use the key definitions specified there. If you do not specify the /KEY_DEFINITION qualifier, the TE will use the default mapping described in Chapter 1.

D.1.1.1 The DEFINE/KEY Statement

You use the DEFINE/KEY statement to assign a new function to a particular key. The DEFINE/KEY statement uses the following format:

DEFINE/KEY [/STATE=EXTEND] *keyname function*

where

/STATE	is an optional qualifier that indicates that the key is to be redefined in extend mode. Nonextend mode is the default if the /STATE qualifier is not supplied.
keyname	is the standard key name on the Digital terminal.
function	indicates the 3270 function or TE function you want mapped to this key.

Most of the named keys can be defined both in normal (nonextend) mode and in extend mode. The Ctrl/*x* keys (and the synonyms for those keys) can be defined only in normal mode; do not specify the qualifier /STATE=EXTEND.

Example:

DEFINE/KEY/STATE=EXTEND "Z" exit

This example assigns the EXIT function to the key sequence EXT + Z.

D.1.1.2 The DELETE/KEY Statement

Use the DELETE/KEY statement to remove the function assigned to a particular key. The DELETE/KEY statement uses the following format:

DELETE/KEY [/STATE=EXTEND] *keyname*

where

/STATE	is an optional qualifier that indicates that the key is in extend mode. Nonextend mode is the default if the /STATE qualifier is not supplied.
keyname	is the standard key name on the Digital terminal.

Example:

DELETE/KEY CtrlZ

This example removes the default value of EXIT from the control key sequence Ctrl/Z.

D.1.1.3 A Sample Key Definition File

By default, the TE maps 3270 functions to the numeric keypad. The following example illustrates a series of key definition statements you might use in a key definition file to restore the numeric keypad on a VT220 keyboard.

EXAMPLE:

```
DEFINE/KEY          KP0 "0"
DEFINE/KEY          KP1 "1"
DEFINE/KEY          KP2 "2"
DEFINE/KEY          KP3 "3"
DEFINE/KEY          KP4 "4"
DEFINE/KEY          KP5 "5"
DEFINE/KEY          KP6 "6"
DEFINE/KEY          KP7 "7"
DEFINE/KEY          KP8 "8"
DEFINE/KEY          KP9 "9"
DEFINE/KEY          period "."
DEFINE/KEY          comma ","
DEFINE/KEY          minus "-"
DEFINE/KEY          Select extend
DEFINE/KEY          Prev_screen reset
```

In this example, the EXT (KP.) key is restored as the decimal point. The default value of any keyboard key is removed when you assign another function to that key. Therefore, because some TE functions rely on an EXT key sequence, the EXT function is defined to correspond to the Select key. This example also restores the RESET (KP0) key by assigning the value 0 to that key. The RESET function, then, is defined to correspond to the Prev Screen key.

D.1.2 Using the DEF KEY Function

You can also use the DEF KEY function to define or redefine a key during an active TE session. When you press DEF KEY (Ctrl/K), the TE displays a prompt in the status line at the bottom of your screen. For example, if you press Ctrl/K, the TE returns the following prompt:

```
Press the key that you wish to define:
```

Enter the key you want to redefine. The TE responds with:

```
Enter the function name or quoted character:
```

Enter the function you wish to assign to this key and press RETURN. You can now use the key as you have redefined it. This new definition will remain in effect only until you exit from the TE. Tables D-1 and D-2 list the keys available for definition and the functions you can assign to the physical keys.

You can also use DEF KEY to remove a function assigned to a particular key. A null reply to the prompt “Enter the function name or quoted character” will remove any definition currently in effect for that key.

Input typed during the DEF KEY dialogue is subject to translation from the national character set to DEC multinational. Therefore, you cannot redefine a key that exists on your national terminal if it has no DEC multinational equivalent.

D.1.3 The TE Help Screen

When you invoke HELP during a session, the TE displays a diagram showing current key definitions. The diagram illustrates the top-row keys, editing keypad, application keypad, and up to 32 control or extend character definitions.

The TE generates the HELP screen internally by scanning the keyboard mapping tables. In this way, the HELP screen always reflects the definitions and changes that you make, including those you make interactively using the DEF KEY (Ctrl/K) function.

E

Supported and Unsupported Features

The 3270 Terminal Emulator (TE) emulates IBM 3270 Information Display Station features. This appendix lists the supported and unsupported features.

E.1 Supported Features

The TE supports emulation of the features listed under the following display stations.

IBM 3274 model 41 C controller:

- Category A terminal adapter (for 32 terminals)
- Configuration support D
- Common communications adapter
- External modem interface

IBM 3278 Display Station models 1, 2, 3, 4, and 5, IBM 3180 Display Station, or IBM 3178 Display Station:

- Keyboard with 24 PF keys and 3 PA keys
- Audible alarm
- Protected and unprotected fields
- Local and host copy and printer order FF (form feed)
- Alphanumeric and numeric data
- Numeric lock override
- Intensified display, display, and nondisplay fields
- Autorepeat keys (as available as a VT100 keyboard SET-UP feature)
- Click and ALT CURSR (as available as a VT100 keyboard SET-UP feature)

The TE also supports the following screen sizes.

- IBM 3178 Display Station: Up to 1920 characters

- IBM 3180 Display Station: Up to 3564 characters
- IBM 3278 Display Station, Model 1: Up to 960 characters
- IBM 3278 Display Station, Model 2: Up to 1920 characters
- IBM 3278 Display Station, Model 3: Up to 2560 characters
- IBM 3278 Display Station, Model 4: Up to 3440 characters
- IBM 3278 Display Station, Model 5: Up to 3564 characters

E.2 Unsupported Features

The TE does not support emulation of the following features for the IBM 3278 Display Station models 1, 2, 3, 4, and 5, the IBM 3180 Display Station, or the IBM 3178 Display Station.

- Selector pen, security lock, magnetic strip card reader, and operator identification card reader
- ↩ (new line) as an autorepeat key
- « (fast left) and » (fast right) keys
- TEST REQ or TEST, IDENT, and CURSR BLINK functions
- Structured fields
- Local function keys other than those supported as VT100/VT200/VT300 SET-UP features. Local function keys are keys that, when operated, do not transmit any interface codes to the host application.

The TE also does not support the following features for the IBM 3278 Display Station models 1, 2, 3, 4, and 5:

- Field inherit keys
- Programmed symbol selection keys

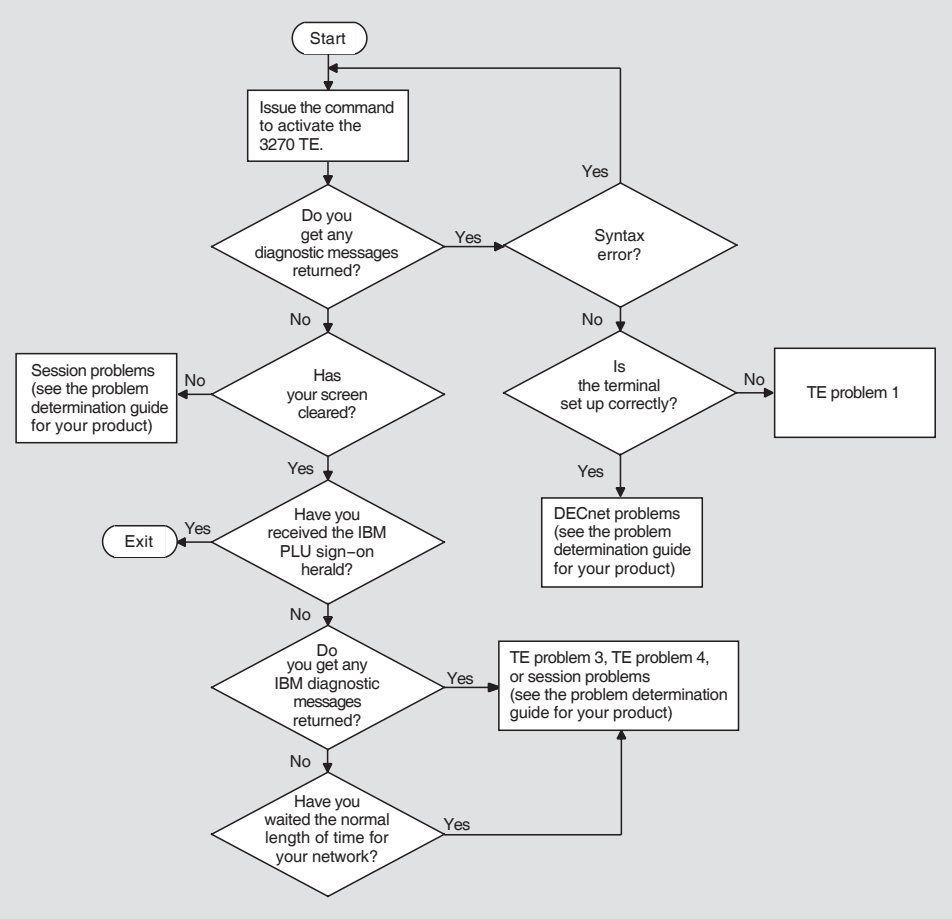
F

3270 Terminal Emulator Problems

This appendix discusses the problems you may encounter when using the TE software and offers possible solutions.

Use the flow chart in Figure F–1 to determine where your problem may be. When you have isolated a problem area, refer to the manual as indicated on the flow chart for a detailed troubleshooting discussion.

Figure F–1 Solving TE Problems



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The following pages contain solutions for each of the problems listed below.

Problem Number	Symptom
1	You receive a message indicating that your terminal is an unsupported terminal type.

2	When you use the TE, the keyboard keys do not work properly. Messages, such as the status line, do not appear in reverse video.
3	You receive a message indicating that the screen size (or the alternate screen size) specified by the IBM application is too big.
4	After you type SET HOST/SNA, the TE rejects the BIND request.
5	When you try to use the RECORD or PLAY function, the TE returns an error message indicating that you have a bad key sequences file.

F.1 TE Problem 1

You receive a message indicating that your terminal is an unsupported terminal type.

Solution:

Check that your terminal is set as follows:

VT100-series terminal. If you have a VT100-series terminal, use VT100 set-up mode to make sure the terminal is in ANSI mode (see your *VT100 User Guide*). Then type the following command at the DCL dollar prompt ($) to make sure your operating system sets up the terminal software properly:

```
$  SET TERMINAL/INQUIRE
```

Note

You cannot use the TE software on a VT131 terminal that is running in block mode.

VT200-series terminal. If the terminal you are using is a VT200-series terminal or a terminal attached to a Digital personal computer, use the set-up mode to make sure your terminal is in ANSI mode and is set to VT100 or VT200 emulation mode.

Check the communications set-up menu: The terminal communications line must be set for 8-bit characters.

Then type the following command at the DCL dollar prompt ($) to make sure that your operating system sets up the terminal software properly:

```
$  SET TERMINAL/INQUIRE
```

Terminal with a national language keyboard. If you are using a terminal that supports a national language keyboard, make sure that your terminal is set up to correspond to your particular keyboard.

F.2 TE Problem 2

When you use the TE, the keyboard keys do not work properly. Messages, such as the status line, do not appear in reverse video.

Solution:

Check your terminal setup. Refer to TE Problem 1 for the proper set-up requirements.

F.3 TE Problem 3

You receive a message indicating that the screen size (or the alternate screen size) specified by the IBM application is too big.

Solution:

The TE allows screen sizes up to 43 rows by 80 columns or 27 rows by 132 columns (3564 characters). See the *Digital SNA Guide to IBM Parameters* for the values that must be set to allow communication between the IBM application and the TE.

F.4 TE Problem 4

After you type SET HOST/SNA, the TE rejects the BIND request.

Solution:

When the TE rejects a BIND request, an error message displays, indicating which field in the BIND request is causing the problem. Compare the value indicated in the error message with the BIND parameter given in Chapter 4 of the *Digital SNA Guide to IBM Parameters*. A new MODEENT macro may need to be defined in VTAM so that communication with the TE software can occur.

You may be trying to use a session address that corresponds to an LU name that is not configured in CICS or IMS for a 3270 device (LU2). Check with your IBM network communications center to be sure your LU is defined properly.

F.5 TE Problem 5

When you try to use the RECORD or PLAY function, the TE returns an error message indicating that you have a bad key sequences file.

Solution:

The file in which the TE stores the recorded key sequence is corrupt or incompatible with the current version of the TE. Have your system manager correct or delete the file, SNATE$RECSEQ.DAT, that is in your SYS$LOGIN directory. If the system manager deletes this file, you will have to record again all the key sequences that were stored on the PF keys.

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