CTIX™ X.25 Terminal/Host Adapter Manual

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LIST OF FIGURES

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RELATED DOCUMENTATION

The documents described below provide additional information related to the contents of this manual.

CONVERGENT TECHNOLOGIES DOCUMENTATION

For a complete list of Convergent Technologies publications, see the "Guide to Technical Documentation" in the Executive Manual or similar command line interpreter manual for your operating system.

Manuals

    CTIX X.25 Network Gateway Manual
    CTIX Operating System Manual, Version B
    CTIX/386 Operating System Manual

Release Notices

    Release Notice for your version of the CTIX
    X.25 Terminal/Host Adapter

The CTIX X.25 Network Gateway Manual provides technical information and operation procedures for the installation, configuration, operation, and maintenance of a CTIX SNA Network Gateway. The manual also defines IBM SNA general concepts and describes the Gateway components.

The CTIX Operating System Manual, Version B, and the CTIX/386 Operating System Manual describe the CTIX operating system, which is derived from the UNIX System V operating system. The manuals describe respective CTIX commands, application programs, system calls, library subroutines, special files, file formats, games, miscellaneous facilities, and system maintenance procedures. These manuals are the starting point for detailed information about CTIX features.

OTHER DOCUMENTATION

International Telegraph and Telephone Consultative Committee. _Data Communication Networks: Services and Facilities, Terminal Equipment and Interfaces_. Recommendations X.1-X.29. Yellow Book. Volume VIII, Fascicle VIII.2. Geneva: CCITT, 1981.

CONVENTIONS

The following command conventions are used throughout the CTIX X.25 Terminal/Host Adapter Manual.

Boldface   Command or other characters entered by the user appear in boldface.

Init Cap   Names of keys to be pressed on a
Boldface   terminal keyboard appear in init cap boldface.

[ ]   Command options are enclosed in square brackets [ ]. Do not type the [ ] when you specify command options.

| A vertical bar between values specifies an either|or choice. Specify only one value.

/   A slash separates or delimits individual values.

            A slash separates directory names in a CTIX pathname.

-          A hyphen specifies a range of values and is placed between the upper and lower limits of the specified range.

1 INTRODUCTION

Chapter 1 introduces the CTIX X.25 Terminal/Host Adapter and the CTIX X.25 Terminal/Host Adapter Manual. This chapter contains the following information:

- an introduction to the basic features and functions of the CTIX X.25 Terminal/Host Adapter

- a brief description of each CTIX X.25 Terminal/Host Adapter component

- an introduction defining the purpose, scope, intended audience, and content of this manual

OVERVIEW

The CTIX X.25 Terminal/Host Adapter, in conjunction with the CTIX X.25 Network Gateway, enables a terminal, configured to your CTIX system, to establish communication with a host computer on an X.25 public data network (PDN).

NOTE

References to the CTIX system in this manual include the CTIX/386 system.

The X.25 Terminal/Host Adapter consists of two basic components: the PAD (packet assembler/disassembler) and the Host Adapter.

The PAD enables you to transmit and receive data
packets over an X.25 line from your terminal. The
standard X.3/X.28 PAD program is used to interface
your terminal to the X.25 Packet Layer within the
CTIX X.25 Network Gateway.

The Host Adapter enables you to configure your
CTIX system to act as a host computer on an X.25
PDN. This allows your system to be accessed by a
remote PAD. The Host Adapter consists of an in-
terface program between the CTIX pts (pseudo ter-
minal) driver and the CTIX X.25 Network Gateway.
The Host Adapter is only used in conjunction with
Incoming Call packets.

X.25 TERMINAL/HOST ADAPTER FEATURES AND FUNCTIONS

The following is a partial list of features de-
signed to enhance the functionality of the X.25
Terminal/Host Adapter:

- The PAD supports the CCITT X.3, X.28 Rec-
  ommendations 1984. Twenty-two parameters
  are supported in the PAD profile.

- The functionality is increased, beyond
  the X.3/X.28 capabilities, for logging
  received PAD data to a file and transmit-
  ting ASCII data from a file.

- The remote host may be identified by a
  name, a short numerical sequence, or the
  full X.25 address. The host name-to-X.25
  address relationship is stored in a
  textfile.

- X.28 parameter profiles are stored in a
  textfile, for example, multiple files and
  different configurations can now be
  saved.

- The PAD has an individual parameter-locking capability. This feature inhibits the remote host from overwriting specific parameters, for example, Control Mode Escape (parameter 1).

- The PAD supports multiple Host and Profile files.

- The X.25 Terminal/Host Adapter Configuration utility menus provide easy administration of the PAD parameter Profile and Host files.

- Online Help information is provided.

- The Host Adapter provides a true virtual terminal interface for Incoming Call packets, enabling remote login to a CTIX host from a remote PAD.

- The virtual terminal capability of the Host Adapter greatly simplifies application design and implementation for the X.25 Network Gateway.

- The X.25 Terminal/Host Adapter enables interpretation of error messages.

- The X.25 Terminal/Host Adapter provides full nationalization capability using the CTAM library, that is, all text and messages (except CTIX messages) may be translated into other languages. Multiple languages are supported with the aid of the **LANG** environment variable.

X.25 TERMINAL/HOST ADAPTER COMPONENTS

The X.25 Terminal/Host Adapter consists of the
following components:

- the PAD (Terminal Adapter)

- the Host Adapter (a virtual terminal ser-
  vice)

- the X.25 Terminal/Host Adapter Configura-
  tion utility (menus)

- a PAD Profile file

- a PAD Host file

- a VT Profile file

The PAD (packet assembler/disassembler) is a soft-
ware program for attaching terminals that do not
operate in packet mode to a packet-switched net-
work (PSN). The PAD, in conjunction with the CTIX
X.25 Network Gateway, enables you to transmit and
receive data packets over an X.25 line from a ter-
minal.

The Host Adapter enables you to configure your
CTIX system to act as a host computer on a PDN for
access by a remote PAD.

The X.25 Terminal/Host Adapter Configuration util-
ity provides an easy-to-follow series of menus
designed to assist you in configuring the X.25
Terminal/Host Adapter and administering the PAD
parameters.

The PAD Host file is the address/host table for
X.25 calls from the PAD. The PAD Host file is
administered with the X.25 Terminal/Host Adapter
Configuration utility. It contains one-line en-
tries for each X.25 destination address, its cor-
responding name, and call-user data.

The PAD Profile file is the default X.3 Parameter
profile file for configuring the PAD during pro-
gram initiation. The PAD Profile file is adminis-
tered by the X.25 Terminal/Host Configuration uti-
lity. It contains one-line entries for each of
the 22 parameters, with a value for each of the
three supported profiles.

The Virtual Terminal (VT) Profile file contains
the profile sent to the PAD immediately following
connection establishment. The VT Profile file has
the same format as the PAD Profile file except
that it contains only one profile and no locking
option.

The X.25 Terminal/Host Adapter operates in either
data transfer mode or command control control
mode.

Chapter 2, "CTIX X.25 Terminal/Host Adapter," pro-
vides an in-depth description of the X.25 Termi-
nal/Host Adapter components and how they function
in relation to one another.

MANUAL OVERVIEW
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PURPOSE AND SCOPE

This manual provides technical information and
tutorial operating procedures required by system
administrators and product users who are respon-
sible for installing, configuring, operating,
maintaining, monitoring, and troubleshooting the
X.25 Terminal/Host Adapter.

The "Contents Guide," below, provides a content overview of each chapter to assist you in determining where the appropriate information required to complete your specific task is located.

X.25 Terminal/Host Adapter-specific terms are listed and defined in Terminology boxes.

The Glossary provides definitions of all technical terminology used throughout this manual.

Wherever possible, tutorial operating instructions, examples, and sample exercises are provided to guide you through the various procedures presented in this manual.

AUDIENCE

The CTIX X.25 Terminal/Host Adapter Manual addresses the information requirements of product users and system administrators.

```
┌──────────────────── NOTE ────────────────────┐
│                                               │
│  In this manual, the terms "product user" and │
│  "system administrator" are used to define job│
│  functions,   responsibilities,   and required│
│  technical knowledge.  These terms are not in-│
│  tended to reflect actual job titles or des-  │
│  criptions.                                    │
│                                               │
└───────────────────────────────────────────────┘
```

Product User

Within the context of this manual, the term "product user" describes anyone who is interested in using the X.25 Terminal/Host Adapter to transmit and receive data packets over an X.25 line from a terminal.

Product users are not required to understand X.25 protocol. However, it is assumed that product users are familiar with the CTIX or CTIX/386 operating system and the hardware to which the X.25 Terminal/Host Adapter is configured.

System Administrator

Within the context of this manual, the term "system administrator" refers to anyone who is responsible for installing, configuring, operating, monitoring, maintaining, and troubleshooting the X.25 Terminal/Host Adapter.

The information presented in this manual assumes that the system administrator is knowledgeable of the CTIX operating system, is a CTIX "super-user," and familiar with general communications concepts. An understanding of the X.25 protocol is extremely helpful. The system administrator must have the ability to interpret and respond to error messages that may be received during operation of the X.25 Terminal/Host Adapter.

The system administrator must also be familiar with the hardware components to which the X.25 Terminal/Host Adapter is configured.

CONTENTS GUIDE

Chapter 1, "Introduction," introduces the X.25 Terminal/Host Adapter and provides a description of the CTIX X.25 Terminal/Host Adapter Manual.

Chapter 2, "CTIX X.25 Terminal/Host Adapter,"
provides a description of the X.25 Terminal/Host
Adapter components, including the PAD (Terminal
Adapter), Host Adapter (a virtual terminal
service), X.25 Terminal/Host Adapter Configuration
utility, PAD Profile file, PAD Host file, and VT
Profile file. Modes of operation and a functional
block diagram depicting the operational concepts
of the X.25 Terminal/Host Adapter are also pro-
vided.

Chapter 3, "Using the Configuration Utility," pro-
vides complete tutorial procedures for configuring
the X.25 Terminal/Host Adapter.

Chapter 4, "X.3 PAD Parameter Descriptions," pre-
sents a complete description of the 22 supported
PAD commands.

Chapter 5, "X.28: PAD Functionality," describes
the PAD functions. A description of each PAD com-
mand, PAD service signals, and profiles of param-
eters are provided. A state diagram of operation
and a description of the PAD operating modes are
also provided.

Chapter 6, "Troubleshooting," provides a complete
list of error messages associated with the X.25
Terminal/Host Adapter.

Appendix A, "Keyboard Tables," lists preconfigured
terminal types supported and translates virtual
key names into keystroke sequences for generic
keyboards.

The Glossary defines technical terms used through-
out this manual; an index follows.

2 CTIX X.25 TERMINAL/HOST ADAPTER

Chapter 2 describes the X.25 Terminal/Host Adapter
and its components. This chapter contains the
following information:

- terminology and definitions

- a definition of X.25, X.3, X.28, and X.29
  protocols

- a description of the following X.25 Ter-
  minal/Host Adapter components:

  - the PAD

  - the Host Adapter

  - the X.25 Terminal/Host Adapter Con-
    figuration utility

  - the PAD Host file

  - the PAD Profile file

  - the VT Profile file

OVERVIEW

WHAT IS THE X.25 TERMINAL/HOST ADAPTER?

The CTIX X.25 Terminal/Host Adapter, in conjunc-
tion with the CTIX X.25 Network Gateway, enables a
terminal, configured to your CTIX system, to es-
tablish communication with a host computer on a
packet-switched X.25 public data network (PDN).

TERMINOLOGY

CTIX X.25 Network Gateway

A gateway is a collection of software pro-
grams designed to provide a communications
path or connection point between two similar
or dissimilar communications systems. In
the case of the CTIX X.25 Network Gateway,
the Gateway provides communication between
your CTIX system and a packet-switching X.25
public data network. In this sense, the
Gateway is a driver. It may also provide
point-to-point communication between two
S/MT or Server PC (SPC) systems, using the
DTE/DCE capabilities of the Gateway.

Host Adapter

The Host Adapter enables you to configure
your CTIX system to act as a host computer
on a PDN for access by a remote packet as-
sembler/disassembler (PAD).

PAD

The PAD utilizes the standard X.3/X.28 PAD
program to interface your terminal to the
X.25 packet level within the CTIX X.25 Net-
work Gateway.

PAD Host File

The Pad Host file is located in the
/etc/x25/padhosts directory. It is the ad-
dress/host translation table for X.25 calls
from the PAD.

PAD Profile File

The Pad Profile file is located in the
/etc/x25/padprofile directory. It is the
default X.3 Parameter (Par) Profile file for
configuring the PAD during program initia-
tion.

Public Data Network

Public data networks provide data communi-
cation services to the public for a sub-
scription fee.

Virtual Terminal (VT) Profile File

The Virtual Terminal (VT) Profile file is
located in the /etc/x25/vtprofile directory.
It contains the profile for the Host Adap-
ter, vtx29. It is the X.28 Parameter (Par)
profile for configuring the CTIX VT at pro-
gram startup.

X.25 Terminal/Host Adapter Configuration util-
ity

The X.25 Terminal/Host Adapter Configuration
utility provides an easy-to-follow series of
menus designed to assist you in configuring
the X.25 Terminal/Host Adapter and adminis-
tering the PAD parameters.

The X.25 Terminal/Host Adapter also enables you to
configure your CTIX system to act as a host compu-
ter on a PDN for access by a remote packet assem-
bler/disassembler (PAD).

WHAT IS X.25?

X.25 is a set of telecommunications recommenda-
tions established by the International Telephone
and Telegraph Consultative Committee (CCITT). Its
specific purpose is to define the interface be-
tween packet mode DTE (data terminal equipment)
and DCE (data circuit equipment), allowing the
packet mode DTE to access a public data network
(PDN).

To provide an interface between character-mode
terminals and the X.25 network for asynchronous
character-mode terminals, CCITT recommends X.3,
X.28, and X.29 protocols to complement X.25 proto-
col.

The following is a brief description of X.3, X.28,
and X.29 protocols:

X.3   X.3 protocol defines the parameters and
           values by which the PAD controls the
           terminal, for example, flow control or
           data forwarding parameters.

X.28   X.28 protocol defines the terminal oper-
           ator's commands to the PAD, such as a
           service request signal or command to set
           and read X.3 parameters.

X.29   X.29 protocol describes the interaction
           between the PAD and a host machine using
           X.25 protocol. X.29 specifies how a
           host computer can control the PAD by
           reading or setting the parameter values
           for a terminal with which it has estab-
           lished communication.

WHAT IS A PACKET-SWITCHED NETWORK?

Packet switching is a method of routing data (for
example, a message) from the transmitter to the
receiver. The packet switching method splits the
data into smaller units called packets. This pro-
cedure is accomplished at either the transmitting
terminal or at the exchange.

When transmitting from an asynchronous terminal,
data characters are individually transmitted over
an asynchronous line. Asynchronous terminals gen-
erally operate in character mode.

The following procedure is required to transmit
X.25 data from an asynchronous terminal:

- assemble the individual characters into
  data packets

- transfer the data packets to the X.25
  packet level of the DTE (X.25 driver)

This procedure is accomplished through use of the
X.25 Terminal/Host Adapter.

X.25 TERMINAL/HOST ADAPTER COMPONENTS

The X.25 Terminal/Host Adapter consists of the
following components:

- the PAD

- the Host Adapter

- the X.25 Terminal/Host Adapter Configu-
  ration utility

- the PAD Host file

- the PAD Profile file

- the VT Profile file

PAD

The PAD (packet assembler/disassembler) is a component of the X.25 Terminal/Host Adapter. The standard PAD X.3/X.28 program interfaces your terminal to the X.25 packet level within the CTIX X.25 Network Gateway. The PAD enables you to transmit and receive data packets over an X.25 line from your terminal.

The X.25 Terminal/Host Adapter supports 22 PAD parameters. A complete description of these parameters is located in Chapter 4, "X.3 PAD Parameter Descriptions."

Host Adapter

The Host Adapter is a component of the X.25 Terminal/Host Adapter. It provides the following functionality:

- remote CTIX login capability for remote PADs

- remote program execution of standard CTIX applications

- X.29 protocol handling and packet assembly/disassembly that is transparent to the application

The Host Adapter is a server program (vtx29) that acts as a filter between another device driver (most commonly the CTIX pts driver) and the CTIX X.25 Network Gateway.

When an Incoming Call packet is received for a subaddress entry in the /usr/spool/x25/proc_table that has the VTI flag set, the X.25 daemon (x25d) executes vtx29. (See the CTIX X.25 Network Gateway Manual for a complete description of the x25d.)

Once the virtual circuit is established, vtx29 transmits an X.29 Set message with parameters and values as specified in /etc/x25/vt/vtprofile. The VT Profile file contains a set of parameters and parameter values optimized for a remote CTIX login application. The profile may, however, be customized to other applications by editing the VT Profile file.

If the proc_table specifies an application program, vtx29 executes the application program and searches for a free virtual terminal device (/dev/vt). If a free device is available, the Incoming Call packet is accepted, and a communications path is established from the applications program through the pts driver, through the vtx29 program, and on to the X.25 device driver. The application is then connected to a /dev/ttypnn (nn being the available device number), which is the controlling terminal. All data going through the interface is assembled and disassembled into X.25 data packets in vtx29. This procedure enables the CTIX X.25 Network Gateway to be transparent to the application.

This method allows applications like remote login to the CTIX host by specifying /bin/login as the application in the proc_table.

Instead of specifying the application name in the proc_table, it is possible to specify a device name in the proc_table entry. This technique may also be used for remote login capability, where the proc_table entry would specify the /dev/vt device(s) instead of /bin/login. With this feature, getty's must be specified in /etc/inittab on /dev/ttypnn, which can be used to inhibit the number of simultaneous remote logins. When receiving an Incoming Call packet, x25d executes vtx29 as before; however, vtx29 now sscanfs only the device family specified, which in this case is /dev/vtnn, for a free subdevice and opens it. vtx29 does not execute any applications in this procedure.

The above examples only discuss the use of the pts
driver with the /dev/ttyp and /dev/vt devices as-
suming simple byte streams may be specified.

NOTE

Any device specified is assumed to reside in
the /dev directory.

PAD Host File

The PAD Host file is in the /etc/x25/padhosts
directory. It is the address-host table for X.25
calls from the PAD. The PAD Host file is
administered with the X.25 Terminal/Host Adapter
Configuration utility. It contains one-line
entries for each X.25 destination address, its
corresponding name, and call-user data. The PAD
Host file is a text file that can be modified with
the vi editor.

NOTE

Because interpretation of files depends on
precise data format, it is recommended that
you add and delete entries by using the X.25
Terminal/Host Adapter Configuration Utility
menus.

Host names must be unambiguous. The file named
padhostfile is the default PAD Host file name and
should not be modified. To select an alternative
PAD Host file, copy the default file, and make
modifications to the copied file.

```
┌─────────────────── NOTE ───────────────────┐
│                                             │
│  The X.25 Terminal/Host Adapter Configuration │
│  utility  interfaces  only  with  the  default │
│  padhostfile.                               │
│                                             │
└─────────────────────────────────────────────┘
```

The PAD Host file consists of the following infor-
mation:

- host address

- host name

- user data

- comments

The following is a brief description of each entry
in the PAD Host file:

Host Address   Host address must be the first en-
                try on the line. The host address
                consists of between 2 and 14 dig-
                its.

Host Name   Host name may be any name. The
                host name cannot exceed 16 charac-
                ters and/or digits, for example,
                speed dial number.

User data   User data is the data that is sent
                as part of the Call Request packet.
                A maximum of 16 user data charac-
                ters or digits is allowed.

Comments   Comments must be preceded by an #
                sign. If you choose to edit the
                file, the menus automatically in-
                sert #.

Figure 2-1 shows a sample line from the PAD Host
file.

```
#
# Host Address   Host Name        User Data       Comments
#-------------+------------+----------------+--------------------------------#
#
12345678901234  myhost  none     # Example
```

Figure 2-1. Sample PAD Host File

PAD Profile File

The PAD Profile file is in the /etc/x25/padprofile
directory. It is the default X.3 Parameter Pro-
file file for configuring the PAD during program
initiation. The file is administered by the X.25
Terminal/Host Configuration utility. The PAD
Profile file contains one-line entries for each of
the 22 parameters, with a value for each of the
three supported profiles. The PAD Profile file
can be modified with the text editor.

NOTE

It is recommended that you use the X.25 Termi-
nal/Host Adapter Configuration utility to mod-
ify the parameters in the PAD Profile file.

If you choose to create multiple PAD Profile
files, copy the padprofile file, and make your
modifications in the copy. The padprofile file is
the default PAD Profile file name and should not
be modified. You can select your copied version
from the X.25 Terminal/Host Adapter Configuration
utility and make modifications to the file using
the configuration menus.

The PAD Profile consists of the following information:

- Par

- prof1

- prof2

- prof3

- Lock

- Comments

Par   Par is the parameter number as defined by CCITT X.3. If a parameter number is omitted, a program default value is set.

prof1   prof1 is one of three profiles that are selectable in the PAD at run-time. prof1 is the X.28 standard profile. The value is the decimal parameter value as defined by CCITT X.28. If you do not specify a value in this field, a program default is set.

prof2   prof2 is one of three profiles that are selectable in the PAD at run-time. prof2 is the X.28 transparent profile. The value is the decimal parameter value as defined by CCITT X.28. prof2 is an optional field. If you do not specify a value in prof2, a program default is set.

prof3   prof3 is one of three profiles that
                         are selectable in the PAD at run-
                         time.   prof3 is the recommended
                         profile for Programmable Terminals
                         (PTs) and Graphic Terminals (GTs).
                         (The PAD defaults to prof3 at
                         startup.)   prof3 is an optional
                         field.   If you do not specify a
                         value in this field, a program de-
                         fault is set.

Lock   Lock prevents an incoming profile
                         from overwriting parameters, for
                         example, assuring that the command-
                         mode escape character always works.
                         Entering **Yes** locks the parameter.
                         If you do not specify a value in
                         the Lock field, the value can be
                         modified remotely with an X.29 Set
                         message.

Comments   Comments must always be preceded
                         with a # sign.

NOTE

Invalid parameters are ignored and replaced
with program default values.   The PAD assumes
that the parameters are in the order profl,
prof2, and prof3.   Therefore, if a prof2 pa-
rameter is not specified, the PAD assigns the
prof3 field value to prof2. Use the lock fea-
ture with great care, as various hosts may ex-
pect a profile (sent by the host) for proper
operation. For example, by locking PAD recall
(parameter 1) during a remote login to another
CTIX system, Control P always escapes to the
command control mode, and does not reach the
application. Parameters may be modified dyna-
mically in the PAD command control mode at any
time.   However, the modifications are not re-
flected in the profile file.

Figure 2-2 shows a sample PAD Profile file.

```
#
#
#Par.  prof1   prof2   prof3   Lock        Comments
#----+-------+-------+-------+-------+----------------------------
1       1       0       1      no     # PAD recall using a character
2       1       0       1      no     # Echo
3      126      0      126     no     # Data forwarding character(s)
4       0       20      0      no     # Idle timer delay
5       1       0       0      no     # Ancillary device control (XON/XOFF)
6       1       0       5      no     # PAD service signal control
7       2       1       2      no     # BREAK signal operation
8       0       0       0      no     # Discard output
9       0       0       0      no     # Padding after Carriage Return
10      0       0       0      no     # Line folding (wrap-around)
11      0       0       0      no     # Terminal line speed (read only)
12      1       0       1      no     # PAD flow control (XON/XOFF)
13      0       0       4      no     # Linefeed after Carriage Return
14      0       0       0      no     # Padding after Linefeed
15      0       0       1      no     # Line editing in Data Transfer State
16      8       8       8      no     # Character Delete - character
17      24      24      24     no     # Line Delete - character
18      18      18      18     no     # Line Display - character
19      0       0       0      no     # PAD editing service signals
20      0       0       0      no     # Echo mask
21      0       0       0      no     # Character parity treatment
22      0       0       0      no     # Page wait
                                                        408.2-2
```

Figure 2-2.   Sample PAD Profile File

Virtual Terminal (VT) Profile File

The Virtual Terminal (VT) Profile file is located
in the /etc/x25/vtprofile directory and contains
the profile for the Host Adapter, vtx29.   The VT
Profile file is the default X.28 Parameter profile
for configuring the CTIX VT at program startup.
The VT Profile file has the same format as the PAD
Profile file, except that it contains only one
profile and does not provide the locking option.
The parameters are sent as specified in the file
in a single X.29 Set message after accepting the
Incoming Call packet.   Parameters that contain
comments or are removed from the file are not sent
as part of the X.29 message.

```
┌──────────────────── NOTE ────────────────────┐
│                                               │
│  The VT Profile file is configured for remote │
│  login to CTIX and should never be modified.  │
│  No menu option is provided for modifying this│
│  file by the X.25 Terminal/Host Adapter Config-│
│  uration utility.                             │
│                                               │
└───────────────────────────────────────────────┘
```

The VT Profile file consists of the following in-
formation:

- Par

- profl

- Comments

Par   Par is the parameter number as defined
           by CCITT X.3.   Only those parameters
           specified are sent to the remote DTE,
           and expected to be set in the remote
           PAD.

profl   profl is the profile of parameter values
           read by the Host Adapter. The value is
           the decimal parameter value as defined
           by CCITT X.3 and tuned for the Virtual
           Terminal Interface. If you do not spec-
           ify a value in the profl field, a pro-
           gram default value is set.

Comments   Comments are always preceded by a #
           sign.

Figure 2-3 shows a sample VT Profile file.

```
#Par.  prof1          Comments
#----+------+--------------------------------------------------
1      0               # PAD recall using a character
2      0               # Echo
3      0               # Data forwarding character(s)
4      1               # Idle timer delay
5      0               # Ancillary device control (XON/XOFF)
#6     0               # PAD service signal control
7      8               # BREAK signal operation
8      0               # Discard output
9      0               # Padding after Carriage Return
10     0               # Line folding (wrap-around)
#11    0               # Terminal line speed (read only)
12     0               # PAD flow control (XON/XOFF)
13     0               # Linefeed after Carriage Return
14     0               # Padding after Linefeed
15     0               # Line editing in Data Transfer State
#16    8               # Character Delete - character
#17    24              # Line Delete - character
#18    18              # Line Display - character
#19    0               # PAD editing service signals
#20    0               # Echo mask
#21    0               # Character parity treatment
#22    0               # Page wait
```

408.2-3

Figure 2-3.   Sample VT Profile File

3 USING THE CONFIGURATION UTILITY

Chapter 3 provides step-by-step instructions for
using the X.25 Terminal/Host Adapter Configuration
utility and its menus. This chapter contains the
following information:

- instructions for executing the **PAD** com-
  mand

- a complete description of the following
  X.25 Terminal/Host Adapter Configuration
  utility menus:

  - X.25 Terminal/Host Adapter Main menu

  - X.25 Hostfile Administration menu:
    PAD Hostfiles in /etc/x25/padhosts
      display
    Add a New Host to the Hostfile menu
    Delete a Host from the Hostfile menu

  - PAD X.3 Parameter Profile Administra-
    tion menu:

    PAD Profile Files in
      /etc/x25/padprofile menu
    PAD Parameter Profile, (Parameters
      1-11) menu, for:
    Profile 1 = X.28 Standard
    Profile 2 = X.28 Transparent
    Profile 3 = Default

    PAD Parameter Profile, (Parameters
      12-22) menu, for:
    Profile 1 = X.28 Standard
    Profile 2 = X.28 Transparent
    Profile 3 = Default

    PAD Parameter Lock, (Parameters 1-11)
      menu

    PAD Parameter Lock, (Parameters 12-
      22) menu

- complete procedures for configuring the
  X.25 Terminal/Host Adapter

OVERVIEW

INSTALLATION

```
┌─────────────────────── NOTE ───────────────────────┐
│                                                     │
│  Refer to the Release Notice for your version       │
│  of this product for complete installation pro-     │
│  cedures.                                            │
│                                                     │
└─────────────────────────────────────────────────────┘
```

HOW TO EXECUTE THE PAD COMMAND

Execute the X.25 Terminal/Host Adapter **PAD** command
in one of the following ways:

  1. Use the X.25 Terminal/Host Adapter Con-
      figuration utility menus.

  2. Execute the **PAD** command from the command
      line.

**Executing the PAD Command from the X.25 Terminal/
Host Adapter Configuration Utility**

The X.25 Terminal/Host Adapter Configuration util-
ity offers an assortment of configuration menus
designed to provide an easy method of adminis-
tering and supporting the PAD Host and PAD Profile
files.   The following is a list of available
administration functions:

  ● adding entries to the Host file

  ● deleting entries from the Host file

  ● viewing the Host file

- modifying the PAD parameter profile

  - Selecting a Profile file

  - Modifying Profile 1

  - Modifying Profile 2

  - Modifying Profile 3

  - Locking Parameters

The parameter values are specified with mnemonics wherever possible. Using the method provided by the X.25 Terminal/Host Adapter Configuration menus enables you to configure the X.25 Terminal/Host Adapter without knowledge of all of the X.3 parameter values. To execute the **PAD** command from the X.25 Terminal/Host Adapter Configuration utility and display the X.25 Terminal/Host Adapter Main menu, complete the following steps:

1. Type **PAD** on the command line.

2. Press **Return**.

The X.25 Terminal/Host Adapter Main menu appears on your screen, as shown in Figure 3-1.
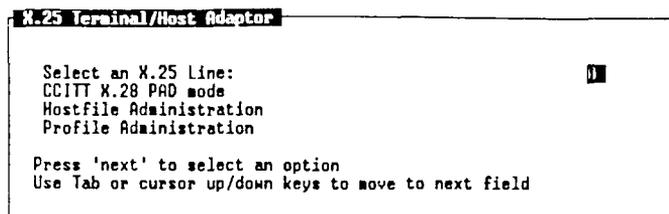
```
┌─X.25 Terminal/Host Adaptor────────────────────────────┐
│                                                        │
│   Select an X.25 Line:                        ▯▮       │
│   CCITT X.28 PAD mode                                  │
│   Hostfile Administration                              │
│   Profile Administration                               │
│                                                        │
│   Press 'next' to select an option                     │
│   Use Tab or cursor up/down keys to move to next field │
│                                                        │
└────────────────────────────────────────────────────────┘
                                          408.3-1
```

Figure 3-1. X.25 Terminal/Host Adapter Main Menu

Executing the PAD Command from the Command Line

By adding an assortment of arguments to the **PAD** command, when it is issued on the command line, you may bypass the X.25 Terminal/Host Adapter Configuration utility and enter PAD operation mode. Using the command line method enables you to move quickly into PAD operation mode when there are no required modifications to the PAD Host or PAD Profile files.

Add one of the following arguments to the PAD command to proceed directly into PAD operation mode:

- −l followed by X.25 Logical Line number

- −h followed by X.25 Hostfile pathname (default /etc/x25/padhosts/padhostfile)

- −p followed by X.28 profile pathname (default /etc/x25/padprofile/padprofile)

The logical line numbers are defined by the CTIX X.25 Network Gateway. The −l argument is mandatory. The Host file and the PAD Profile file argument pathnames are optional; however, if you choose to specify the Host file or PAD Profile file pathnames, it is mandatory to specify the entire pathname. This method allows you to specify your own Host and PAD Profile file names. The format must match that of the default files.

NOTE

Only one Host file (example) is supported by the X.25 Terminal/Host Adapter Configuration utility.

USING THE X.25 TERMINAL/HOST ADAPTER CONFIGURATION UTILITY MENUS

The following section provides step-by-step tutorial operating procedures for configuring the X.25 Terminal/Host Adapter.

---------- NOTE ----------

If you require assistance during configuration of the X.25 Terminal/Host Adapter, press the **Help** key on your PT/GT keyboard. Instructions for completing the chosen task are displayed on your terminal screen. To leave the Help facility, press **Exit**.

---------- NOTE ----------

The following instructions discuss proper cursor-movement procedures for moving between the various display and edit fields of each menu. However, you can move between fields by typing a unique menu command, for example, if you wish to move to the Hostfile Administration option field, you need only type Host, and the highlighted cursor will automatically position itself over the Hostfile Administration option on your menu.

X.25 TERMINAL/HOST ADAPTER MAIN MENU

To display the X.25 Terminal/Host Adapter Main menu and begin configuration of the X.25 Terminal/ Host Adapter, complete the following steps:

1. Type **PAD** on the command line.

2. Press **Return**.

The X.25 Terminal/Host Adapter Main menu appears
on your screen, as shown in Figure 3-1.

The X.25 Terminal/Host Adapter Main menu displays
the following options:

- Select an X.25 Line

- CCITT X.28 PAD Mode

- Hostfile Administration

- Profile Administration

SELECT AN X.25 LINE

You must select an X.25 line before attempting to
operate the PAD, for example, to place a call or
transfer data.   X.25 line numbers correspond to
the logical X.25 line numbers configured in the
CTIX X.25 Network Gateway. If the specified line
number is not configured in the X.25 Network Gate-
way, an error is returned when you attempt
operation on the incorrectly specified line. Line
numbers begin with 0.

If you do not specify an X.25 line number in the
edit field located to the right of the Select an
X.25 Line option, the PAD defaults to 0.

```
┌─────────────────── NOTE ───────────────────┐
│                                             │
│  Line  numbers  (beginning  with  0)  have  no  cor-  │
│  respondence  to  port  numbers  (physical  line  │
│  numbers).                                  │
│                                             │
└─────────────────────────────────────────────┘
```

To specify the Select an X.25 Line option, com-
plete the following steps:

1. Type the appropriate X.25 line number in
    the highlighted edit field.

    The highlighted cursor is automatically
    positioned in the edit field located to
    the right of the Select an X.25 Line
    option when the X.25 Terminal/Host Adap-
    ter Main menu is displayed.

    If you do not specify an X.25 line
    number, the PAD defaults to X.25 line
    number 0.

2. Press **Next** to record your selection.

3. Press **Exit** to confirm your selection.

4. Press **Tab** to proceed to the CCITT X.28
    PAD Mode option,

    and

    use the Up or Down cursor key to posi-
    tion the highlighted cursor over either
    the Hostfile Administration or Profile
    Administration options listed on the
    X.25 Terminal/Host Adapter Main menu.

CCITT X.28 PAD MODE

The CCITT X.28 PAD Mode option designates the PAD
operating mode. Once you enter the PAD operating
mode, you must reinvoke the PAD to return to the
X.25 Terminal/Host Adapter Main menu after you
exit. Figure 3-2 highlights the selection of the
CCITT X.28 PAD Mode option on the X.25 Terminal/
Host Adapter Main menu.

To specify the Hostfile Administration option, complete the following procedures:

1. Display the X.25 Terminal/Host Adapter Main menu, as shown in Figure 3-1.

    When the X.25 Terminal/Host Adapter Main menu is displayed, the highlighted cursor automatically appears in the edit field located to the right of the Select an X.25 Line option.

2. Press **Tab** to position the highlighted cursor over the CCITT X.28 PAD Mode option,

    and

    then use the Up or Down cursor key to position the highlighted cursor over the Hostfile Administration option.

NOTE

Remember, you can type the unique portion of the option name, and the highlighted cursor will automatically position itself on the option.

---

3. Press **Enter** or **Next** to display the X.25 Hostfile Administration menu, as shown in Figure 3-3,

    or

    press **Exit** to exit from the X.25 Terminal/Host Adapter Main menu and the X.25 Terminal/Host Adapter Configuration utility.

```
┌─ X.25 Terminal/Host Adaptor ──────────────────────────────────┐
│  X.25 Hostfile Administration ────────────────────────────┐    │
│                                                            │    │
│  ─Show Hosts                                               │    │
│   Add a Host                                               │    │
│   Delete a Host                                            │    │
│                                                            │    │
│  Press 'next' to select an option                          │    │
│                                                            │    │
└────────────────────────────────────────────────────────────────┘
```
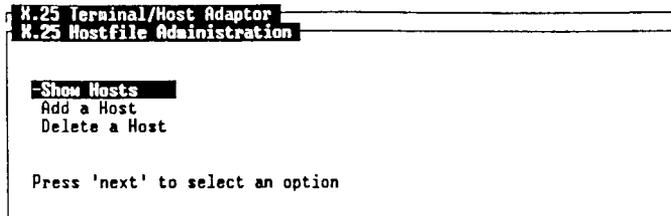
408.3-3

Figure 3-3. X.25 Hostfile Administration Menu

The X.25 Hostfile Administration menu provides the
following options:

- Show Hosts

- Add a Host

- Delete a Host

SHOW HOSTS

The Show Hosts option appears on the X.25 Hostfile
Administration menu, as shown in Figure 3-3.

The Show Hosts option allows you to display all
hosts defined in /etc/x25/padhosts/padhostfile.

To specify the Show Hosts option, complete the
following steps:

1. Display the X.25 Hostfile Administration
    menu, as shown in Figure 3-3.

    The highlighted cursor automatically
    positions itself over the Show Hosts op-
    tion when the X.25 Hostfile Administra-
    tion menu is displayed on your screen.

Using the Configuration Utility   3-11

2. Press **Enter** or **Next** to display the
    address, host name, and associated user
    data for each host defined in
    /etc/x25/padhosts/padhostfile. Use **Next
    Page** or **Prev Page** to show additional
    entries in the file,

    or

    press **Exit** to return to the X.25
    Terminal/Host Adapter Main menu, as
    shown in Figure 3-1.

The PAD Host Files in /etc/x25/padhosts display,
as shown in Figure 3-4, appears on your terminal
screen.
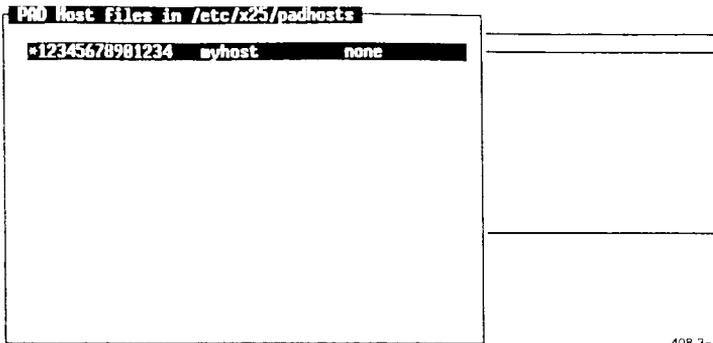
408.3-4

Figure 3-4.   PAD Host Files in /etc/x25/padhosts
Display

ADD A HOST

The Add a Host option is located on the X.25 Host-
file Administration menu, as shown in Figure 3-3.

Selecting this option allows you to define and add
new hosts to the /etc/x25/padhosts/padhostfile, by
specifying the following information:

- Host Name or Alias

- Host X.25 Network Address

- Call User Data

- Comments

The Host Name or Alias and the Host X.25 Network
Address fields are mandatory. The Call User Data
and Comments fields are optional.

To specify the Add a Host option, complete the
following steps:

1. Display the X.25 Hostfile Administration
   menu, as shown in Figure 3-3.

2. Use the Up or Down cursor key to
   position the highlighted cursor over the
   Add a Host option.

3. Press **Next** to display the Add a New Host
   to the Hostfile menu, as shown in Figure
   3-5,

   or

   press **Exit** to return to the X.25 Ter-
   minal/Host Adapter Main menu, as shown
   in Figure 3-1.

HOST NAME OR ALIAS

The Host Name or Alias option allows you to optionally enter a name, alias, or short numerical sequence when calling a host from the PAD, rather than memorizing the 14 digits of the X.25 address to the host. The Host Name or Alias option must be uniquely specified within the file and is only used as a reference to the host address.
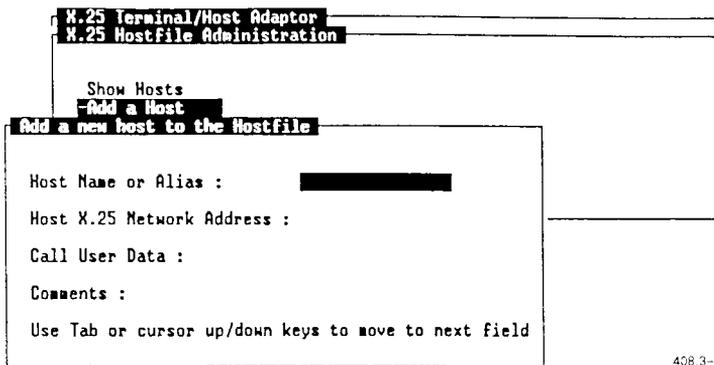
```
┌─X.25 Terminal/Host Adaptor ────────────────────────────────┐
│ ┌─X.25 Hostfile Administration ────────────────────────┐   │
│ │                                                       │   │
│ │    Show Hosts                                         │   │
│ │ ┌─Add a Host ───┐                                     │   │
┌─┤ │ Add a new host to the Hostfile ──────────────┐      │   │
│ │ │                                              │      │   │
│ Host Name or Alias :        ████████████        │      │   │
│                                                  │      │   │
│ Host X.25 Network Address :                      │──────┘   │
│                                                  │          │
│ Call User Data :                                 │          │
│                                                  │          │
│ Comments :                                       │          │
│                                                  │          │
│ Use Tab or cursor up/down keys to move to next field        │
└──────────────────────────────────────────────────┘          
                                                    408.3-5
```

Figure 3-5.   Add a New Host to the Hostfile Menu

When operating in the operating mode, the c command accepts one or more spaces between the c and the name. No spaces are allowed if you enter the entire address. An invalid call syntax error is reported if the host name or alias is not defined in the Host file.

To specify the Host Name or Alias option, complete the following steps:

1. Display the Add a New Host to the Hostfile menu, as shown in Figure 3-5.

2. The highlighted cursor automatically positions on the edit field located to the right of the Host Name or Alias option. If necessary, press **Tab** to position the highlighted cursor over the edit field located to the right of the Host Name or Alias option.

3. Type in a name, alias, or short numerical sequence.

4. Press **Tab** to position the highlighted cursor over the Host X.25 Network Address option,

   or

   press **Enter** or **Next** to record the specified name, alias, or short numerical sequence.

5. Press **Exit** to confirm your entry.

— NOTE —

If you press **Exit** before pressing **Next**, the entries made in the Host Name or Alias, Host X.25 Network Address, Call User Data and Comments options are not recorded in the hostfile.

---

6. Press **Exit** again to return to the X.25 Hostfile Administration menu, as shown in Figure 3-3.

HOST X.25 NETWORK ADDRESS

Specifying the Host X.25 Network Address option allows you to specify the address that is used in the Call Request packet to the remote host. Depending on which public data network (PDN) you are subscribing to and the data destination, you may be required to enter all 14 of the allowable digits representing the Host X.25 Network Address.

The entry in the Host X.25 Network Address option must consist of between 1 and 14 numeric charac-ters. Any number of host names may be assigned the same address.

To specify the Host X.25 Network Address option, complete the following steps:

1. Display the Add a New Host to the Hostfile menu, as shown in Figure 3-5.

2. Press **Tab** to position the highlighted cursor in the edit field located to the right of the Host X.25 Network Address option.

3. Enter a numeric sequence consisting of between 1 and 14 numeric characters.

4. Press **Tab** to move the highlighted cursor to the Call User Data option edit field,

   or

   press **Enter** or **Next** to record the new entry in the Host file.

5. Press **Exit** to confirm the new entry.

6. Press **Exit** again to return to the X.25 Hostfile Administration menu, as shown in Figure 3-3.

CALL USER DATA

The Call User Data option allows you to optionally
specify user data for transmission with the Call
Request packet.   This   information   is   used   by
various   hosts   to   route   the   call   to   the   appro-
priate application.   The information you enter in
the Call User Data option must not exceed 16 data
bytes.

The Call User Data option is optional.   If no call
user data is required, leave the edit field blank.

To specify the Call User Data option, complete the
following steps:

 1. Display   the   Add   a   New   Host   to   the
    Hostfile menu, as shown in Figure 3-5.

 2. Press **Tab** to   position   the   highlighted
    cursor in the edit field located to the
    right of the Call User Data option.

 3. Type the call user data (not to exceed
    16 data bytes).

 4. Press **Tab** to move the highlighted cursor
    to the Comments option edit field,

    or

    press **Enter** or **Next** to record   the   new
    entry in the Host file.

 5. Press **Exit** to confirm the new entry.

 6. Press **Exit** again to return to the X.25
    Hostfile Administration menu,   as   shown
    in Figure 3-3.

COMMENTS

The Comments option is used to specify an optional
comment that is stored with the other entries in
the Host file.

The Comments option is optional. If you do not
want to specify any comments, leave the Comments
option edit field blank.

To specify the Comments option, complete the fol-
lowing steps:

1. Display the Add a New Host to the
    Hostfile menu, as shown in Figure 3-5.

2. Press **Tab** to position the highlighted
    cursor in the edit field located to the
    right of the Comments option.

3. Type the optional comments.

4. Press **Tab** to position the highlighted
    cursor over one of the other options,
    which appear on the Add a New Host to
    the Hostfile menu,

    or

    press **Enter** or **Next** to save the new
    entry in the Host file.

5. Press **Exit** to confirm the new entry.

6. Press **Exit** again to return to the X.25
    Hostfile Administration menu, as shown
    in Figure 3-3.

Figure 3-6 shows a sample Add a New Host to the
Hostfile menu.


```
┌─ X.25 Terminal/Host Adaptor ──────────────────────────┐
│┌─ X.25 Hostfile Administration ───────────────────────┤
││                                                       │
││   Show Hosts                                          │
││  ─Add a Host                                          │
│┌─ Add a new host to the Hostfile ──────────┐           │
││                                            │           │
││  Host Name or Alias :       myhost         │           │
││                                            │──────────┘
││  Host X.25 Network Address : 1234567890    │
││  Call User Data :           none           │
││  Comments :                 Hostfile example│
││                                            │
││  Use Tab or cursor up/down keys to move to next field │
│└────────────────────────────────────────────┘
```

408.3-6

Figure 3-6.   Sample Add a New Host to the Hostfile
Menu

DELETE A HOST

The Delete a Host option is located on the X.25
Hostfile Administration menu, as shown in Figure
3-3.

The Delete a Host option allows you to delete a
single host defined in the Host file. All of the
hosts defined in the Host file are displayed by
name and address to facilitate a selection.

To specify the Delete a Host option, complete the
following steps:

   1. Display the X.25 Hostfile Administration
       menu, as shown in Figure 3-3.

   2. Use the Up or Down cursor key to posi-
       tion the highlighted cursor over the
       Delete a Host option.

3. Press **Enter** or **Next** to display the Delete a Host from the Hostfile menu, as shown in Figure 3-7,

   or

   press **Exit** to return to the X.25 Terminal/Host Adapter Main menu, as shown in Figure 3-1.

Figure 3-7 shows the Delete a Host from the Hostfile menu.

HOW TO DELETE A HOST FROM THE HOSTFILE

To delete a host from the Delete a Host from the Hostfile menu, complete the following steps:

1. Display the Delete a Host from the Hostfile menu, as shown in Figure 3-7.

2. Use the Up or Down cursor key to position the highlighted cursor directly over the host address and host name of the host you are deleting from the Host file.

3. Press **Enter** or **Next** to execute the deletion.

4. Press **Exit** to confirm the deletion.

```
┌─Delete a Host from the Hostfile┌───────────┐
│ ▪12345678981234  myhost        none        │
│                                            │
│                                            │
│                                            │
│                                            │
│                                            │
│                                            │
│                                            │
│                                            │
│                                            │
└────────────────────────────────────┘
```
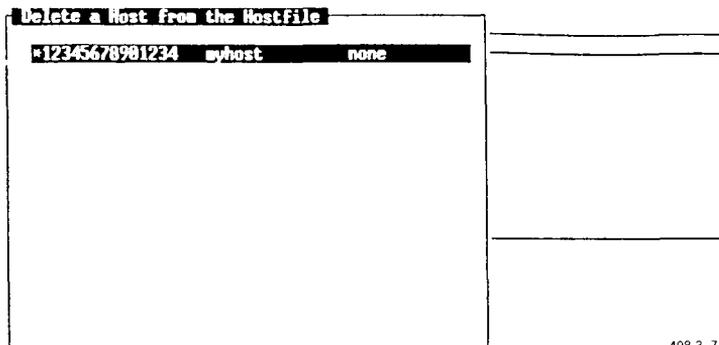
408.3-7

Figure 3-7.   Delete a Host from the Hostfile Menu

5.   Press **Exit** again to return to the X.25
     Hostfile Administration menu, as shown
     in Figure 3-3.

PROFILE ADMINISTRATION

The Profile Administration option is located on
the X.25 Terminal/Host Adapter Main menu, as shown
in Figure 3-1.

When the X.25 Terminal/Host Adapter is operating
in the operating mode, the PAD uses a profile of
22 parameters that describe the terminal interface
to the PAD.

To specify the Profile Administration option, com-
lete the following steps:

1.   Display the X.25 Terminal/Host Adapter
     Main menu, as shown in Figure 3-1.

2.   Press **Tab** to position the highlighted
     cursor on the CCITT X.28 PAD Mode op-
     tion.

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3. Press the Up or Down cursor key to position the highlighted cursor directly over the Profile Administration option,

   or

   type the menu command to automatically position the highlighted cursor directly on the Profile Administration option.

4. Press **Next** to display the PAD X.3 Parameter Profile Administration menu, as shown in Figure 3-8,

   or

   press **Exit** to exit from the X.25 Terminal/Host Adapter Main menu and the X.25 Terminal/Host Adapter Configuration utility.

Figure 3-8 shows the PAD X.3 Parameter Profile Administration menu.

```
┌─X.25 Terminal/Host Adaptor ─────────────────────────────┐
│ PAD X.3 Parameter Profile Administration ───────────────┐ │
│                                                         │ │
│  ▐▀Select a Profile file▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▀▌              │ │
│   Modify/View Profile 1 (X.28 Standard)                 │ │
│   Modify/View Profile 2 (X.28 Transparent)              │ │
│   Modify/View Profile 3 (Default)                       │ │
│   Parameter Locking                                     │ │
│                                                         │ │
│  Press 'next' to select an option                       │ │
└─────────────────────────────────────────────────────────┘
```
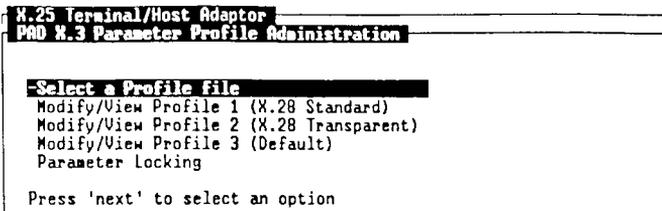
                                                    408.3-8

Figure 3-8. PAD X.3 Parameter Profile
             Administration Menu

SELECT A PROFILE FILE

The Select a Profile File option is located on the
PAD X.3 Parameter Profile Administration menu, as
shown in Figure 3-8.

The Select a Profile File option allows you to
choose   one   of   the   Profile   files   in
/etc/x25/padhosts/padhostfile.   The PAD has a
padprofile file in this directory that serves as a
default file.   To create optional profile files,
copy the default Profile file (padprofile) into
another file name, and modify the parameters in
the copied file.

The padprofile file contains three parameter pro-
files that can be modified separately with the
Select a Profile File option. All three profiles
are loaded into the PAD on selection of the file
and can be selected in the PAD operating mode by
using the **prof** command.

To specify the Select a Profile File option,
complete the following steps:

1. Display the PAD X.3 Parameter Profile
    Administration   menu,   as   shown   in
    Figure 3-8.

2. The highlighted cursor automatically ap-
    pears on the Select a Profile File
    option.

3. Press **Next** to display the PAD Profile in
    the /etc/x25/padprofile directory menu,
    as shown in Figure 3-9.

4. Press **Next Page** or **Prev Page** to scroll
    through the list of files displayed on
    the PAD Profile in the directory menu
    /etc/x25/padprofile, if necessary.

5. Use the Up or Down cursor key to po-
   sition the highlighted cursor on the
   file you want to select.

6. Press **Next** to select a file, and prompt
   your screen display to return to the PAD
   X.3 Parameter Profile Administration
   menu, as shown in Figure 3-8.

```
┌─────────────────────────────────────────┐
│ PAD Profile files in /etc/x25/padprofile │
│                                          │
│ wpadprofile                              │
│                                          │
│                                          │
│                                          │
│ Press 'next' to select an option         │
└─────────────────────────────────────────┘
                                    408.3-9
```
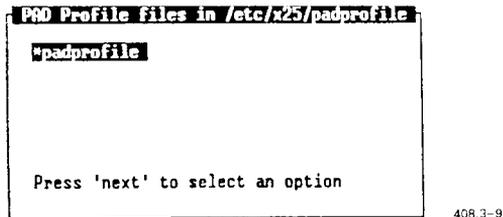
Figure 3-9.   PAD Profile Files in
      /etc/x25/padprofile Menu

MODIFY/VIEW PROFILE 1 (X.28 STANDARD)

Profile 1 is the standard profile recommended by
X.28. It is the profile recommended for use with
dumb terminals for general transaction-type appli-
cations.   Profile 1 is selected from the data
transfer or command control mode by using the
profl command.

To specify the Modify/View Profile 1 (X.28 Stan-
dard) option, complete the following steps:

1. Display the PAD X.3 Parameter Profile
   Administration   menu,   as   shown   in
   Figure 3-8.

2. Use the Up or Down cursor key to
   position the highlighted cursor directly
   on the Modify/View Profile 1 (X.28 Stan-
   dard) option.

3. Press **Next** to display the PAD Parameter
Profile (Parameters 1-11) menu, as shown
in Figure 3-10,

or

press **Exit** to return to the X.25
Terminal/Host Adapter Main menu, as
shown in Figure 3-1.

A complete description of the 22 PAD parameters is
located in Chapter 4, "X.3 PAD Parameter Descrip-
tions."

```
┌─PAD Parameter Profile, parameters 1 thru 11─────────────┐
│                                                     ┐   │
│   Parameter 1, Control Mode Escape       ▐Use DLE (^P)▌  │
│   Parameter 2, Local Character Echo      Local Echo   ┤  │
│   Parameter 3, Data Forwarding Character All control chars│
│   Parameter 4, Idle Timer Delay          0            │  │
│   Parameter 5, Ancillary Device Control  XON/XOFF     │  │
│   Parameter 6, PAD Service messages      service      │  │
│   Parameter 7, Break Character handling  Reset        │  │
│   Parameter 8, Discard output to terminal Normal      │  │
│   Parameter 9, Padding after Car. Return 0            │  │
│   Parameter 10, Line folding length      0            │  │
│   Parameter 11, Line Speed                           ┘  │
│                                                         │
│   Select next page (Parameters 12 thru 22)              │
│                                                         │
└─────────────────────────────────────────────────┘  408.3-10
```

Figure 3-10.   PAD Parameter Profile (Parameters
1-11) Menu

To display the PAD Parameter Profile (Parameters
12-22) menu, complete the following steps:

1. Display the PAD Parameter Profile (Pa-
rameters 1-11) menu, as shown in
Figure 3-10.

2. Press **Tab** to position the highlighted
cursor over the Select Next Page option,
located at the bottom of the PAD Param-
eter Profile (Parameters 1-11) menu.

3. Press **Next** to display the PAD Parameter
    Profile (Parameters 12-22) menu, as
    shown in Figure 3-11,

    or

    press **Exit** to return to the PAD X.3
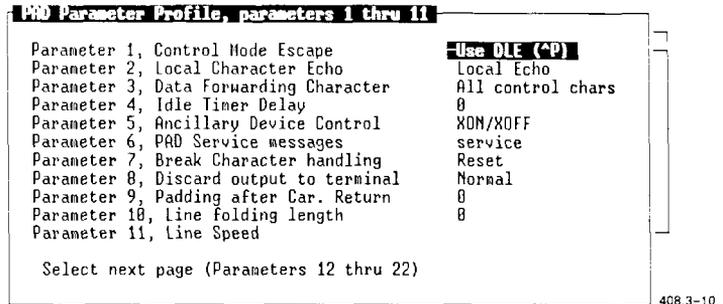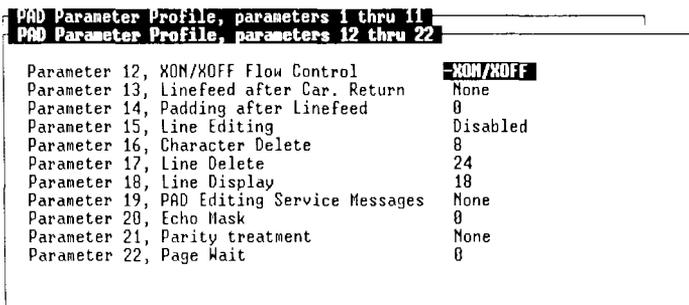   Parameter Profile Administration menu,
    as shown in Figure 3-8.

```
┌─PAD Parameter Profile, parameters 1 thru 11─────────────┐
│┌─PAD Parameter Profile, parameters 12 thru 22───────────┐
││                                                         │
││  Parameter 12, XON/XOFF Flow Control      ▀XON/XOFF     │
││  Parameter 13, Linefeed after Car. Return  None         │
││  Parameter 14, Padding after Linefeed      0            │
││  Parameter 15, Line Editing                Disabled     │
││  Parameter 16, Character Delete            8            │
││  Parameter 17, Line Delete                 24           │
││  Parameter 18, Line Display                18           │
││  Parameter 19, PAD Editing Service Messages None        │
││  Parameter 20, Echo Mask                   0            │
││  Parameter 21, Parity treatment            None         │
││  Parameter 22, Page Wait                   0            │
││                                                         │
│└─────────────────────────────────────────────────────────┘
```

                                          408.3-11

Figure 3-11.   PAD Parameter Profile (Parameters
                    12-22) Menu

MODIFY/VIEW PROFILE 2 (X.28 TRANSPARENT)

Profile 2 is the transparent profile recommended
by X.28. Profile 2 is recommended for use with
applications that require full control over the
terminal interface with a minimum of interception
by the PAD. Profile 2 is selected from the ope-
rating mode with the **prof2** command.

To specify the Modify/View Profile 2 (X.28 Trans-
parent) option, complete the following steps:

1. Display the PAD X.3 Parameter Profile
    Administration menu, as shown in
    Figure 3-8.

2. Use the Up or Down cursor key to posi-
   tion the highlighted cursor directly
   over the Modify/View Profile 2 (X.28
   Transparent) option.

3. Press **Next** to display the PAD Parameter
   Profile (Parameters 1-11) menu, as shown
   in Figure 3-10,

   or

   press **Exit** to return to the X.25 Termi-
   nal/Host Adapter Main menu, as shown in
   Figure 3-1.

To display the PAD Parameter Profile (Parameters
12-22) menu, complete the following steps:

1. Display the PAD Parameter Profile (Pa-
   rameters 1-11) menu, as shown in Figure
   3-10.

2. Press **Tab** to position the highlighted
   cursor over the Select Next Page option,
   located at the bottom of the PAD Param-
   eter Profile (Parameters 1-11) menu.

3. Press **Next** to display the PAD Parameter
   Profile (Parameters 12-22) menu, as
   shown in Figure 3-11,

   or

   press **Exit** to return to the PAD X.3
   Parameter Profile Administration menu,
   as shown in Figure 3-8.

A complete description of the 22 PAD parameters is
located in Chapter 4, "X.3 PAD Parameter Descrip-
tions."

MODIFY/VIEW PROFILE 3 (DEFAULT)

Profile 3 is the default profile for the PAD. The parameter values that appear in this profile are specified for Programmable Terminals (PTs) and Graphic Terminals (GTs) but may be customized for your own terminal.

NOTE

Ancillary Device Control (parameter 5) should always be set to 0 when operating the PAD from a PT or GT.

Profile 3 is selected from the operating mode by using the **prof3** command.

To specify the Modify/View Profile 3 (Default) option, complete the following steps:

1. Display the PAD X.3 Parameter Profile Administration menu, as shown in Figure 3-8.

2. Use the Up or Down cursor key to position the highlighted cursor directly on the Modify/View Profile 3 (Default) option.

3. Press **Next** to display the PAD Parameter Profile (parameters 1-11) menu, as shown in Figure 3-10,

   or

   press **Exit** to return to the X.25 Terminal/Host Adapter Main menu, as shown in Figure 3-1.

To display the PAD Parameter Profile (Parameters
12-22) menu, complete the following steps:

1. Display the PAD Parameter Profile (Pa-
    rameters 1-11) menu, as shown in
    Figure 3-10.

2. Press **Tab** to position the highlighted
    cursor over the Select Next Page option,
    located at the bottom of the PAD Param-
    eter Profile (Parameters 1-11) menu.

3. Press **Next** to display the PAD Parameter
    Profile (Parameters 12-22) menu, as
    shown in Figure 3-11,

    or

    press **Exit** to return to the PAD X.3
    Parameter Profile Administration menu,
    as shown in Figure 3-8.

A complete description of the 22 PAD parameters is
located in Chapter 4, "X.3 PAD Parameter Descrip-
tions."

PARAMETER LOCKING

The Parameter Locking option is an optional fea-
ture that allows you to inhibit specific param-
eters from modification by an Incoming X.29 Set
message. Using the Parameter Locking option is
advantageous if the remote host sets a profile
that is incompatible with your terminal that
inhibits the PAD from escaping to the command
control mode by resetting Control Mode Escape
(parameter 1). By invoking the Parameter Locking
option, each parameter can be individually locked.
The Parameter Locking option is effective with all
three profiles.

To specify the Parameter Locking option, complete
the following steps:

1. Display the PAD X.3 Parameter Profile
    Administration menu, as shown in Figure
    3-8.

2. Use the Up or Down cursor key to posi-
    tion the highlighted cursor directly
    over the Parameter Locking option.

3. Press **Next** to display the PAD Parameter
    Lock (Parameters 1-11) menu, as shown in
    Figure 3-12,

    or

    press **Exit** to return to the X.25
    Terminal/Host Adapter Main menu, as
    shown in Figure 3-1.
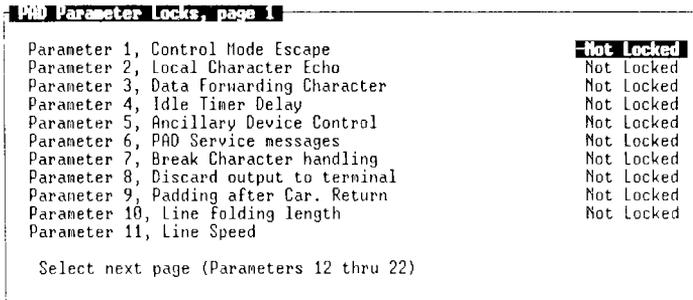
```
┌─ PAD Parameter Locks, page 1 ──────────────────────────────┐
│                                                            │
│   Parameter 1, Control Mode Escape          ▐ Not Locked ▌ │
│   Parameter 2, Local Character Echo            Not Locked   │
│   Parameter 3, Data Forwarding Character       Not Locked   │
│   Parameter 4, Idle Timer Delay                Not Locked   │
│   Parameter 5, Ancillary Device Control        Not Locked   │
│   Parameter 6, PAD Service messages            Not Locked   │
│   Parameter 7, Break Character handling        Not Locked   │
│   Parameter 8, Discard output to terminal      Not Locked   │
│   Parameter 9, Padding after Car. Return       Not Locked   │
│   Parameter 10, Line folding length            Not Locked   │
│   Parameter 11, Line Speed                                 │
│                                                            │
│   Select next page (Parameters 12 thru 22)                │
│                                                            │
└────────────────────────────────────────────────────────────┘
```

408.3-12

Figure 3-12.   PAD Parameter Lock (Parameters 1-11)
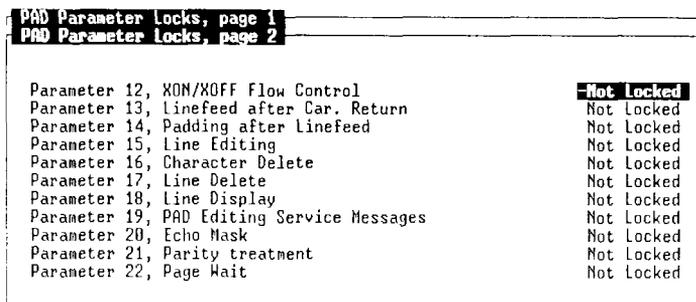   Menu

To display the PAD Parameter Lock (Parameters 12-22) menu, as shown in Figure 3-13, complete the following steps:

1. Display the PAD Parameter Lock (Parameters 1-11) menu, as shown in Figure 3-12.

2. Press **Tab** to position the highlighted cursor over the Select Next Page option, located at the bottom of the PAD Parameter Lock (Parameters 1-11) menu.

3. Press **Next** to display the PAD Parameter Lock (Parameters 12-22) menu, as shown in Figure 3-13,

   or

   press **Exit** to return to the PAD X.3 Parameter Profile Administration menu, as shown in Figure 3-8.

A complete description of the 22 PAD parameters is located in Chapter 4, "X.3 PAD Parameter Descriptions."

```
┌─PAD Parameter Locks, page 1────────────────────────────────┐
│┌─PAD Parameter Locks, page 2─────────────────────────────────┐
││                                                             │
││  Parameter 12, XON/XOFF Flow Control          ▐Not Locked▌ │
││  Parameter 13, Linefeed after Car. Return      Not Locked   │
││  Parameter 14, Padding after Linefeed          Not Locked   │
││  Parameter 15, Line Editing                    Not Locked   │
││  Parameter 16, Character Delete                Not Locked   │
││  Parameter 17, Line Delete                     Not Locked   │
││  Parameter 18, Line Display                    Not Locked   │
││  Parameter 19, PAD Editing Service Messages    Not Locked   │
││  Parameter 20, Echo Mask                       Not Locked   │
││  Parameter 21, Parity treatment                Not Locked   │
││  Parameter 22, Page Wait                       Not Locked   │
│└─────────────────────────────────────────────────────────────┘
```

408.3-13

Figure 3-13. PAD Parameter Lock (Parameters 12-22) Menu

4   X.3 PAD PARAMETER DESCRIPTIONS

Chapter 4 describes the 22 X.3 PAD parameters sup-
ported by the X.25 Terminal/Host Adapter.   This
chapter contains a complete description of, pos-
sible values for, and instructions for specifying
the values of the following X.3 PAD parameters:

- Parameter 1, Control Mode Escape

- Parameter 2, Local Character Echo

- Parameter 3, Data Forwarding Character

- Parameter 4, Idle Timer Delay

- Parameter 5, Ancillary Device Control

- Parameter 6, PAD Service Messages

- Parameter 7, Break Character Handling

- Parameter 8, Discard Output to Terminal

- Parameter 9, Padding After Carriage Return

- Parameter 10, Line Folding Length

- Parameter 11, Line Speed

- Parameter 12, XON/XOFF Flow Control

- Parameter 13, Linefeed After Carriage Return

- Parameter 14, Padding After Linefeed

- Parameter 15, Line Editing

- Parameter 16, Character Delete

- Parameter 17, Line Delete

- Parameter 18, Line Display

- Parameter 19, PAD Editing Service Message

- Parameter 21, Parity Treatment

- Parameter 22, Page Wait

Parameters 1 through 11 are located on the PAD Parameter Profile (1-11) menu. Parameters 12 through 22 are located on the PAD Parameter Profile (12-22) menu.

```
┌──────────────────── NOTE ─────────────────────┐
│                                                │
│  If you require assistance during the configu- │
│  ration procedures described in this chapter,  │
│  press Help.                                   │
│                                                │
│  To exit the Help facility and return to the   │
│  PAD Profile Setup menu, press Exit.           │
│                                                │
└────────────────────────────────────────────────┘
```

Complete instructions for using the X.25 Terminal/Host Adapter Configuration utility are located in Chapter 3, "Using the Configuration Utility."

Control Mode Escape
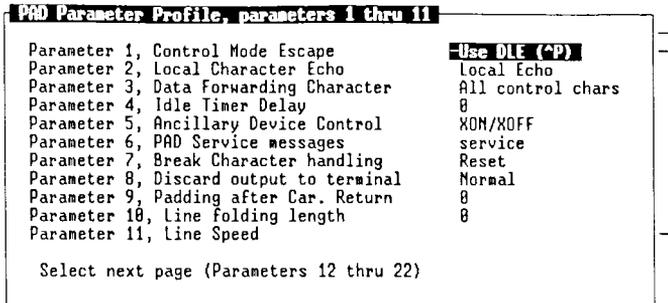Parameter 1

DESCRIPTION

The Control Mode Escape parameter (parameter 1) controls whether the PAD can escape to command control mode from the data transfer mode.

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
Not possible	0	Command escape inhibited
Use DLE (Code-p)	1	Command escape possible with the DLE character (Code-p)
User-Defined	32-126	Any graphic character between the range of 32-126 decimal

HOW TO SPECIFY THE CONTROL MODE ESCAPE PARAMETER

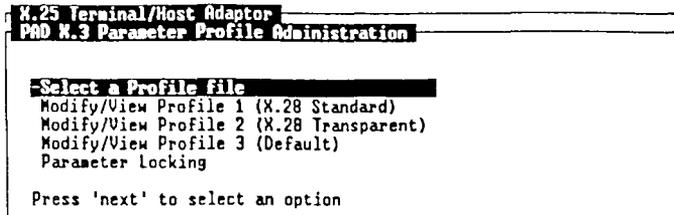To display the Control Mode Escape parameter (parameter 1), complete the following steps:

1. Display the PAD Parameter Profile (1-11) menu, as shown in Figure 4-1.

2. The highlighted cursor automatically appears on the menu field located to the right of the Control Mode Escape option.

```
┌─PAD Parameter Profile, parameters 1 thru 11─────────────┐
│                                                          │
│   Parameter 1, Control Mode Escape       ▓Use DLE (^P)▓  ┐ ─
│   Parameter 2, Local Character Echo       Local Echo     │
│   Parameter 3, Data Forwarding Character  All control chars
│   Parameter 4, Idle Timer Delay           0              │
│   Parameter 5, Ancillary Device Control   XON/XOFF       │
│   Parameter 6, PAD Service messages       service        │
│   Parameter 7, Break Character handling   Reset          │
│   Parameter 8, Discard output to terminal Normal         │
│   Parameter 9, Padding after Car. Return  0              │
│   Parameter 10, Line folding length       0              │
│   Parameter 11, Line Speed                              ┘ ─
│                                                          │
│    Select next page (Parameters 12 thru 22)             │
│                                                          │
└──────────────────────────────────────────────────────────┘
```

                                                        408.4-1

Figure 4-1.   PAD Parameter Profile (1-11) Menu

3.   Use the Up or Down cursor key until the
     appropriate option is displayed in the
     menu field located to the right of the
     Control Mode Escape option.

4.   Press **Exit** to return to the PAD X.3 Par-
     ameter Profile Administration menu, as
     shown in Figure 4-2.

```
┌─────────────────────────────────────────────────────────────────┐
│ █X.25 Terminal/Host Adaptor                                      │
│ ┌─█PAD X.3 Parameter Profile Administration█──────────────────┐  │
│ │                                                             │  │
│ │ █Select a Profile file█                                     │  │
│ │  Modify/View Profile 1 (X.28 Standard)                      │  │
│ │  Modify/View Profile 2 (X.28 Transparent)                   │  │
│ │  Modify/View Profile 3 (Default)                            │  │
│ │  Parameter Locking                                          │  │
│ │                                                             │  │
│ │ Press 'next' to select an option                            │  │
│ └─────────────────────────────────────────────────────────────┘  │
└─────────────────────────────────────────────────────────────────┘
```

                                                          408.4-2

    Figure 4-2.   PAD X.3 Parameter Profile
                      Administration Menu

If you select the user-defined option with the Up
or Down cursor key, complete the following steps:

   1.   Press **Next**. A submenu appears display-
        ing the following prompt:

            enter graphics character [ ]

   2.   Enter   the   appropriate   character,   and
        press **Next** to return to the PAD Param-
        eter Profile (1-11) menu.

   3.   Press **Exit** to return to the PAD X.3 Pa-
        rameter Profile Administration menu, as
        shown in Figure 4-2.

Local Character Echo
Parameter 2

DESCRIPTION

The Local Character Echo parameter (parameter 2)
controls whether the PAD is required to echo for
the terminal. Some applications, for example,
remote login, require that the echo feature is
turned off in the data transfer mode, because some
CTIX applications echo all characters.

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
Local Echo:	1	All characters are echoed locally by the PAD.
No Echo:	0	Characters are not echoed.

HOW TO SPECIFY THE LOCAL CHARACTER ECHO PARAMETER

To display the Local Character Echo parameter (pa-
rameter 2), complete the following steps:

1. Display the PAD Parameter Profile (1-11)
    menu, as shown in Figure 4-1.

2. Use **Tab** to position the highlighted cur-
    sor in the menu field located to the
    right of the Local Character Echo option
    field.

3. Use the Up or Down cursor key to display
    the appropriate option in the menu field
    located to the right of the Local Char-
    acter Echo option.

4. Press **Exit** to return to the PAD X.3 Pa-
    rameter Profile Administration menu, as
    shown in Figure 4-2.

Data Forwarding Character
Parameter 3

DESCRIPTION

The Data Forwarding Character parameter (parameter
3) enables you to select a character(s) on which
you want to forward data to the remote host.

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
All Control Characters	126	Any control character prompts the data to be forwarded. Control characters consist of all nonprintable characters of columns 0 and 1 of the international alphabet. The international alphabet is displayed in Table 4-1 at the end of this chapter.
None	0	No specified character will effect the transfer of data. The transmission of data will occur only on timeout or when the end-of-line is met.

Data Forwarding Character
Parameter 3   continued

CR   2   Data   is   forwarded
                                        each time the **Return**
                                        key is pressed.

CR, ESC, BEL, ENQ,   6   Data   is   transferred
or ACK: only when one of the
                                        control characters in
                                        this list is entered.

CR, EOT, ETX   18   Data   is   forwarded
                                        only when one of the
                                        control characters in
                                        this list is entered.

**HOW TO SPECIFY THE DATA FORWARDING CHARACTER PA-
RAMETER**

To display the Data Forwarding Character parameter
(parameter 3), complete the following steps:

   1.   Display the PAD Parameter Profile (1-11)
        menu, as shown in Figure 4-1.

   2.   Press **Tab** to position the highlighted
        cursor on the menu field located to the
        right of the Data Forwarding Character
        option.

   3.   Use the Up or Down cursor key until the
        appropriate option is displayed in the
        menu field located to the right of the
        Data Forwarding Character option.

   4.   Press **Exit** to return to the PAD X.3 Pa-
        rameter Profile Administration menu, as
        shown in Figure 4-2.

Idle Timer Delay
Parameter 4

DESCRIPTION

The Idle Timer Delay parameter (parameter 4) con-
trols a timer, which, on expiration, prompts all
queued data to be forwarded. Data forwarding on
timeout is particularly useful when total trans-
parency is required for the setup, making any use
of data forwarding characters unwanted.

The Idle Timer Delay parameter would normally be
used when the Data Forwarding Character parameter
(parameter 3) is set to None. If the Data For-
warding Character (parameter 3) is set to any-
thing but None, the Idle Timer Delay parameter
(parameter 4) should be set to 0.

POSSIBLE VALUES (DECIMAL)   FEATURES

0:                                The Data Forwarding con-
                                  dition on timeout is dis-
                                  abled. However, if Data
                                  Forwarding Character (pa-
                                  rameter 3) is also 0, and
                                  Line Editing (parameter
                                  15) is 0 (editing dis-
                                  abled), the 0 value of
                                  Idle Timer Delay (param-
                                  eter 4) causes each char-
                                  acter to be forwarded
                                  immediately in individual
                                  data packets.

    1-254:   Timeout units of .05 sec-
                                onds, rounded up to whole
                                seconds.   It is disabled
                                if Line Editing (param-
                                eter   15)   is   enabling
                                editing.

HOW TO SPECIFY THE IDLE TIMER DELAY PARAMETER

To display the Idle Timer Delay parameter (param-
eter 4), complete the following steps:

    1.   Display the PAD Parameter Profile (1-11)
         menu, as shown in Figure 4-1.

    2.   Press **Tab** to position the highlighted
         cursor on the menu field located to the
         right of the Idle Timer Delay option.

    3.   Enter the appropriate value.

    4.   Press **Exit** to return to the PAD X.3 Pa-
         rameter Profile Administration menu, as
         shown in Figure 4-2.

Ancillary Device Control
Parameter 5

DESCRIPTION

The Ancillary Device Control parameter (parameter 5) controls the flow control of data from the terminal to the PAD. The PAD transmits XON or XOFF characters to signal its readiness to accept data from the terminal. Your terminal must be configured for the XON and XOFF protocol if you select the Ancillary Device Control parameter.

NOTE

If you are using a PT or GT, the XON and XOFF should not be selected.

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
No XON/XOFF	0	XON/XOFF flow control is not used.
XON/XOFF	1	Use XON/XOFF flow control to the terminal (XOFF = Code-s and XON = Code-q).

HOW TO SPECIFY THE ANCILLARY DEVICE CONTROL PARAM-
ETER

To display the Ancillary Device Control parameter
(parameter 5), complete the following steps:

1. Display the PAD Parameter Profile (1-11)
    menu, as shown in Figure 4-1.

2. Press **Tab** to position the highlighted
    cursor on the menu field located to the
    right of the Ancillary Device Control
    option.

3. Use the Up or Down cursor key until the
    appropriate option is displayed in the
    menu field located to the right of the
    Ancillary Device Control option.

4. Press **Exit** to return to the PAD X.3 Pa-
    rameter Profile Administration menu, as
    shown in Figure 4-2.

DESCRIPTION

The PAD Service Messages parameter (parameter 6)
determines whether the PAD is required to transmit
service signals to the terminal.

Service signals are messages printed by the PAD.
The prompt is the CR-LF-* in command mode.

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
service	1	Only PAD service signal messages are printed, no prompts.
service+prompts	5	All PAD service signals (messages and prompts) are printed.
none	0	Neither PAD signals (messages or prompts) are printed.

HOW TO SPECIFY THE PAD SERVICE MESSAGES PARAMETER

To display the PAD Service Messages parameter (pa-
rameter 6), complete the following steps:

1. Display the PAD Parameter Profile (1-11)
   menu, as shown in Figure 4-1.

2. Press **Tab** to position the highlighted
    cursor on the menu field located to the
    right of the PAD Service Messages op-
    tion.

3. Use the Up or Down cursor key until the
    appropriate option is displayed in the
    menu field located to the right of the
    PAD Service Messages option.

4. Press **Exit** to return to the PAD X.3 Pa-
    rameter Profile Administration menu, as
    shown in Figure 4-2.

Break Character Handling
Parameter 7

DESCRIPTION

The Break Character Handling parameter (parameter 7) determines what action is taken by the PAD when it receives a break signal (break key) from the terminal.

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
Reset	2	A Reset packet is sent to the remote host. This action may prompt a Call Clearing packet from the Host.
Data Escape	8	The PAD enters the command control mode. This is an alternative to using a character, for example, Code-p, to escape to the Command Control mode.

Discard+Int+Ind   21   The PAD discards all
                                 received   data   that
                                 was sent to the ter-
                                 minal   for   printing.
                                 The PAD transmits an
                                 Interrupt packet fol-
                                 lowed by an Indica-
                                 tion of Break X.29
                                 message.

None   0   The **Break** key has no
                                 effect.

Interrupt   1   The PAD transmits an
                                 Interrupt packet.

--------------------------- **NOTE** ---------------------------

  PTs and GTs may not function properly upon
  sending or receiving a Break character.   It
  may be necessary to power off the terminal to
  recover.

HOW TO SPECIFY THE BREAK CHARACTER HANDLING PARAM-
ETER

To display the Break Character Handling parameter
(parameter 7), complete the following steps:

1. Display the PAD Parameter Profile (1-11)
    menu, as shown in Figure 4-1.

2. Press **Tab** to position the highlighted
    cursor on the menu field located to the
    right of the Break Character Handling
    option.

3. Use the Up or Down cursor key until the
    appropriate option is displayed in the
    menu field located to the right of the
    Break Character Handling option.

4. Press **Exit** to return to the PAD X.3 Pa-
    rameter Profile Administration menu, as
    shown in Figure 4-2.

Discard Output to Terminal
Parameter 8

DESCRIPTION

The Discard Output to Terminal parameter (param-
eter 8) controls the printing of data on the PAD
terminal. When it is enabled, all of the received
data from the remote host is discarded and cannot
be printed from the terminal.

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
Normal	0	Received data is dis-played normally on the PAD terminal.
Discard	1	All received data is discarded.

HOW TO SPECIFY THE DISCARD OUTPUT TO TERMINAL PA-
RAMETER

To display the Discard Output to Terminal param-
eter (parameter 8), complete the following steps:

   1. Display the PAD Parameter Profile (1-11)
       menu, shown in Figure 4-1.

   2. Press **Tab** to position the highlighted
       cursor on the menu field located to the
       right of the Discard Output To Terminal
       option.

3. Use the Up or Down cursor key until the
    appropriate option is displayed in the
    menu field located to the right of the
    Discard Output to Terminal option.

4. Press **Exit** to return to the PAD X.3 Pa-
    rameter Profile Administration menu, as
    shown in Figure 4-2.

Padding After Carriage Return
Parameter 9

DESCRIPTION

The Padding After Carriage Return parameter (pa-
rameter 9) controls the number of padding (NULL)
characters that are transmitted after each Return
sent to the PAD terminal.

NOTE

Padding characters after a Return or Linefeed
are only applicable with older printer termi-
nals that require some time-delay after each
line shift.

POSSIBLE VALUES (DECIMAL)   FEATURES

    0:                          No padding characters are
                                        inserted after a Return.

    1-7:   Number of padding charac-
                                        ters   inserted   after   a
                                        Return.

HOW TO SPECIFY THE PADDING AFTER CARRIAGE RETURN
PARAMETER

To display the Padding After Carriage Return pa-
rameter (parameter 9), complete the following
steps:

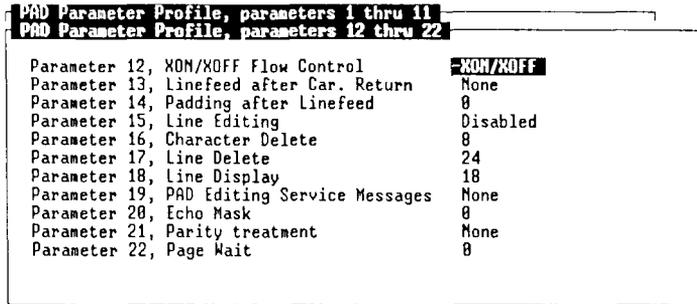1. Display the PAD Parameter Profile (1-11)
    menu, as shown in Figure 4-1.

2. Press Tab to position the highlighted
    cursor on the menu field located to the
    right of the Padding After Carriage Re-
    turn option.

3. Enter the appropriate value of padding
    characters (0-7).

4. Press **Exit** to return to the PAD X.3 Pa-
    rameter Profile Administration menu, as
    shown in Figure 4-2.

Line Folding Length
Parameter 10

DESCRIPTION

The Line Folding Length parameter (parameter 10) controls the line width on the PAD terminal. A Return and a Linefeed are inserted in the received data stream that is sent to the terminal when a line length specified in this parameter is reached.

POSSIBLE VALUES (DECIMAL)   FEATURES

0:                          No line folding. A Return or Linefeed character is not inserted in the received data stream. Instead, the line width is controlled by the remote host transmitting the data.

1-255:   Line width in number of characters. A Return or Linefeed is inserted when the number specified is reached after the last Return or Linefeed.

HOW TO SPECIFY THE LINE FOLDING LENGTH PARAMETER

To display the Line Folding Length parameter (pa-
rameter 10), complete the following steps:

1. Display the PAD Profile Setup Menu, as
    shown in Figure 4-1.

2. Press **Tab** to position the highlighted
    cursor on the menu field located to the
    right of the Line Folding Length option.

3. Enter the line length in numbers of
    characters (0-255).

4. Press **Exit** to return to the PAD X.3 Pa-
    rameter Profile Administration menu, as
    shown in Figure 4-2.

Line Speed
Parameter 11

DESCRIPTION

The Line Speed parameter (parameter 11) is a
read-only parameter. The Line Speed parameter
determines the rate that data is transmitted ac-
ross the interface between the PAD and the termi-
nal.

XON/XOFF Flow Control
Parameter 12

DESCRIPTION

The XON/XOFF Flow Control parameter (parameter 12)
controls the flow control of the data from the PAD
to the terminal. You may specify XOFF (Code-s) to
temporarily freeze the display, and XON (Code-q)
when you are ready to display additional data on
the terminal screen.

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
None	0	XON/XOFF flow control is not used.
XON/XOFF	1	Use XON/XOFF flow control from the terminal (XOFF = Code s and XON = Code q).

HOW TO SPECIFY THE XON/XOFF FLOW CONTROL PARAMETER

To display the XON/XOFF Flow Control parameter
(parameter 12), complete the following steps:

1. Display the PAD Parameter Profile
    (12-22) menu, as shown in Figure 4-3.

2. Press **Tab** to position the highlighted
    cursor on the menu field located to the
    right of the XON/XOFF Flow Control op-
    tion.

```
┌─PAD Parameter Profile, parameters 1 thru 11 ──────────────────┐
│ PAD Parameter Profile, parameters 12 thru 22 │                │
│                                                               │
│   Parameter 12, XON/XOFF Flow Control        ═XON/XOFF═        │
│   Parameter 13, Linefeed after Car. Return   None             │
│   Parameter 14, Padding after Linefeed       0                │
│   Parameter 15, Line Editing                 Disabled         │
│   Parameter 16, Character Delete             8                │
│   Parameter 17, Line Delete                  24               │
│   Parameter 18, Line Display                 18               │
│   Parameter 19, PAD Editing Service Messages None             │
│   Parameter 20, Echo Mask                    0                │
│   Parameter 21, Parity treatment             None             │
│   Parameter 22, Page Wait                    0                │
│                                                               │
│                                                    408.4-3    │
└───────────────────────────────────────────────────────────────┘
```

Figure 4-3.   PAD Parameter Profile (12-22) Menu

3.   Use the Up or Down cursor key until the
     appropriate option is displayed in the
     menu field located to the right of the
     XON/XOFF Flow Control option.

4.   Press **Exit** to return to the PAD Param-
     eter Profile (1-11) menu, as shown in
     Figure 4-1.

5.   Press **Exit** to return to the PAD X.3 Pa-
     rameter Profile Administration menu, as
     shown in Figure 4-2.

Linefeed After Carriage Return
Parameter 13

DESCRIPTION

The Linefeed After Carriage Return parameter (pa-
rameter 13) controls the optional insertion of a
Linefeed character after each Return in different
modes.   This procedure is useful in cases where
the remote host uses only a Return to go to the
next line and the terminal cannot automatically
insert a Linefeed.

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
None	0	A Linefeed character is never inserted af-ter a Return.
Data to DTE	1	A Linefeed character is only inserted af-ter a Return in re-ceived data to be sent to the terminal (DTE).
Echo to DTE	4	A Linefeed character is only inserted af-ter a Return is echoed locally from the PAD to the termi-nal.

Data+Echo   5   A Linefeed is only
                               inserted after a Re-
                               turn both in received
                               data and local echoes
                               of the Return to the
                               terminal.

From DTE   6   A Linefeed is only
                               inserted after each
                               Return sent from the
                               terminal and after
                               echo of the Return to
                               the terminal (both in
                               command control and
                               data transfer mode).

All   7   A Linefeed is inser-
                               ted after each Return
                               in all of the cases
                               described above.

HOW TO SPECIFY THE LINEFEED AFTER CARRIAGE RETURN
PARAMETER

To display the Linefeed After Carriage Return pa-
rameter (parameter 13), complete the following
steps:

1. Display the PAD Parameter Profile
    (12-22) menu, as shown in Figure 4-3.

2. Press **Tab** to position the highlighted
    cursor on the menu field located to the
    right of the Linefeed After Carriage
    Return option.

3. Use the Up or Down cursor key until the
    appropriate option is displayed in the
    menu field located to the right of the
    Linefeed After Carriage Return option.

4. Press **Exit** to return to the PAD Param-
    eter Profile (1-11) menu, as shown in
    Figure 4-1.

5. Press **Exit** once again to return to the
    PAD X.3 Parameter Profile Administration
    menu, as shown in Figure 4-2.

Padding After Linefeed
Parameter 14

DESCRIPTION

The Padding After Linefeed parameter (parameter
14) controls the number of padding (NULL) charac-
ters that are sent after each Linefeed character
sent by the PAD terminal.

```
┌──────────────────── NOTE ────────────────────┐
│                                                │
│  Padding characters after a Return or Linefeed │
│  are  only  applicable  in  the  case  of older │
│  printer    terminals,    which    require    some │
│  time-delay after each line shift.             │
│                                                │
└────────────────────────────────────────────────┘
```

POSSIBLE VALUES (DECIMAL)   FEATURES

  0:                      No padding characters are
                          inserted after a Line-
                          feed.

  1-7:   The number of padding
                          characters after a Line-
                          feed.

HOW TO SPECIFY THE PADDING AFTER LINEFEED PARAM-
ETER

To display the Padding After Linefeed parameter
(parameter 14), complete the following steps:

1. Display the PAD Parameter Profile
    (12-22) menu, as shown in Figure 4-3.

2. Press **Tab** to position the highlighted
    cursor on the menu field located to the
    right of the Padding After Linefeed op-
    tion.

3. Enter the number of padding characters
    (0-7).

4. Press **Exit** to return to the PAD Param-
    eter Profile (1-11) menu, as shown in
    Figure 4-1.

5. Press **Exit** once again to return to the
    PAD X.3 Parameter Profile Administration
    menu, as shown in Figure 4-2.

Line Editing
Parameter 15

DESCRIPTION

The Line Editing parameter (parameter 15) controls
the enabling/disabling of the local, line editing
mode of the PAD while it is operating in the data
transfer mode. The editing only allows for delet-
ing single characters (in the current line) or
deleting a single line (the current one). After
the deletion process is complete, new characters
may be entered.

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
Disabled	0	Line editing is dis-abled. Parameters 16, 17, and 18 have no effect.
Enabled	1	Line editing is en-abled with Parameters 16, 17, and 18 con-trolling the editing functions.

HOW TO SPECIFY THE LINE EDITING PARAMETER

To display the Line Editing parameter (parameter 15), complete the following steps:

1. Display the PAD Parameter Profile (12-22) menu, as shown in Figure 4-3.

2. Press **Tab** to position the highlighted cursor on the menu field located to the right of the Line Editing option.

3. Use the Up or Down cursor key until the appropriate option is displayed in the menu field located to the right of the Line Editing option.

4. Press **Exit** to return to the PAD Parameter Profile (1-11) menu, as shown in Figure 4-1.

5. Press **Exit** once again to return to the PAD X.3 Parameter Profile Administration menu, as shown in Figure 4-2.

Character Delete
Parameter 16

DESCRIPTION

The Character Delete parameter (parameter 16) con-
trols which character will effect the deletion of
a single character in the line editing mode. The
PAD prompts according to the Parameter 20 setting.

POSSIBLE VALUES (DECIMAL)   FEATURES

0-127:	Any character in this (decimal) character value range. A value of 8 is the backspace character.

HOW TO SPECIFY THE CHARACTER DELETE PARAMETER

To display the Character Delete parameter (param-
eter 16), complete the following steps:

1. Display the PAD Parameter Profile
    (12-22) menu, as shown in Figure 4-3.

2. Press **Tab** to position the highlighted
    cursor on the menu field located to the
    right of the Character Delete option.

3. Enter the decimal value for the chosen
    character-delete character.

4. Press **Exit** to return to the PAD Param-
    eter Profile (1-11) menu, as shown in
    Figure 4-1.

5. Press **Exit** once again to return to the
    PAD X.3 Parameter Profile Administration
    menu, as shown in Figure 4-2.

Line Delete
Parameter 17

DESCRIPTION

The Line Delete parameter (parameter 17) controls
which character will effect the deletion of the
current line. The PAD prompts according to the
Parameter 20 setting.

POSSIBLE VALUES (DECIMAL)   FEATURES

  0-127:   Any character in this
                        (decimal) character value
                        range. A value of 24 is
                        the Code-x character.

HOW TO SPECIFY THE LINE DELETE PARAMETER

To display the Line Delete parameter (parameter
17), complete the following steps:

  1. Display the PAD Parameter Profile
      (12-22) menu, as shown in Figure 4-3.

  2. Press **Tab** to position the highlighted
      cursor on the menu field located to the
      right of the Line Delete option.

  3. Enter the decimal value for the chosen
      line-delete character.

  4. Press **Exit** to return to the PAD Param-
      eter Profile (1-11) menu, as shown in
      Figure 4-1.

  5. Press **Exit** once again to return to the
      PAD X.3 Parameter Profile Administration
      menu, as shown in Figure 4-2.

DESCRIPTION

The Line Display parameter (parameter 18) controls
which character will effect a refresh display of
the current line.

POSSIBLE VALUES (DECIMAL)   FEATURES

   0-127:   Any   character   in   this
                                (decimal) character value
                                range.   A value of 18 is
                                the Code-r character.

HOW TO SPECIFY THE LINE DISPLAY PARAMETER

To display the Line Display parameter (parameter
18), complete the following steps:

   1. Display   the   PAD   Parameter   Profile
      (12-22) menu, as shown in Figure 4-3.

   2. Press **Tab** to position the highlighted
      cursor on the menu field located to the
      right of the Line Display option.

   3. Enter the decimal value for the chosen
      line-display character.

   4. Press **Exit** to return to the PAD Param-
      eter Profile (1-11) menu, as shown in
      Figure 4-1.

   5. Press **Exit** once again to return to the
      PAD X.3 Parameter Profile Administration
      menu, as shown in Figure 4-2.

DESCRIPTION

The PAD Editing Services Messages parameter (parameter 19) controls the edit mode prompts. Depending on whether your terminal is a printer or a CRT, you may select the prompts best suited for your purposes.

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
Printer	1	Each character-delete is prompted with \ followed by a space.
		Each line-delete is prompted with XXX following by a Return and Linefeed.
CRT	2	Each character-delete is prompted with a backspace-space-backspace sequence of characters.

code 8	8	The backspace character (decimal 8) is prompted to the character edit functions. On a line-delete, a Return or Linefeed follows the prompt.
User Defined	32-126	The selected character is prompted to any of the edit functions. On a line-delete, a Return or Linefeed follows the prompt. The user-defined prompt character must be within the decimal range 32-126.
None	0	No editing prompts are displayed or printed. However, the editing characters are echoed if Parameter 2 enables the local echo.

HOW TO SPECIFY THE PAD EDITING SERVICES MESSAGES
PARAMETER

To display the PAD Editing Services Messages pa-
rameter (parameter 19), complete the following
steps:

1. Display the PAD Parameter Profile
    (12-22) menu, as shown in Figure 4-3.

2. Press **Tab** to position the highlighted
    cursor on the menu field located to the
    right of the PAD Editing Services Mes-
    sages option.

3. Use the Up or Down cursor key until the
    appropriate option is displayed in the
    menu field located to the right of the
    PAD Editing Services Messages option.

4. Press **Exit** to return to the PAD Param-
    eter Profile (1-11) menu, as shown in
    Figure 4-1.

5. Press **Exit** once again to return to the
    PAD X.3 Parameter Profile Administration
    menu, as shown in Figure 4-2.

If you selected the user-defined option with the
Up or Down cursor key, complete the following
steps:

1. Press **Next**. A submenu appears display-
    ing the following prompt:

        enter graphics character [ ]

2. Enter the appropriate character, and
    press **Next** to return to the PAD Param-
    eter Profile (1-11) menu.

4. Press **Exit** to return to the PAD Param-
    eter Profile (12-22) menu, as shown in
    Figure 4-3.

5. Press **Exit** once again to return to the
    PAD X.3 Parameter Profile Administration
    menu, as shown in Figure 4-2.

Echo Mask
Parameter 20

DESCRIPTION

The Echo Mask parameter (parameter 20) controls
which characters are echoed if Parameter 2 enables
the local echo. It is used to selectively turn
echo on or off of specific control characters
only. All printable characters are solely con-
trolled with Parameter 2. The parameter values
can be combined (by adding their values) to select
multiple options.

POSSIBLE VALUES (DECIMAL)   FEATURES

   0:                        No echo mask. All con-
                            trol   characters   are
                            echoed.

   1:                        No echo of Return.

   2:                        No echo of Linefeed.

   4:                        No echo of VT (Code- k),
                            HT (Code-i or Tab) and FF
                            (Code-l).

   8:                        No echo of BEL (Code-g),
                            or BS (Code-h).

  16:                        No echo of ESC (0x1b) or
                            ENQ (Code-e).

32:                              No echo of ACK (Code-f),
                                 NAK   (Code-u),   STX
                                 (Code-b), SOH (Code-a),
                                 EOT   (Code-d),   ETB
                                 (Code-w),   or   ETX
                                 (Code-c).

64:                              No echo of editing char-
                                 acters BS (Code-h), CAN
                                 (Code-x),   or   DC2
                                 (Code-r).

128:                             No echo of any character
                                 with value 0x00-0x32 (all
                                 control characters).

The mask may be a combination (sum) of any of the
above listed options.

HOW TO SPECIFY THE ECHO MASK PARAMETER

To display the Echo Mask parameter (parameter 20),
complete the following steps:

   1. Display   the   PAD   Parameter   Profile
       (12-22) menu, as shown in Figure 4-3.

2. Press **Tab** to position the highlighted
    cursor on the edit field located to the
    right of the Echo Mask option.

3. Enter the decimal value (or sum of val-
    ues) for the chosen mask.

4. Press **Exit** to return to the PAD Param-
    eter Profile (1-11) menu, as shown in
    Figure 4-1.

5. Press **Exit** once again to return to the
    PAD X.3 Parameter Profile Administration
    menu, as shown in Figure 4-2.

Parity Treatment
Parameter 21

DESCRIPTION

The Parity Treatment parameter (parameter 21) con-
trols the parity checking for the terminal I/O.

```
┌──────────────────── NOTE ────────────────────┐
│                                               │
│  Parity checking is performed by the CTIX tty │
│  driver  and  cannot  be  separated  for  checking │
│  and generation of parity, even though the menu │
│  may indicate that it can.                     │
└───────────────────────────────────────────────┘
```

POSSIBLE VALUES	DECIMAL VALUE	FEATURES
None	0	No parity checking or generation.
Parity Checking	1	Parity is checked.
Parity Generation	2	Parity is generated.
Parity Check and Generation	3	Parity is checked and generated.

HOW TO SPECIFY THE PARITY TREATMENT PARAMETER

To display the Parity Treatment parameter (para-
meter 21), complete the following steps:

1. Display   the   PAD   Parameter   Profile
    (12-22) menu, as shown in Figure 4-3.

2. Press **Tab** to position the highlighted
    cursor on the menu field located to the
    right of the Parity Treatment option.

3. Use the Up or Down cursor key until the
    appropriate option is displayed in the
    menu field located to the right of the
    Parity Treatment option.

4. Press **Exit** to return to the PAD Param-
    eter Profile (1-11) menu, as shown in
    Figure 4-1.

5. Press **Exit** once again to return to the
    PAD X.3 Parameter Profile Administration
    menu, as shown in Figure 4-2.

Page Wait
Parameter 22

___

DESCRIPTION

The Page Wait parameter (parameter 22) controls the page mode of the PAD. A nonzero value in this parameter effects the terminal display to freeze when a number of lines of received data is received, corresponding to the parameter value. The received data flow is automatically flow-controlled when the page mode in entered, and PAGE is printed on the terminal. Normal data transfer is resumed by typing any character on the keyboard.

POSSIBLE VALUES (DECIMAL)   FEATURES

   0:                    Page wait mode is dis-
                         abled.

   1-255:   Page wait mode is entered
                         after printing the number
                         of lines indicated.

HOW TO SPECIFY THE PAGE WAIT PARAMETER

To display the Page Wait parameter (parameter 22), complete the following steps:

   1. Display the PAD Parameter Profile (12-22) menu, as shown in Figure 4-3.

   2. Press **Tab** to position the highlighted cursor on the menu field located to the right of the Page Wait option.

3. Enter the number of lines for the page
    wait to occur.

4. Press **Exit** to return to the PAD Param-
    eter Profile (1-11) menu, as shown in
    Figure 4-1.

5. Press **Exit** once again to return to the
    PAD X.3 Parameter Profile Administration
    menu, as shown in Figure 4-2.

TABLE 4-1

INTERNATIONAL ALPHABET

				b7	0	0	0	0	1	1	1	1
				b6	0	0	1	1	0	0	1	1
				b5	0	1	0	1	0	1	0	1
b4	b3	b2	b1		0	1	2	3	4	5	6	7
0	0	0	0	0	NUL	TC7 (DLE)	SP	0	@	P	`	p
0	0	0	1	1	TC1 (SOH)	DC1	!	1	A	Q	a	q
0	0	1	0	2	TC2 (STX)	DC2	''	2	B	R	b	r
0	0	1	1	3	TC3 (ETX)	DC3	#	3	C	S	c	s
0	1	0	0	4	TC4 (EOT)	DC4	¤	4	D	T	d	t
0	1	0	1	5	TC5 (ENQ)	TC8 (NAK)	%	5	E	U	e	u
0	1	1	0	6	TC6 (ACK)	TC9 (SYN)	&	6	F	V	f	v
0	1	1	1	7	BEL	TC10 (ETB)	'	7	G	W	g	w
1	0	0	0	8	FE0 (BS)	CAN	(	8	H	X	h	x
1	0	0	1	9	FE1 (HT)	EM	)	9	I	Y	i	y
1	0	1	0	10	FE2 (LF)	SUB	*	:	J	Z	j	z
1	0	1	1	11	FE3 (VT)	ESC	+	;	K	[	k	{
1	1	0	0	12	FE4 (FF)	IS4 (FS)	,	<	L	\	l	|
1	1	0	1	13	FE5 (CR)	IS3 (GS)	−	=	M	]	m	}
1	1	1	0	14	SO	IS2 (RS)	.	>	N	^	n	~
1	1	1	1	15	SI	IS1 (US)	/	?	O	_	o	DEL

408-4-1

5 X.28: PAD FUNCTIONALITY

Chapter 5 describes how the PAD functions. This chapter contains the following information:

- a description of PAD commands

- a description of the PAD service signals and profiles of parameters

- a state diagram of PAD operation

- a description of PAD operating modes

- instructions for what to do when you receive a Break signal from the CRT

- instructions for what to do when events are received from the X.25 level

PAD COMMANDS

PAD commands, issued from the DTE to the PAD, allow you to perform the following functions:

- establish and clear a virtual circuit

- select preset values for the PAD parameters

- select individual PAD parameter values

- request the current PAD parameter value

- send an Interrupt packet

- request the status of the virtual circuit

- reset the virtual circuit

The following sections describe each of the stand-
ard X.28 PAD commands implemented in the X.25 Ter-
minal/Host Adapter. Commands may be entered in
either upper or lowercase letters.

```
┌──────────────────── NOTE ────────────────────┐
│                                               │
│  The underlined definition, appearing at the  │
│  beginning of each command description, is the │
│  definition that appears on your screen if you │
│  type help <command name>.                    │
│                                               │
└───────────────────────────────────────────────┘
```

SYNTAX

!<shell command>

where

<shell command> = the name of the shell command
you want to execute.

DESCRIPTION

Escape to the CTIX shell. The ! command may be
used to execute a CTIX shell command from the PAD.

SYNTAX

   stat or STAT

DESCRIPTION

Check line status.   The **STAT** command returns the
X.25 line   status.   When the **STAT** command is
issued, the PAD responds with one of the following
messages:

   ENGAGED: Line in use.

   This message is received if a Call has already
   been placed.

   or

   FREE: Line free.

   This message is received if a Call has not yet
   been placed.

SYNTAX

   prof# or PROF#

   where

   # = the requested profile number.

DESCRIPTION

Set profile of parameters. The **PROF** command is
used to set a profile of X.3 parameters. The
available profiles are

   PROF1: Simple Standard Profile

   PROF2: Transparent Standard Profile

   PROF3: Profile recommended for PT/GTs
          (PROF3 is the default)

SYNTAX

   par? or **PAR?**   check all 22 parameters.

   PAR?p1,...,p22   check a specified parameter.

DESCRIPTION

Display X3 PAD parameters.   The **PAR?** command is
used to verify the X.3 parameter settings.   When
the **PAR?** command is issued, the PAD responds with

   PARp:v

   where

   p = the parameter number.

   v = the parameter value.

SYNTAX

    set?p1:v,p2:v,...,p22:v

    or

    SET?p1:v,p2:v,...,p22:v

    where

    p = the parameter number.

    v = the parameter value.

DESCRIPTION

Set X3 PAD parameters. The **SET?** command is used to change one or more of the X.3 parameter settings. When the **SET?** command is issued, the PAD responds by displaying the following:

    PAR:p1:v, p2:v,...,p22:v

If **?** is omitted from the command line, the **SET** command is executed, but the PAD will not display the results.

SYNTAX

   quit or QUIT

DESCRIPTION

<u>Quit</u> <u>PAD</u> <u>program</u>.   The **QUIT** command is used to
exit the PAD program.

SYNTAX

   clr or CLR

DESCRIPTION

Send clear packet to remote DTE. The CLR command
is used to send a Clear packet to the remote DTE
to clear the virtual circuit. The PAD responds by
displaying

   CLEAR CONFIRMED

to indicate that the circuit is cleared.

SYNTAX

   to [file] or TO [file]

DESCRIPTION

Open file to log received data.   The TO [FILE]
command is used to open a file in which all the
incoming data for the current PAD session will be
stored.   If the TO [FILE] command fails, the PAD
responds by displaying the following message:

   named file cannot be opened

If the file is successfully opened, the PAD re-
sponds by displaying the following message:

   file opened

SYNTAX

   to or TO

DESCRIPTION

Close the data logging file. The TO command clo-
ses the file that was previously opened with the
TO FILE command. When the TO command is issued,
incoming data is no longer saved.

SYNTAX

   from [file] or FROM [file]

DESCRIPTION

Transmit (ASCII) data from file. The **FROM [file]**
command opens a file that contains data that is
transmitted during the current PAD session.   If
the open command fails, the PAD responds by dis-
playing the following message:

   named file cannot be opened

If the file is successfully opened, the PAD re-
sponds by displaying the following message:

   file opened

SYNTAX

   reset or RESET

DESCRIPTION

Send reset packet to remote DTE. The RESET com-
mand is used to send a Reset packet to the remote
DTE.

SYNTAX

   int or INT

DESCRIPTION

Send Interrupt packet to remote DTE. The INT com-
mand is used to send an Interrupt packet to the
remote DTE.   When the INT command is issued, the
PAD responds by displaying the following message:

   INTERRUPT CONFIRMED

to confirm that the Interrupt packet was sent.

SYNTAX

   c nnnnnn or **c hostname**

   where

   nnnnnn   = the called address

   hostname = the name defined in the Host file

DESCRIPTION

Send Call with name or address. The C command is
used to send a Call Request. When the circuit is
established, the PAD responds by displaying the
following message:

   COM: Virtual Circuit Established

SYNTAX

  help parameters or HELP PARAMETERS

DESCRIPTION

The Help command alternatively displays a list of
available commands, command syntax for a specified
command, a list of all the hosts defined in your
host file, or a parameter summary.

To display a list of available commands, simply
type **help** and press **Return**.

To display the syntax for a command, type **help**
then the name of the command, and press **Return**.

To display a list of all the hosts defined in your
host file, type **help hosts** and press **Return**.

To display the list of all help parameters, type
help parameters and press **Return**. The following
parameter summary appears on your terminal screen:

PARAMETER   DESCRIPTION

  1   PAD recall using a character

  2   Echo

PARAMETER	DESCRIPTION
3	Data forwarding signal
4	Idle timer display
5	Flow control of start/stop DTE by pad
6	Pad service signals
7	Break signal action
8	Discard output
9	Padding after a CR
10	Line folding
11	Binary speed
12	Flow control by start/stop
13	Linefeed in after CR
14	Linefeed pad after CR
15	PAD editing
16	Delete character
17	Line Delete
18	Line Display
19	PAD Editing Service Messages
20	Echo Mask
21	Parity treatment
22	Page Wait

SYNTAX

   hosts or **HOSTS**

DESCRIPTION

Print the defined hostnames in Hostfile. When the
HOSTS command is issued, the PAD responds by dis-
playing one of the following messages:

   No hostnames available

   or

   Currently defined hosts in
   Hostname   Host Address   Call Data
    Myhost   12345   *ABC

PAD SERVICE SIGNALS

PAD service signals, issued from the PAD to the DTE, allow the following functions:

- acknowledge PAD commands

- transmit information regarding PAD operations to terminal

PARAMETER PROFILES

When the PAD is initialized, each parameter is set according to a predetermined set of values. This set of values is called the "default profile."

The following are two standard profiles defined by the X.28 recommendations. The third is added as a customized user profile:

1. The "simple standard profile" with the profile Identifier 1 (PROF1).

2. The "transparent standard profile," which can be set with the **PROF** command followed by the profile Identifier 2 (PROF2).

3. The "default profile," which can be set with the **PROF** command followed by the profile identifier 3 (PROF3).

PAD OPERATION

Figure 5-1 shows a state diagram of PAD operation.
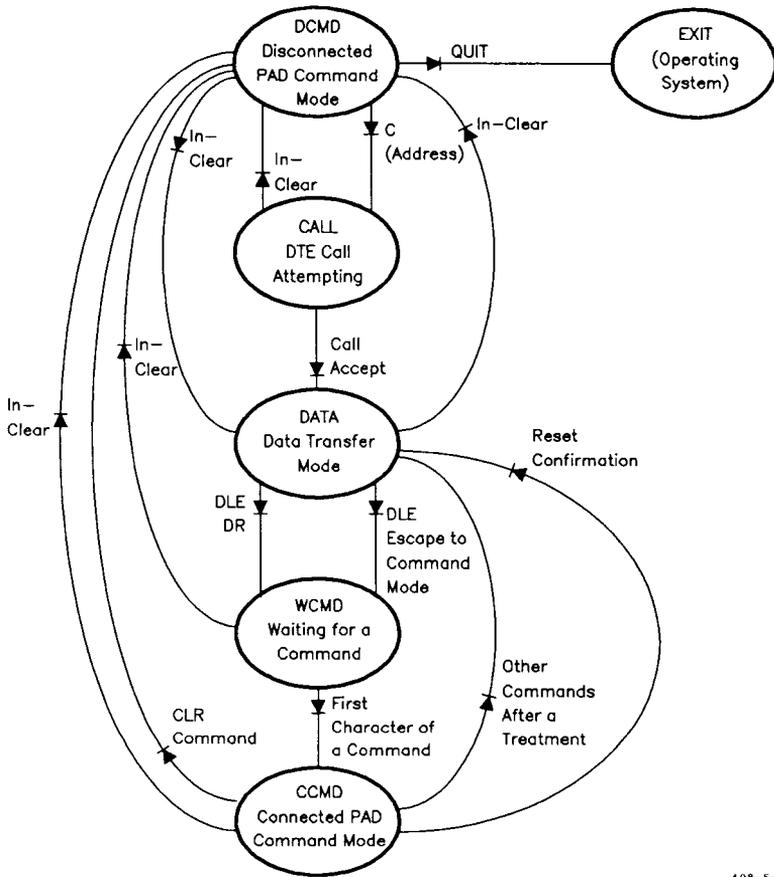
Figure 5-1. State Diagram of PAD Operation

MODES OF OPERATION

Disconnected PAD Command Control Mode

This is the operational PAD state prior to placing
a call (using the **C** command) or after clearing a
call. (The PAD prompt is *.) The PAD accepts the
following commands:

SET?   The **SET?** command is issued to set
           and optionally read the specified
           parameter(s).

PAR?   The **PAR?** command is issued to read
           the specified parameter(s).

PROF1   Transparent Standard Profile

PROF2   Simple Standard Profile

PROF3   User's Default Profile

STAT   The **STAT** command is issued to re-
           quest the status of a virtual cir-
           cuit. A Status Free PAD service
           signal is sent to the CRT terminal
           if the Pad Service Messages (param-
           eter 6) is set to 4 or 5.

C(ADDRESS) The **C(ADDRESS)** command is issued to
           establish a virtual call onto the
           network. The character **C** must be
           followed by the Address Block and,
           optionally, by a Call User data
           field, preceded by **d** or **D**, or by a
           host name.

           The maximum size of the Block Ad-
           dress is 16 digits. The maximum
           size of the Call User field is 12
           digits.

QUIT   The **QUIT** command is issued to quit
                the PAD program.

!   Escape to the CTIX shell.

HELP   Displays   information   on   command
                syntax.

HELP   X.3 PAD Parameter Summary.
PARAMETERS

HELP HOSTS   Prints the defined hostnames in the
                Host file.

CALL: DTE Call Attempting State

This is the state entered after using the **C** com-
mand but prior to the call being accepted. (The
PAD prompt is *.) The PAD program is waiting for
a virtual circuit connect confirmation. You can
execute the following command:

CLR   Issue   the   **CLR**   command   to   send   a
                Clear   packet   on   the   network   and
                return to the disconnected command
                control mode.

When the PAD receives the VC call confirmation,
the string

   COM: Virtual Circuit Established

is transmitted to the CRT, and the PAD enters the
Data state.

Data Transfer State

This state is entered when the virtual circuit is
established. When operating in the Data Transfer
state, no PAD prompt is sent to the CRT.

Data Editing

Parameter 15 (Line Editing) must be specified as editing enabled, and parameter 2 (Local Character Echo) must be in the local echo mode.

Data entered on the CRT is temporarily stored in an editing buffer before it is segmented into data packets and transmitted. The Echo character is effected if the Local Character Echo parameter (parameter 2) is set to 1.

The following editing capability is available if the Line Editing parameter (parameter 15) is set to 1:

1. Character Delete (parameter 16) to delete the last character in the editing buffer.

   The service signal depends on the setting of parameter 19 (PAD Editing Service Messages):

   CRT   Backspace-Space-Backspace

   PRINTER   A / for each deleted character

   Backspace   One backspace for each deleted character

   User Defined One user defined character for each delete

2. The Line Delete capability (parameter 17) to delete the current contents of the editing buffer. The Line Delete service signal XXX is sent to the CRT, depending on the setting of parameter 19 (PAD Editing Service Messages).

CRT   Return-Linefeed

Printer   XXX followed by Return-
                 Linefeed

Backspace   Return-Linefeed

User Defined User defined character
                 followed by Carriage Re-
                 turn-Linefeed

A new line is stored in the editing buffer after a
Return if the Linefeed after Return parameter (pa-
rameter 13) is set to 1, 6, or 7.

Parameter Forwarding Conditions

The packet forwarding conditions described below
are subject to X.25 Gateway flow control.

A packet is forwarded under the following condi-
tions:

- Whenever enough data is received from the
  CRT to fill a packet after the last
  packet is forwarded. Packet size depends
  on the X.25 Network Gateway configured
  packet size.

- If the Idle Timer Delay period elapses
  while entering characters, it transfers
  as many characters that were entered in
  the elapsed period. If parameter 4 (Idle
  Timer Delay) is set to 0 and parameter 15
  (Line Editing) is set to 0, each charac-
  ter is transferred in individual packets.

- When you transmit one of the data for-
  warding characters defined by the Data
  Forwarding Character parameter (param-
  eter 3). The character is included in
  the data field of the packet it delimits
  prior to the forwarding of the packet.

- When you send a break signal by pressing
  the **Break** key when the Break Character
  Handling parameter (parameter 7) is set
  to any value except 0.

NOTE

PT/GTs do not have a **Break** key.

- When entering command mode.

- When a Set, Read, or Set and Read PAD
  message is received in the data packet
  with the Q bit set to 1.

Delivery of User Data to the CRT

Data included in the incoming data packets are
sent to the CRT when the Discard Output to Termi-
nal parameter (parameter 8) is set to 0 (normal).
If the Discard Output to Terminal parameter is set
to 1 (discard), the data is discarded and not dis-
played.

The data flow to the terminal is interrupted when
the XON/XOFF Flow Control parameter (parameter 12)
is set to 1 and when the PAD receives the XOFF
character from the CRT. Data transfer is resumed
if the PAD receives either the XON or the Escape-
Command character.

The flow control condition is effective down through the layers of the X.25.

A Linefeed is sent to the CRT after a Return, if the parameter is set to 1, 5, or 7.

RECEIVING A BREAK SIGNAL FROM THE CRT

When you press the **Break** key, a Break signal is received from the CRT. Depending on the setting of the Break Character Handling parameter (parameter 7), one of the following actions is performed:

1. If the Break Character Handling parameter is set to 0 (None), the state of the PAD remains the same, and no further action is taken by the PAD.

2. If the Break Character Handling parameter is set to 1 (Interrupt), the state of the PAD remains the same, and an Interrupt packet is sent to the network (with the User Data field of the Interrupt packet set to 1).

3. If the Break Character Handling parameter is set to 2 (Reset), the state of the PAD remains the same, and a Reset packet is sent to the network.

4. If the Break Character Handling parameter is set to 21 (Discard&Int&Ind), the state of the PAD remains the same. All of the data received from the CRT is discarded, and an Interrupt packet (with the User Data field of the Interrupt packet set to 1) is sent, followed by an indication of a Break PAD message.

5. If the Break Character Handling param-
    eter is set to 8 (Data Escape), the PAD
    escapes from the data transfer mode and
    enters the waiting for command control
    mode.

Command Control Mode

During the data transfer mode, you can escape to
the command control mode by transmitting the Es-
cape character DLE when the Control Mode Escape
parameter (parameter 1) is set to 1.

If the Break Character Handling parameter (para-
meter 7) is set to 8, the Break signal may be used
as the escape signal from data transfer mode with-
out loss of character transparency.

When the CRT receives the next character, the PAD
acts in accordance with one of the following con-
ditions:

1. If the character is the DLE character
    (1/0), the PAD immediately returns to
    the data transfer mode. This character
    is treated as user data.

2. If the character received is the PAD
    command delimiter, characters (2/11) +
    or (0/13) CR, the PAD does not transfer
    it and returns to the data transfer
    mode.

3. For any other character, the PAD remains
    in the connected command control mode.

4. If, after an elapsed time of approxima-
    tely 1 minute from entering command
    control mode, it will return to data
    transfer mode.

Once you are in the command control mode, delivery of any character to the CRT terminal is delayed until the interface returns to the data transfer mode.

A * prompt PAD signal is sent to the CRT terminal if the parameter is set to 5.

Connected Command Control Mode Commands

You are in the connected command control mode when you have escaped to the command control mode and entered the first character of a command.

The PAD accepts the following commands:

PAR? The **PAR?** command is issued to read the specified parameter (3). After execution of the **PAR?** command, the PAD automatically returns to the Data Transfer state.

SET The **SET** command is issued to set and read the specified parameter (1). After execution of the **SET** command, the PAD automatically returns to the Data Transfer state.

PROF (Identifier of Profile)

PROF1= Transparent Standard Profile

PROF2 = Simple Standard Profile

PROF3 = User's Default Profile

After execution of the **PROF** command, the PAD automatically returns to the Data Transfer state.

STAT   The **STAT** command requests the sta-
                tus of the virtual call. The PAD
                responds by sending the status en-
                gaged PAD service signal to the CRT
                terminal and returns to the Data
                Transfer mode.

RESET   The **RESET** command requests a reset-
                ting of the virtual call. A Reset
                packet is sent onto the network.

INT   The **INT** command requests an Inter-
                rupt packet (with the User Data
                field of the Interrupt packet set
                to 1) to be sent by the PAD onto
                the network.

CLR   The **CLR** command requests the clear-
                ing of the virtual call. The PAD
                sends a Clear packet.

!   Escape to the CTIX shell.

To   Open file to log received data.

FROM   Transmit (ASCII) data from file.

HELP   Displays Help Information.

HELP   X.3 Pad Parameter Summary
PARAMETERS

HELP HOSTS   Prints the defined hostnames in the
                Host file.

CLEAR: Waiting for a DCE Clear Confirmation Mode

After a Clear Request packet is sent to the net-
work, the PAD waits for the DCE Clear Confir-
mation packet.

In this state, all characters from the DTE are
ignored. When the Clear Confirmation packet is
received, the PAD enters the disconnected command
control mode.

WHAT TO DO WHEN EVENTS ARE RECEIVED FROM THE X.25
LEVEL

Receipt of a Reset Packet

When a Reset packet is received from the X.25
software, the PAD sends a PAD service signal to
the CRT terminal. The PAD service signal indi-
cates one of the following reasons for the reset:

- RESET DTE: The remote DTE has reset
                the virtual call.

- RESET ERR: Indicates a reset due to a
                local procedure error (X.25
                Network Gateway protocol
                error).

- RESET NC: Indicates a reset due to
                network congestion.

Receipt of a Clear Packet

When a Clear Indication packet is received from the X.25 software, the PAD sends a Clear PAD service signal to the CRT terminal, if the PAD Service Messages (parameter 6) is set to 1 or 5.

The PAD service signal indicates one of the following reasons for the Clear:

CLR OCC:	Number busy
CLR NC:	Network congestion
CLR INV:	Invalid facility request
CLR NA:	Access barred
CLR ERR:	Local procedure error
CLR RPE:	Remote procedure error
CLR NP:	Not obtainable
CLR DER:	Out of order
CLR DTE:	DTE clearing

The PAD then returns to the disconnected command control mode.

Receipt of an Interrupt Packet

When an Interrupt packet is received by the X.25 software, the PAD sends an INT service signal to the terminal.

PAD X.29 Messages

PAD X.29 messages are conveyed in the User Data
fields of complete packet sequences with the Q bit
set to 1. PAD messages are conveyed in both di-
rections on a virtual call.

Receipt of a Set, Read or Set, and Read PAD Mes-
sage

When the PAD receives a Set, Read or Set, and Read
PAD message, any data previously received is sent
to the CRT terminal before taking action on the
PAD messages. The PAD also considers the arrival
of such a PAD message as a forwarding condition.

The PAD responds to a valid Read or Set and Read
PAD message by transmitting a parameter indication
PAD message. This PAD message has a parameter
containing a list of the parameter's references
and current specified values, after any necessary
modification of the PAD parameters to which the
PAD message received referred.

Receipt of an Invitation to Clear PAD Message

When the PAD receives an invitation to clear a PAD
message, the PAD performs one of the following
actions:

- The PAD sends a Clear Indication packet
  onto the network. The Clearing Cause
  field is set to DTE clearing.

- The PAD transmits the "Received an invitation to Clear" service signals to the CRT terminal if the PAD Service Messages parameter (parameter 6) is set to 1.

PAD Messages Transmitted by the PAD in Response to Set, Set and Read, and Read PAD Messages

Table 5-1 displays a matrix of PAD messages that are transmitted by the PAD in response to the receipt of a Set, Set and Read, or a Read PAD message.

TABLE 5-1

PAD MESSAGES TRANSMITTED BY THE PAD
IN RESPONSE TO SET, SET AND READ,
AND READ PAD MESSAGES

PAD Message received on the PAD		Action upon PAD parameters	Corresponding parameter indication pad message transmitted to the packet mode DTE
Type	Parameter Field		
Set	None	Reset all implemented Recommendation X.3 parameters to their initial values corresponding to initial profile.	None
	List of selected parameters with chosen modes.	Set selected parameters to given values: a) no error is encountered b) the profiles are to modify the values of some parameters	a) None b) List of these invalid parameters with error bit set
Set and Read	None	Reset all implemented Recommendation X.3 parameters to their initial values corresponding to initial profile.	List all implemented Recommendation X.3 parameters and their initial values.
	List of selected parameters with chosen values.	Set selected parameters to given values.	List of these parameters with their new current values with error bit set as appropriate.
Read	None	None	List all implemented Recommendation X.3 capabilities with their current values.
	List of selected parameters	None	List of these parameters with their current values.

6 TROUBLESHOOTING

Chapter 6 provides a complete list of X.25 Termi-
nal/Host Adapter Configuration utility error mes-
sages, CCITT and Non-CCITT standard PAD error mes-
sages, and protocol diagnostic error messages.

ERROR MESSAGES

X.25 Terminal/Host Adapter Error Messages

Both Host Name and Host Address must be entered.

   Either the Host Name or the Host Address was
   not specified. You must specify both values
   before proceeding.

Host Address field must be decimals.

   A nondecimal value was specified in the Host
   Address field.

Error writing new entry to <filename>.

   An error was detected while writing a new entry
   to the specified file name.

Cannot open <filename>.

   The specified file name cannot be opened.
   Check the file permissions.

Cannot open temp file.

   The PAD failed to open a temp file. Verify
   that sufficient disk space is available in
   /tmp.

Illegal parameter value.

   The specified parameter value is not valid.

Parameter option not yet supported.

   A parameter value was entered into a parameter
   option field not currently supported by the
   X.25 Terminal/Host Adapter.

More than one number.

   Only one numeric entry is allowed in this
   field.

Non-numeric.

   A numeric entry must be made in this field.

Too large.

   The entry exceeded the allowable range.

PAD Error Messages

Request to X.25 driver was interrupted.

   The read or write request to the X.25 Gateway
   was interrupted due to a signal (Interrupt).
   In this case, data may be lost.

X.25 driver I/O error (maybe the line is down).

   The X.25 Network Gateway returned an I/O error.
   Refer to the CTIX X.25 Network Gateway Manual
   for an explanation.

Cannot find X.25 devices.

   The X.25 Network Gateway is probably not in-
   stalled.

Access to X.25 driver denied.

   Access to the X.25 driver is denied. Check the
   access permissions on /dev/x25/devices.

X.25 driver busy.

   The X.25 Network Gateway is congested with a
   lot of traffic and users. Try again.

X.25 driver not loaded.

   The X.25 Network Gateway driver is not loaded.
   Refer to the CTIX X.25 Network Gateway Manual
   for further explanation.

X.25 driver not started yet or the line is down.

   Either the X.25 Network Gateway has not been
   started (x.25man) or the line is down (DCD
   down, Frame Layer down).

X.25 Call cleared.

   The X.25 Network Gateway read/write request was
   returned in error because the call was cleared.

Illegal X.25 address.

   The address sent to the X.25 Network Gateway
   with the C command was considered illegal by
   the X.25 Network Gateway.

No free X.25 LUN available.

   The X.25 Network Gateway is currently serving
   the maximum number of virtual circuits. Try
   again. You will have to wait until a virtual
   circuit is free.

X.25 driver timed out.

   The request to the X.25 Network Gateway timed
   out. This error message is not yet supported.

CTIX error.

   The request to the X.25 Network Gateway was
   returned due to an error in CTIX.

ERROR: Command string too long.

   You have entered more than 128 characters into
   the command buffer. Reenter the command.

ERROR: Incorrect call syntax.

   The call address is entered incorrectly.
   Reenter the address with no spaces.   If you
   entered a host name, it was not located in the
   Host file.

ERROR: Invalid command in connected command
         state.

   The command you entered is not valid for this
   state.

ERROR: Invalid command in Disconnect Command
         state.

   The command you entered is not valid in this
   state.

ERROR: Requested profile does not exist.

   You have executed the profile number command
   with a number that is invalid. No profile
   exists for the specified number.

ERROR: Invalid command syntax.

   The command was entered incorrectly. Reenter
   the command.

COM: Virtual Circuit Established.

   The call was successfully completed.

PAD Messages

PAGE.

   The number of lines defined in Parameter 22 has
   been reached. Type any character to resume
   data reception.

CLEAR CONFIRMED.

   The local user has sent a Clear packet. This
   procedure confirms the Clear. Reestablishing
   the virtual circuit may be necessary.

INTERRUPT CONFIRMED.

   The Interrupt packet was received by the remote
   DTE.

RESET CONFIRMED.

   The Reset packet was received by the remote
   DTE.

RESET.

   The PAD received a Reset packet from the DCE.

RESET DTE (reset by remote DTE).

   The PAD received a Reset packet. The Reset
   packet was initiated by the remote DTE.

RESET EPR (local procedure error).

   The local user received a Reset packet. The
   Reset was caused by a protocol error in the
   X.25 Network Gateway.

RESET NC (network congestion).

   The local user received a Reset packet. The
   Reset was caused by congestion on the PDN.

CLR.

   The DCE cleared the virtual circuit.

CLR OCC (number busy).

   The local user received a Clear packet. The
   virtual circuit cannot be established because
   the remote DTE is busy. Try again.

CLR NC (network congestion).

   The local user received a Clear packet. The
   PDN is congested. Try again.

CLR INV (invalid facility request).

   The local user received a Clear packet. The
   Call Request packet contained an invalid facil-
   ity for this subscription.

CLR NA (access barred).

The local user received a Clear packet. Access
to this network address was denied.

ENGAGED: Line in use.

A user is in the Connected Command state. A
virtual circuit is established.

FREE: Line Free.

A user is in the Disconnected Command state.
No virtual circuit has been established.

PAR p1: v1, p2:v, ..., p22

Response to PAR? All parameters are displayed.

PAR pn:vn,

Response to PAR?n or SET?n with a specific pa-
rameter in question.

PAR INV,pn

Response to PAR? or SET pn when the parameter
number is invalid.

Non-CCITT PAD Messages

PAD: Error in reading from a file.

The PAD closes the file and expects further
data to be input at the terminal.

PAD: TTY read error.

The PAD cannot read from the terminal; the PAD
terminates.

PAD: Create of <filename> failed.

The PAD cannot create the requested file.

PAD: Cannot open <filename>.

The PAD cannot open the requested file.

PAD: TO file closed.

The file opened with the **TO** **<filename>** command
is closed.

PAD: <Filename> open.

The PAD successfully opened the file requested
with the **FROM** or **TO** <filename> commands.

PAD: Cannot open any LUN.

No LUNs are available for the user to establish
a virtual circuit on. You must wait for an
available LUN.

PAD: Open of an LUN failed.

An LUN is available but the open failed.

PAD: LUN write error.

The PAD cannot write to an LUN in the Gateway.

PAD: LUN read error.

The PAD cannot read from an LUN in the Gateway.

PAD: TO file write error.

The PAD cannot write to a TO file.

Protocol Diagnostic Messages

CLR ERR (local procedure error).

The local user received a Clear packet. The VC is terminated.

CLR RPE (Remote procedure error).

There is a protocol error in the remote DTE.

CLR NP (Called address not obtainable).

The local user received a Clear packet. The address specified in the C command does not exist.

CLR DER (Called number out of order).

The local user received a Clear packet. The remote DTE is out of order and not reachable.

CLR DTE (Remote DTE clearing call).

Normal call clearing by the remote DTE.

CLEAR PAD: received an invitation to clear.

Remote PAD clearing call, requested by the remote host. The PAD will send a Clear Indication.

APPENDIX A: KEYBOARD TABLES

This appendix lists the preconfigured terminal
types supported with this release of the CTIX X.25
Terminal/Host Adapter

Since the CTIX X.25 Terminal/Host Adapter supports
several terminal types (and, therefore, several
different keyboards), this guide refers to keys by
virtual key names. For example, where this manual
reads **Enter**, you press **Go** or **Linefeed**, depending
on the type of terminal you use.

This appendix provides key tables for the standard
preconfigured terminals. Use the appropriate key
table to determine the actual keys on your
keyboard that match the virtual key names given in
this guide.

If you use a nonstandard terminal that is not
configured with special keys, you can type key
sequences to perform many functions. Refer to the
"Generic Keyboard" discussion, later in this
appendix, for a list of key sequences to type for
the virtual keys.

PRECONFIGURED TERMINAL TYPES

This release of the CTIX X.25 Terminal/Host
Adapter supports the following preconfigured
terminals:

  PT and GT (with RS-422 and RS-232-C
            connections)
  Wyse 85
  DEC VT-100 compatibles
  DEC VT-102
  DEC VT-220
  Link (S/T2)
  Freedom 100

GENERIC KEYBOARD

The following table translates virtual key names
into keystroke sequences for a generic (dumb)
terminal keyboard.

WHEN YOU SEE THIS KEY NAME	TYPE THIS KEY SEQUENCE
Back	Escape bw
BackSpace	BackSpace
BackTab	Escape Tab
Begin	Escape bg
Break	Break
Cancel	Control-X
Clear	Escape ce
ClearLine	Escape ci
Close	Escape cl
Command	Control-C
Copy	Escape cp
Create	Escape cr
Delete	Escape dl
Delete Character	Delete
Down	Escape dn
End	Escape en
Enter	LineFeed
Exit	Control-D
Escape	ESC
Find	Escape fi
Forward	Escape fw
F1	Escape 1
F2	Escape 2
F3	Escape 3
F4	Escape 4
F5	Escape 5
F6	Escape 6

F7	Escape 7
F8	Escape 8
F9	Escape 9
F10	Escape 0
Help	Escape ?
Home	Escape hm
InputMode	Escape im
Mark	Escape mk
Message	Escape ms
Move	Escape mv
Next	Escape nx
Open	Escape op
Options	Escape ot
Page	Escape pg
PF1	Escape f1
PF2	Escape f2
PF3	Escape f3
PF4	Escape f4
PF5	Escape f5
PF6	Escape f6
PF7	Escape f7
PF8	Escape f8
PF9	Escape f9
PF10	Escape f0
PF11	Escape f-
PF12	Escape f=
Previous	Escape pv
Print	Escape pr
Redo	Escape ro
Ref	Escape re
Replace	Escape rp
Restart	Escape rs
Resume	Escape rm
Return	Return
Save	Escape sa

Scroll Up	Escape ru
Scroll Down	Escape dn
Select	Escape sl
Shift-Back	Escape BW
Shift-Beginning	Escape BG
Shift-Cancel	Escape CX
Shift-ClearLine	Escape CI
Shift-Command	Escape CM
Shift-Copy	Escape RP
Shift-Create	Escape CR
Shift-Delete Character	Escape DC
Shift-End	Escape EN
Shift-Exit	Escape EX
Shift-Find	Escape FI
Shift-Forward	Escape FW
Shift-Help	Escape HL
Shift-Home	Escape HM
Shift-InputMode	Escape NJ
Shift-Message	Escape MS
Shift-Move	Escape MV
Shift-Next	Escape NX
Shift-Options	Escape OT
Shift-Page	Escape PG
Shift-Previous	Escape PV
Shift-Print	Escape PR
Shift-Redo	Escape RO
Shift-Replace	Escape RP
Shift-Resume	Escape RM
Shift-Save	Escape SV
Shift-Undo	Escape UD
Shift-F1	Escape !
Shift-F2	Escape @

Shift-F3	Escape #
Shift-F4	Escape $
Shift-F5	Escape %
Shift-F6	Escape Control
Shift-F7	Escape &
Shift-F8	Escape *
Shift-F9	Escape (
Shift-F10	Escape)
Undo	Escape ud
Up	Escape up

PT/GT KEYBOARD

The following table translates the virtual key names used in this guide to actual keys on the PT/GT terminal keyboard.

WHEN YOU SEE THIS KEY NAME	TYPE THIS KEY SEQUENCE
Back	Left Arrow
BackTab	Control-Tab
Begin	Control-Up Arrow
Break	Cancel
Cancel	Cancel
Clear	Control-F7
ClearLine	Shift-Cancel
Close	Control-F6
Command	Control-C
Copy	Copy
Delete	Control-Delete
Delete Character	Delete
Down	Down Arrow
End	Control-Down Arrow
Enter	Go
Exit	Finish
Escape	Control-E
Forward	Right Arrow
F1	F1
F2	F2
F3	F3
F4	F4
F5	F5
F6	F6
F7	F7
F8	F8
F9	F9

F10	F10
Help	Help
Home	Shift-Up Arrow
InputMode	Overtype
Mark	Mark
Move	Move
Next	Shift-Right Arrow
Page	Next Page
Previous	Shift-Left Arrow
Print	Control-F4
Redo	Control-F2
Replace	Control-F3
Save	Control-F1
Scroll Up	Scroll Down
Scroll Down	Scroll Up
Shift-Back	Control-Left Arrow
Shift-Copy	Shift-Copy
Shift-Delete Character	Shift-Delete
Shift-Exit	Shift Finish
Shift-Forward	Control-Right Arrow
Shift-Help	Shift-Help
Shift-Home	Shift-Down Arrow
Shift-Move	Shift-Move
Shift-Page	Prev Page
Shift-F1	Shift-F1
Shift-F2	Shift-F2
Shift-F3	Shift-F3
Shift-F4	Shift-F4
Shift-F5	Shift-F5
Shift-F6	Shift-F6
Shift-F7	Shift-F7
Shift-F8	Shift-F8
Shift-F9	Shift-F9
Shift-F10	Shift-F10
Up	Up Arrow

VT-100 KEYBOARD

The following table translates the virtual key
names used in this guide to actual keys on the VT-
100 terminal keyboard or to keystroke sequences.
Note that the + sign, as used below, indicates a
second instance of a key mapping for a particular
virtual key name: **+Fl** is a second **Fl** key.)

WHEN YOU SEE THIS KEY NAME	TYPE THIS KEY SEQUENCE
Back	Left Arrow
BackSpace	BackSpace
BackTab	Escape Tab
Begin	Escape bg
Break	Break
Cancel	Control-X
Clear	Escape ce
ClearLine	Escape ci
Close	Escape cl
Command	Control-C
Copy	Escape cp
Create	Escape cr
Delete	Escape dl
Delete Character	Delete
Down	Down Arrow
End	Escape en
Enter	LineFeed
Exit	Control-D
Escape	ESC
Forward	Right Arrow
Fl	Escape 1
F2	Escape 2
F3	Escape 3
F4	Escape 4
F5	Escape 5

F6	Escape 6
F7	Escape 7
F8	Escape 8
F9	Escape 9
F10	Escape 0
+F1	Pf1
+F2	Pf2
+F3	Pf3
+F4	Pf4
Help	Escape ?
Home	Escape hm
InputMode	Escape im
Mark	Escape mk
Message	Escape ms
Move	Escape mv
Next	Escape nx
Open	Escape op
Options	Escape ot
Page	Escape pg
PF1	Escape f1
PF2	Escape f2
PF3	Escape f3
PF4	Escape f4
PF5	Escape f5
PF6	Escape f6
PF7	Escape f7
PF8	Escape f8
PF9	Escape f9
PF10	Escape f0
PF11	Escape f-
PF12	Escape f=
Previous	Escape pv
Print	Escape pr
Redo	Escape ro
Ref	Escape re

Replace	Escape rp
Restart	Escape rs
Resume	Escape rm
Return	Return
Save	Escape sa
Scroll Up	Escape ru
Scroll Down	Escape dn
Select	Escape sl
Shift-Back	Escape BW
Shift-Beginning	Escape BG
Shift-Cancel	Escape CX
Shift-ClearLine	Escape CI
Shift-Command	Escape CM
Shift-Copy	Escape RP
Shift-Create	Escape CR
Shift-Delete Character	Escape DC
Shift-End	Escape EN
Shift-Exit	Escape EX
Shift-Find	Escape FI
Shift-Forward	Escape FW
Shift-Help	Escape HL
Shift-Home	Escape HM
Shift-InputMode	Escape NJ
Shift-Message	Escape MS
Shift-Move	Escape MV
Shift-Next	Escape NX
Shift-Options	Escape OT
Shift-Page	Escape PG
Shift-Previous	Escape PV
Shift-Print	Escape PR
Shift-Redo	Escape RO
Shift-Replace	Escape RP

Shift-Resume	Escape RM
Shift-Save	Escape SV
Shift-Undo	Escape UD
Shift-F1	Escape !
Shift-F2	Escape @
Shift-F3	Escape #
Shift-F4	Escape $
Shift-F5	Escape %
Shift-F6	Escape Control
Shift-F7	Escape &
Shift-F8	Escape *
Shift-F9	Escape (
Shift-F10	Escape)
Undo	Escape ud
Up	Up Arrow

VT-220 KEYBOARD

The following table translates the virtual key
names used in this guide to actual keys on the VT-
220 terminal keyboard or to keystroke sequences.

WHEN YOU SEE THIS KEY NAME	TYPE THIS KEY SEQUENCE
Back	Escape bw
BackSpace	BackSpace
BackTab	Escape Tab
Begin	Escape bg
Break	
Cancel	Control-X
Clear	Escape ce
ClearLine	Escape ci
Close	Escape cl
Command	Control-C
Copy	Escape cp
Create	Escape cr
Delete	Remove
Delete Character	
Down	Escape dn
End	Escape en
Enter	Do
Exit	Control-D
Escape	ESC
Find	Find
Forward	Escape fw
F1	F6
F2	F7
F3	F8
F4	F9
F5	F10
F6	F17

F7	F18
F8	F19
F9	F20
F10	Escape 0
Help	Help
Home	Escape hm
InputMode	Insert-Here
Mark	Select
Message	Escape ms
Move	Escape mv
Next	Escape nx
Open	Escape op
Options	Escape ot
Page	Escape pg
PF1	Escape f1
PF2	Escape f2
PF3	Escape f3
PF4	Escape f4
PF5	Escape f5
PF6	Escape f6
PF7	Escape f7
PF8	Escape f8
PF9	Escape f9
PF10	Escape f0
PF11	Escape f-
PF12	Escape f=
Previous	Escape pv
Print	Escape pr
Redo	Escape ro
Ref	Escape re
Replace	Escape rp
Restart	Escape rs
Resume	Escape rm
Return	Return
Save	Escape sa

Scroll Up	Escape ru
Scroll Down	Escape dn
Select	Escape sl
Shift-Back	Escape BW
Shift-Beginning	Escape BG
Shift-Cancel	Escape CX
Shift-ClearLine	Escape CI
Shift-Command	Escape CM
Shift-Copy	Escape RP
Shift-Create	Escape CR
Shift-Delete Character	Escape DC
Shift-End	Escape EN
Shift-Exit	Escape EX
Shift-Find	Escape FI
Shift-Forward	Escape FW
Shift-Help	Escape HL
Shift-Home	Escape HM
Shift-InputMode	Escape NJ
Shift-Message	Escape MS
Shift-Move	Escape MV
Shift-Next	Escape NX
Shift-Options	Escape OT
Shift-Page	Escape PG
Shift-Previous	Escape PV
Shift-Print	Escape PR
Shift-Redo	Escape RO
Shift-Replace	Escape RP
Shift-Resume	Escape RM
Shift-Save	Escape SV
Shift-Undo	Escape UD
Shift-Fl	Escape !
Shift-F2	Escape @

Shift-F3	Escape #
Shift-F4	Escape $
Shift-F5	Escape %
Shift-F6	Escape Control
Shift-F7	Escape &
Shift-F8	Escape *
Shift-F9	Escape (
Shift-F10	Escape)
Undo	Escape ud
Up	Escape up

WYSE-85 KEYBOARD

The following table translates the virtual key
names used in this guide to actual keys on the
Wyse-85 keyboard or to keystroke sequences to be
typed from the Wyse-85 keyboard.

WHEN YOU SEE THIS KEY NAME	TYPE THIS KEY SEQUENCE
Back	<X]
BackSpace	BackSpace
BackTab	Escape Tab
Begin	Escape bg
Break	Break
Cancel	Control-X
Clear	Escape ce
ClearLine	Escape ci
Close	Escape cl
Command	Control-C
Copy	Escape cp
Create	Escape cr
Delete	Remove
Delete Character	Shift-<X]
Down	Escape dn
End	Escape en
Enter	Do
Exit	Control-D
Escape	ESC
Find	Find
Forward	Escape fw
F1	F6
F2	F7
F3	F8
F4	F9
F5	F10

F6	F17
F7	F18
F8	F19
F9	F20
F10	Escape 0
Help	Help
Home	Home
InputMode	Insert-Here
Mark	Select
Message	Escape ms
Move	Escape mv
Next	Escape nx
Open	Escape op
Options	Escape ot
Page	Escape pg
PF1	Escape f1
PF2	Escape f2
PF3	Escape f3
PF4	Escape f4
PF5	Escape f5
PF6	Escape f6
PF7	Escape f7
PF8	Escape f8
PF9	Escape f9
PF10	Escape f0
PF11	Escape f-
PF12	Escape f=
Previous	Escape pv
Print	Escape pr
Redo	Escape ro
Ref	Escape re
Replace	Escape rp
Restart	Escape rs
Resume	Escape rm
Return	Return

Save	Escape sa
Scroll Up	Escape ru
Scroll Down	Escape dn
Select	Escape sl
Shift-Back	Escape BW
Shift-Beginning	Escape BG
Shift-Cancel	Escape CX
Shift-ClearLine	Escape CI
Shift-Command	Escape CM
Shift-Copy	Escape RP
Shift-Create	Escape CR
Shift-Delete Character	Escape DC
Shift-End	Escape EN
Shift-Exit	Escape EX
Shift-Find	Escape FI
Shift-Forward	Escape FW
Shift-Help	Escape HL
Shift-Home	Escape HM
Shift-InputMode	Escape NJ
Shift-Message	Escape MS
Shift-Move	Escape MV
Shift-Next	Escape NX
Shift-Options	Escape OT
Shift-Page	Escape PG
Shift-Previous	Escape PV
Shift-Print	Escape PR
Shift-Redo	Escape RO
Shift-Replace	Escape RP
Shift-Resume	Escape RM
Shift-Save	Escape SV
Shift-Undo	Escape UD
Shift-Fl	Escape !

Shift-F2	Escape @
Shift-F3	Escape #
Shift-F4	Escape $
Shift-F5	Escape %
Shift-F6	Escape Control
Shift-F7	Escape &
Shift-F8	Escape *
Shift-F9	Escape (
Shift-F10	Escape)
Undo	Escape ud
Up	Escape up

LINK (S/T2) KEYBOARD

The following table translates the virtual key names used in this guide to actual keys on the LINK (S/T2) keyboard or to keystroke sequences. Note that the + sign, as used below, indicates a second instance of a key mapping for a particular virtual key name: +**Cancel** is a second **Cancel** key.)

WHEN YOU SEE THIS KEY NAME	TYPE THIS KEY SEQUENCE
Back	Left
BackSpace	
BackTab	Control Tab
Begin	Control Up
Break	Control]
Cancel	Control-X
+Cancel	F20
Clear	Control F7
ClearLine	Shift F20
Close	Control F6
Command	Control-C
+Command	F13
Copy	F11
Create	***
Delete	Remove
Delete Character	<X
Down	Down
End	Control-Down
Enter	Do
Exit	Control-D
+Exit	F14
Escape	ESC
Find	
Forward	Right

F1	F1
F2	F2
F3	F3
F4	F4
F5	F5
F6	F6
F7	F7
F8	F8
F9	F9
F10	F10
Help	Help
Home	Shift-Up
InputMode	Insert-Here
Mark	Select
Message	
Move	F12
Next	Shift-Right
Open	Control-F5
Options	
Page	Next Page
Previous	Shift-Left
Print	F19
Redo	Control-F2
Ref	
Replace	Control-F3
Restart	
Resume	
Return	
Save	Control-F1
Scroll Up	Prev Screen
Scroll Down	Next Screen
Shift-Back	Control-Left
Shift-Beginning	
Shift-Cancel	

```
Shift-
ClearLine
Shift-Command
Shift-Copy        Shift-F11
Shift-Create
Shift-Delete
Character         Control-<X
Shift-End
Shift-Exit        Shift-F14
Shift-Find
Shift-Forward     Control-Right
Shift-Help        Shift-Help
Shift-Home        Shift-Down
Shift-InputMode
Shift-Message
Shift-Move        Shift-F12
Shift-Next
Shift-Options
Shift-Page        Prev Page
Shift-Previous
Shift-Print
Shift-Redo
Shift-Replace
Shift-Resume
Shift-Save
Shift-Undo
Shift-F1          Shift-F1
Shift-F2          Shift-F2
Shift-F3          Shift-F3
Shift-F4          Shift-F4
Shift-F5          Shift-F5
Shift-F6          Shift-F6
Shift-F7          Shift-F7
Shift-F8          Shift-F8
Shift-F9          Shift-F9
```

Shift-F10   Shift-F10
Undo   Control-U
Up   Up

alphanumeric. A string made up of letters (alphabetic) and numbers (numeric).

applications program. A computer program that performs a data processing task rather than a control function. In CTIX it also denotes a program running in user space rather than the Kernel, that is, the application is being swapped.

ASCII (American Standard Code for Information Interchange). A control and graphic character set consisting of 7-bit coded characters (8 bits including parity check), used for information interchange between data communications systems.

ASCII terminal. A terminal consistent with the American Standard Code for Information Interchange (ASCII), commonly used for serial data transmission.

binary digit (bit). A unit of information that designates one of two possible states, represented by either 1 or 0.

bit. See **binary digit**.

bit rate. The rate at which bits (binary digits) are transmitted over a communications path, normally expressed in bits per second (bps); not to be confused with the data signaling rate (baud), which measures the rate of signal changes being transmitted.

bit stream. A continuous series of bits being transmitted on a transmission line.

block. A set of contiguous bits and/or bytes that make up a definable quantity of information.

blocking. A procedure that indicates the detention of an unsatisfied request until such time as the request can be satisfied. For example, a read request will block until a data packet is received and placed into the read buffer.

buffer. A storage area for a block of data.

byte. A sequence of 8 consecutive bits operated on as a unit.

call (or virtual call). In X.25, the establishing of a virtual circuit by transmitting a Call Request and receiving a Call Connected.

Call Accept Packet. Used to acknowledge an incoming call and to negotiate the flow control parameters present in the facilities field.

call collision. A conflict that occurs at a DTE/DCE interface when both sides transmit Call Requests simultaneously.

Call Request Packet. Used to place an outgoing call and can be transmitted only when there is no virtual circuit set up or currently in progress on an LCN.

carrier. A continuous wave that is modulated by an information-bearing signal. In this case, it is the Data Carrier Detect signal on the modem.

CCITT (International Telephone and Telegraph Consultative Committee). An international organization, including telecommunications carriers, who are responsible for developing telecommunications standards by making recommendations to standardization.

channel. A data communications path.

Clear Packet Processing. Fenerated by an application to clear the associated virtual circuit.

Clear Request Packet. Transmitted to clear a virtual circuit that is set up, or if received by an application, indicates that the remote DTE or the network has cleared the call.

Clock. The entity for the bit rate timing on the physical line. The clock signal can be generated either internally by the DTE or be supplied externally by the DCE modem.

coaxial cable. A two-conductor wire with longitudinal axes coincident. The cable has a shield against noise around a signal-carrying conductor.

command. An operation, pulse signal, or code designed to start, stop, or continue an operation.

communications. The transmission of intelligence between two points of origin and reception.

communications line. Any physical link, such as a wire or a telephone circuit, that connects one or more remote terminals to a communications control unit or connects one communications control unit to another.

configuration. A group of machines, devices, or programs that constitute a data processing system.

data. In relation to X.25, a collection of bits to which meaning is assigned by higher protocols in order to convey information to users.

data communications. The transfer of data between a data source and a data sink using one or more data links according to a designated protocol.

data field. An area in a computer's main memory that contains a data record.

data link. (1) The physical means of connecting one location to another for the purpose of transmitting and receiving data; (2) an assembly of those parts of two data terminal equipments (DTEs) that defines protocol, along with its interconnecting data circuit.

DCE (data circuit-terminating equipment). The network side of the user-to-network interface.

dedicated line. A communications line that is leased from a common carrier and used for communications between two points. It is also called a leased or private line.

device. A terminal, printer, disk, tape, or other input/output medium that can be attached to a system. A device can be a physical unit or a logical unit.

device driver. A program that controls a specified device. In CTIX, a device driver resides in the Kernel.

dial line. A communications line that is dialed, as opposed to dedicated or leased.

digital. Describes devices and communications sytems that operate using discontinuous signals that change between two states.

DTE (data terminal equipment). The device at the user's side of a user-to-network interface. In the case of X.25, this is the computer system (packet mode DTE).

file. A set of related records treated as a unit. A CTIX file is a collection of data records that may be different from one another and may or may not have any relationship to one another.

flow control. A procedure for controlling the rate of transfer of packets (Level 3 flow control) and frames (Level 2 flow control) between two nominated points in a network, usually the DTE and the DCE.

format. The structure of a message or data such that specific controls or data can be identified by their position during processing.

frame. A sequence of bits generated by the Level 2 protocol of X.25 that comprises an address field, a control field, a frame check sequence and (in information frames only) an information field containing data.

gateway. The loadable character device driver, comprising the X.25 protocol state machines. It establishes a point of connection between two dissimilar systems, for example, between your system and a Public Data Network.

Incoming Call. A call request packet when it is being received, in other words, when it is transmitted by the remote end as a Call Request packet.

Information frame (I-frame). A frame that contains an information field and therefore carries user data. The data consists of Level 3 packets.

interface. A definition of rules by which interaction occurs between two different systems or processes.

invoke. To activate a procedure at one of its entry points.

I/O (Input/Output). The process of moving information between a central processing unit and peripheral devices. It may also refer to the particular peripheral hardware that is used.

ISO (International Organization of Standards). An international federation of national standards organizations involved in developing international standards, including communication standards.

layer. A defined functional separation of the X.25 protocols. The X.25 protocol consists of three layers: physical, frame, and packet.

leased line. A communications line for voice and/or data leased from a communications carrier. It is also known as a private line or a dedicated line.

Library. A collection of objects that may be linked into an application program.

logical channel. A bi-directional logical association between a DTE and DCE. A channel is only apparent (and its identification only significant) at the respective local DTE/DCE interface.

logical channel number (LCN). A number allowing the DTE/DCE interface to recognize specific LCs. The numbers must coincide on the DTE/DCE interface.

M Bit (more data bit). In a Data packet, when set, indicates that at least one or more Data packets are required to complete a message of contiguous data.

mode. A specific method of operation.

modem. A mnemonic derived from the functions that a unit performs by MOdulating and DEModulating digital information from a terminal or computer port into an analog carrier signal to be transmitted over an analog line.

network. Refers to a configuration of data processing products, such as processors, controllers, PDNs, and terminals, established and operated by users for the purpose of data processing and information exchange.

network gateway. A software product that provides a transport service allowing application subsystems to communicate with or utilize a PDN.

network gateway driver. A program, utility, or procedure that directs the operation of a peripheral device under CPU control.

Network ID. Identified by a DNIC (Data Network Identification Code, generally, the first four digits of the network address.

node. A terminal computer or peripheral device that provides a switching or terminating point in a network.

Packet. A block of data whose maximum length is fixed: the unit of information exchanged by X.25 at Level 3. There are Data packets and various control packets. A packet type is identified by the encoding of its header.

padding. Filling in a unit of data (such as a block) with zeroes and other fillers.

parameter. (1) A variable that is given a constant value for a specified application, which may denote the application; (2) a name in a procedure used to refer to any argument passed to that procedure. Within the context of this manual, 22 parameters are used to describe the PAD terminal characteristics.

PDN (Public Data Network). A data communications network whose services are available to any user willing to pay for them. Most PDNs use packet switching techniques, but some use circuit switching.

Proc_table. A file in the /usr/spool/x25 directory to define user applications to be executed on incoming calls on a specific subaddress.

profile. A term used for the range of interest of an individual or group in selective discrimination of information.

protocol. The specification of the rules whereby data communications, over a data link, are performed in terms of the particular transmission code, transmission mode, and control and recovery procedures.

PSN (Packet Switching Network). Any data communications network using X.25 packet switching techniques whereby data is broken up into packets at source interface and disassembled back into a data stream at the destination interface. A public PSN offers the service to any paying customer.

PVC (Permanent Virtual Circuit). A permanent logical association between two physically separate DTEs that does not require call setup or clearing procedures.

Q Bit (qualified bit). When set in Data packets, signifies that the packet's user data is an X.29 message.

remote host. Any computer with which communications are to take place. More than one remote host computer can be designated in a data communications network.

Reset Request Packet. Used to reset the sequence numbers at the packet layer, which generally causes retransmission of data, and, on occasion, a clearing of the virtual circuit.

subaddress. Generally consists of digits in the network address. Not all PDNs support subaddress. The Gateway treats the last two digits in the address as the subaddress.

SVC **(Switched** **Virtual** **Circuit).** A temporary logical association between two physically separate DTEs that exists only for the duration of the data transfer. Call setup and call clearing procedures are required with an SVC.

virtual call. In X.25, the communication of two DTEs using a virtual circuit identified by logical channel identifiers at the respective DTE/DCE interfaces. See **DTE** and **DCE**.

virtual circuit (VC). A logical association between two physically separate DTEs.

X.25. Defines the interface between a DTE and a DCE for packet-mode operation on a Public Data Network (PDN).

X.29. Defines the interface for the exchange of control information and user data between a packet-mode DTE and remote Packet Assembly/ Disassembly (PAD) facility, over a packet switching network.