Personal Communications/3270
for DOS (Full-Function Mode)

IBM

Up and Running

Version 4.1

SC31-8262-00

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for DOS (Full-Function Mode)

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Up and Running

Version 4.1

SC31-8262-00

Note

Before using this information and the product it supports, be sure to read the general information under “Notices” on page ix.

First Edition (March 1996)

This edition applies to Version 4.1 of Personal Communications and to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters. Make sure you are using the correct edition for the level of the product.

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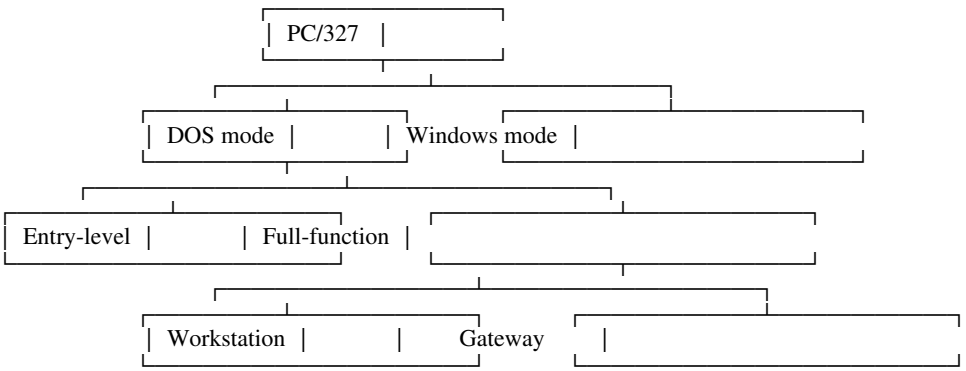
About This Product

IBM* Personal Communications/3270 (hereafter called ***PC/3270***) has two basic modes: ***DOS mode*** and ***Windows** mode***.

For a workstation, ***Windows mode*** provides PC/3270 functions under Microsoft** Windows.

Entry-level DOS mode provides Control Unit Terminal (CUT) or Home3270 (3270 emulation via an asynchronous connection through a protocol converter or the AEA of an IBM 3174 Controller). ***Full-function DOS mode*** provides other connectivities for a workstation or a gateway.



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The following table summarizes the PC/3270 publications for each mode:

Table 1. PC/3270 Publications for Each Mode

Mode	Submode	Publications
DOS	Full-function	*Up and Running for DOS (Full-Function Mode)* (*SC31-8262*) *Reference for DOS (Full-Function Mode)* (*SC31-8265*) *Programmer's Guide for Windows and DOS (Full-Function Mode)*** (*SC31-8266*)
	Entry-level	*Up and Running for DOS (Entry-Level Mode)* (*SC31-8263*) *Programmer's Guide for DOS (Entry-Level Mode)* (*SC31-8267*)
Windows	—	*Up and Running for Windows* (*SC31-8261*) *Reference for Windows* (*SC31-8264*) *Programmer's Guide for Windows and DOS (Full-Function Mode)*** (*SC31-8266*)

* For the U.S. only.
** Common publications for full-function DOS and Windows modes.

Table 2 shows which publications are shipped with the PC/3270 product.

Table 2. PC/3270 Publications Shipped with the Product or Not

Group	Publications	Windows	DOS (Full-function)	DOS (Entry)
Ship Group	*Up and Running*	Yes	Yes	Yes
Nonship Group	*Reference*	Yes	Yes	
	*Programmer's Guide***	Yes	Yes	Yes

** Common publications for full-function DOS and Windows modes.

About This Book

This book provides the information you need to install and use PC/3270 Full-Function DOS Mode on various types of PCs. Throughout this book, *PC* means all supported IBM Personal Computers and IBM Personal System/2* (PS/2*) computers. When only one model or architecture of personal computer is referred to, only that type is intended.

Who Should Read This Book

This book is for the person who installs and uses PC/3270. It describes how to:

- Install PC/3270 on your own PC or on a network server, as a workstation or as a gateway
- Use PC/3270 as a host-system terminal
- Transfer files between a PC and a host system
- Print screens, presentation spaces, and host files
- Use PC/3270 utilities to change the display colors, remap the keyboard, and do several other functions

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How to Use This Book

Organization

This book has the following chapters and appendixes:

Chapter 1, "Introduction," introduces the PC/3270 program.

Chapter 2, "Host Communication without Installation (Auto3270)," describes how to start communicating with a host system without having to install PC/3270

Chapter 3, "Installing PC/3270 in a Workstation," describes how to install PC/3270 in a workstation.

Chapter 4, "Using PC/3270 - Basic Operations," describes how to operate PC/3270 as a 3270 terminal running under DOS.

Chapter 5, "Using the 3270 Setup and Utility," describes several utilities that help you with various PC/3270 functions.

Chapter 6, "Copying and Printing Screens and Files," describes how to copy and print information during a PC/3270 session.

Chapter 7, "Other Useful Functions," describes how to use several other functions.

Appendix A, "OIA Messages," explains information displayed in the operator information area (OIA) located on the bottom line of the host.

Appendix B, "Configuration Information," describes the host attachment and installation options.

Appendix C, "Considerations for PC/3270 Installation and Use," describes the considerations that are needed during installation operations and in using PC/3270.

Appendix D, "Gateway Installation," describes how to install PC/3270 as a gateway.

Appendix E, "Exchanging Files with OfficeVision/MVS," describes how to transfer files between a PC and OfficeVision*/MVS by using the TRANSFER program.

Highlighting Conventions

This book uses the following highlighting conventions:

UPPERCASE	Uppercase type indicates DOS and host programs, commands, and options.
Bold	Bold type indicates prompts and messages as displayed on the screen.
Bold Monospace	Bold monospace type indicates text that you enter to accomplish the actions stated for the example. Lowercase bold monospace used in example text generally indicates a variable. On example screens, bold monospace type indicates the literal text displayed. Bold monospace is also used for file and directory names.
Monospace	Monospace type indicates variables for placeholders, parameters, and file names. When you enter a command, replace all variables with the appropriate file name, number, or option. On an example display screen, regular monospace type indicates a variable quantity other than a default value. Monospace type is also used for examples.
Italics	Italic type indicates a special emphasis in text, or a reference citation.
Bold Italics	Bold italic type indicates a term that is defined in the immediate context of its use.

Command-Syntax Special Characters

In this book, the special characaters used in showing the command syntax have the following meanings or uses:

( ) Parentheses enclose operands that govern the action of certain command options. Type the parentheses as part of the command.

[ ] Brackets indicate an optional command argument. Do not type the brackets when you type the command. If you do not use the optional item, the program selects a default action.

... Ellipsis after an argument indicates that you can repeat the preceding item any number of times. Do not type the ellipsis.

\ A backslash is included as part of any DOS directory name. An initial backslash indicates the first-level directory and an additional backslash is inserted in the directory name indicating each level.

All directives, operands, and other syntax can be typed in uppercase or lowercase, unless otherwise indicated.

Chapter 1. Introduction

Personal Communications/3270 (PC/3270) enables PCs to perform the functions of a 3270 network station (3278 or 3279) with various enhancements, or of a 3270 communications gateway, or both.

As a network station, it allows you to log on to one or more System/390* host computers as if you have a 3270 terminal.

As a gateway for a Local Area Network (LAN), PC/3270 provides access to a host system for other IBM PCs. The gateway provides the attachment to the host system and distributes 3270 sessions to other network stations.

When PC/3270 is started, it can manage three types of session on your PC:

The DOS session, where normal PC programs are run

Display sessions, where your PC operates as a 3270 display terminal

Host-directed print sessions, where your PC emulates an IBM Model 3287 printer

PC/3270 for DOS mode supports the following PCs:

IBM Personal Computer
IBM Personal Computer XT* Model 286
IBM Personal Computer AT*
IBM Personal System/2
IBM Personal System/ValuePoint*
IBM ThinkPad*
Non-IBM PCs that are compatible with the IBM ones listed above

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Features of PC/3270

PC/3270 allows IBM PCs to emulate IBM 3270 display stations and 3287 printers. It also allows a PC to function as a network gateway.

Attachment Types

Distributed Function Terminal (DFT) with coaxial cable
- SNA
- Non-SNA

Local Area Network
- LAN attachment through IEEE 802.2 protocol
- LAN attachment through 3270 Emulation Program Version 3 gateway (NetBIOS)
- LAN via TCP/IP for attachment to a Telnet 3270 server
- LAN attachment through a Netware-for-SAA gateway (IPX)
- 3174 Peer Communication

Synchronous Data Link Control (SDLC)
Asynchronous Data Link Control (ASYNCH) attachment to a Series/1* SNA gateway
X.25 Packet switching data network (PSDN) attachment through CCITT X.25 recommendation
Hayes** AutoSync†
SNA-over-Async†

Display Functions

Dual color or monochrome displays[1]
Extended color and highlighting
White underline cursor[2]
Nonblinking cursor[2]
Slow-blinking cursor[2]
Alternate cursor
Fully configurable display colors
GDDM-PCLK 1.1 graphics
3270 OIA and divider line[3]
Best-fit font for 3270 Model 2, 3, 4, and 5 screens[3]
3270 terminal font[3]
132-column full-screen display[3]
Display blanks after specified delay
ISO 9241 part-3 and DIN 66234 compliant font

† New or enhanced in V4.0.

1 For PC XT and AT only.

2 Available with some models of PS/2.

3 Available with VGA or other display adapters with comparable functions.

Rule line
Copy/Paste
Underscore display on PS/2 (continuous or broken)

Keyboard Functions

Queued keystroke handling
Word-processing keyboard functions
Fully configurable keyboard layout
122-key keyboard support

Printing Functions

Local Copy (3270 print screen) capability, both host and user-initiated, on a PC printer

Host-Directed Printing including:

- LU3 (3270 data stream)
- LU1 (SNA character string)
- Non-SNA (3270 data stream)

Change print description

Change print destination

Print-to-disk

Gateway Functions

Configurations with or without local sessions on the gateway PC

PU type 2.0 downstream nodes for logical unit (LU) types 1, 2, 3, and 6.2

The following IBM emulation products in workstations on Token-Ring, FDDI, PC Networks, or Ethernet networks can use a PC/3270 gateway:

- Personal Communications/3270 Version 1.0 or later
- Operating System/2** (OS/2**) Communications Manager 3270 emulators (Extended Edition, Extended Services, or CM/2)
- IBM 3270 Work Station Program Version 1.1[4]
- IBM 3270 Emulation Program Version 3.05 (stand-alone)[4]
- IBM Networking Services/DOS or APPC/PC
- IBM Networking Services/2 or APPC (OS/2)

SDLC, IEEE 802.2, SNA DFT, or X.25 communications to the host system (only one host attachment at a time)

Self-Defining Dependent LU (SDDLU) Support

Single-route capability through a LAN bridge for both upstream or downstream links

4 Not for Ethernet or FDDI.

Introduction

LU pooling (20 pools)

Two downstream adapters using the IEEE 802.2 interface

Up to 253 downstream LUs

Configurable PIU (data block) sizes on both the upstream and downstream links. The downstream PIU size can be configured at each workstation.

Multiple concurrent printer operations on multiple PC printers in the following configurations:

- Attached to the PC
- Spooled
- Redirected

Utility Programs

3270 Setup and Utility
- Display setup
- 3270 keyboard definition utility
- File transfer utility
- Printer utility
- Vital product data setup
- Extended vital product data setup

Gateway Status Utility
Automatic Access Utility (auto dial, auto logon, and so on)

Application Programming Interfaces

EHLLAPI
LLAPI (for Personal Services/PC)
PCSPCLK (for GDDM-PCLK)
SRPI (for Enhanced Connectivity Facilities)

Other Features

Support for PCMCIA (Credit-Card) adapter

File transfer between your PC and the host

Modify file-transfer translation tables

IMPORT/EXPORT (file transfer with OfficeVision/MVS)

Keyboards and code pages for national languages

Modify EHLLAPI translation tables

Alert function for DFT

Response time monitor for DFT

VPD/Extended VPD for DFT

Record/play 3270 keystrokes or responses

Workstation SNA support:

- Data compression
- Self-Defining Dependent LU (SDDLU).

DOS applications running in the background while a 3270 session is active

Ability to work under DOS 5 Task Switching Facilities

PC/3270 Task Swapper frees memory for one application and maintains the host connection

Utility to remap the keyboard and the screen colors

Ability to remove the emulator easily from memory

Ability to work with accessories for people with disabilities; Screen Reader, Phone Communicator, and Access DOS.

High-speed modems (V.32bis/V.42bis) support

Enhanced Auto Dial:

- maintain up to 8 telephone directory entries
- change or add modem commands easily

Support for non-IBM PCs

Non-IBM printer support

Compatible LAN Programs

PC/3270 runs concurrently with the following programs on all the supported LAN types and with all the supported attachment types if your PC has enough memory:

IBM DOS LAN Requester
IBM PC LAN Program
Novell** NetWare** requester

Chapter 2. Host Communication without Installation (Auto3270)

Full-Function DOS Diskette 3 (Auto3270) allows you to start communicating with the host system according to the functions and specifications in the table below, without having to install or configure PC/3270.

Notes:

1. Auto3270 is available in English language versions only.
2. This diskette does not install PC/3270 in your PC. To install PC/3270, go to Chapter 3, “Installing PC/3270 in a Workstation” on page 9.
3. This diskette is available as a 3.5-inch diskette only.

To start host communication without installation, do the following:

1. Close all DOS applications.
2. Insert the Full-Function DOS Diskette 3 (Auto3270) in drive A.
3. Restart the PC. After about a minute, you will see the host-session initial panel on your PC screen. Your PC is now ready to communicate with the host system.

To stop PC/3270, make sure the host sessions are logged off, then restart the PC.

Note: If you do not see the appropriate host initial panel, check the connection to the host system.

Table 3. Auto3270 Functions and Specifications

Functions/ Specifications	**Settings**
Maximum number of sessions	5 (depending on your control unit configuration)
Attachment type	DFT
Screen size	24 x 80
Utility	Not provided
DOS session	Not provided
Printer options	Not supported
Expanded memory	Not supported
PC	Personal System/2
Keyboard type	Host-connected or Enhanced keyboard
Keyboard layout	U.S.
Country (host code page)	U.S. English (037)

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Chapter 3. Installing PC/3270 in a Workstation

You can install Personal Communications/3270 (PC/3270) in several different ways:

As a network station or as a gateway
On or from a local area network (LAN) server
On or from diskettes
On a hard disk on your own PC
By using either quick or flexible installation

You can also install PC/3270 from CD-ROM. Refer to the CD-ROM manual for more information.

Depending on whether you are installing a network station or a gateway, the possibillities are as follows:

	Network Station	Gateway
Install from:	Diskettes Network server	Diskettes Network server
Install to:	Diskettes Local hard disk Network server directory	Local hard disk Network server directory
Program files reside on:	Diskettes Local hard disk Network server	Local hard disk Network server
Procedure:	Quick Installation Flexible Installation	Flexible Installation only

Installation Procedures

For a network station, you use either quick or flexible installation; which you use depends on your requirements:

Quick Installation
Installs PC/3270 with a minimum of steps, most definitions being predefined.

Flexible Installation
Allows you to have more than one connection to the host and to configure all the possible options. It has two subprocedures, basic link options and advanced link options.

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Installing PC/3270 in a Workstation

Important

Before you start to install PC/3270, please do two things:

1. Read the README file on the Full-Function DOS Mode diskette 1. It contains information produced after this book was printed.
2. Gather the information you will need in order to complete the configration panels; this is listed in “Required Information” at the start of the “Quick Installation” and “Flexible Installation” sections of this book.

The following table shows where to find the procedure you will use.

Installation...	Go to page...
Quick Installation	11
Flexible Installation	23

Quick Installation

This installation procedure allows you to install PC/3270 with a minimum of installation steps. Some installation options are pre-defined; if you need to change their default values, you should use flexible installation.

This section contains the following subsections:

Supported Functions/Specifications 11
Required Information 13
Quick Installation Procedure 14

Supported Functions/Specifications

The following functions/specifications are supported by quick installation:

Functions /Specifications	Quick Installation Settings
Maximum types of connection	1
Maximum number of sessions	**DFT** 5 (depending on your control unit configuration) **Asynchronous** 4 **Others** 8
Drive	Selectable
Subdirectory	**\PC327** (for hard disk) \ (root directory for a diskette)
Configuration-file name	**PC327 .BAT**
Attachment type	Selectable
Screen size	Selectable
Utility	Installed
DOS session	Provided
Printer options	Selectable (local printer only)
Expanded memory	Not supported
PC/Host code pages[5]	Predefined
DOS graphic save option	No

Quick Installation

Functions /Specifications	Quick Installation Settings
Keyboard layout (host code page)	Albania (500) Belgium (500) Bosnia/Herzegovina - Croatian (870) Bosnia/Herzegovina - Serbian (1025) Brazil (037) Bulgaria (1025) Canada - bilingual (037) Croatia (870) Czech (870) Denmark (277) Former Yugoslavian Republic of Macedonia (1025) France 120 (297) France 189 (297) Germany/Austria (273) Greece (875) Hungary (870) Iceland (500) Italy 141 (280) Italy 142 (280) Latin America - Spanish (284) Netherlands (037) Norway (277) Poland (870) Portugal (037) Romania (870) Russia 441 (1025) Russia 443 (1025) Serbia/Montenegro (1025) Slovakia (870) Slovenia (870) Spain (284) Sweden/Finland (278) Switzerland - French (500) Switzerland - German (500) Turkey 179 (1026) Turkey 440 (1026) United Kingdom 166 (285) United Kingdom 168 (285) U.S. English (037)

Changing the Configuration

If you want to change the configuration after it is installed by the quick installation process, you must rerun the installation program.

Warning: If you do so, the files that were previously installed will be overwritten.

5 The PC and host code pages are predefined for each country selection. Refer to the help panel (press F1 during installation) for the **Keyboard Country** selection.

Required Information

You can change the default settings of the following selections. Obtain the required information according to your attachment type (refer to the table below), then go to "Quick Installation Procedure" on page 14.

For help, please refer to the *Reference for DOS (Full-Function Mode)*.

Attachment Type[6]	**Required Selection Information**
Distributed Function Terminal (DFT)	None
LAN via 802.2 protocol	Destination address Physical unit ID Block ID PIU size
LAN via NetBIOS (3270 Emulation Program Gateway Version 3)	Session name
3174 Peer Communication	Destination address Physical unit ID Block ID PIU size
Synchronous Data Link Control (SDLC)	Line type SDLC station address PIU size NRZI encoding Half-speed backup Continuous carrier Physical unit ID Block ID Answer-tone generation
Asynchronous	Communication port Line speed in bps Bits per character and parity

6 One of these attachment types can be selected.

Quick Installation Procedure

You can use quick installation to install PC/3270 from diskettes or from a network server into a directory on a hard disk; that disk can be on your own PC or on the server. If you install from a server, you have two options: to share the program files with other users and create just a few files that are specific to yourself; or to have your own copy of the program files. The first alternative is recommended because it is more economical of disk space and makes updating the program files much easier. You should consult your system administrator about this.

Follow the steps below to install PC/3270:

Installation from Diskettes

1. Before you start to install PC/3270, make a backup copy of the program diskettes and put the original diskettes in a safe place; you should install from the copy, not from original, because the program might write to the diskette.
2. Insert the copy of the *Full-Function DOS Diskette 1 (Installation)* into drive A and change the current drive to A: (type A: and press Enter).
3. Type **INSTALL** and press Enter. You will see the IBM logo, followed by the Introduction panel shown Figure 1 on page 15.

Installation from a Network Server

Your system administrator will tell you the location of the PC/3270 program files on the server; they will be in a directory that will be known by its PC name (H:\APPS\PC3270, for example) or by an alias, such as HOSTCOMM. In either case, the location will be referred to below as **netdrive**.

1. Connect to the network in the usual way.
2. Make current the path (drive and directory) in which the PC/3270 program files are stored on the server (for example, type H:\APPS\PC3270 and press Enter)
3. At the DOS prompt, enter:

   INSTALL

Sharing the Program Files

When you install PC/3270 from a server, you will normally store, in one of your own directories, only the files that are private to you such as a configuration file, a keyboard file and a few others; you will share with other users the program files that are stored on the server. You can store your private files on your own PC or in a personal directory (which will be called \PC3270) on the server.

If you want to do this type of installation, type **CONFIG** instead of **INSTALL**.

4 You will see the IBM logo, followed by the Introduction panel shown below. The files will be installed in the **PC3270** directory on the drive that you specify in the Install panel, which will appear shortly (with quick installation, you have no choice for the directory name).

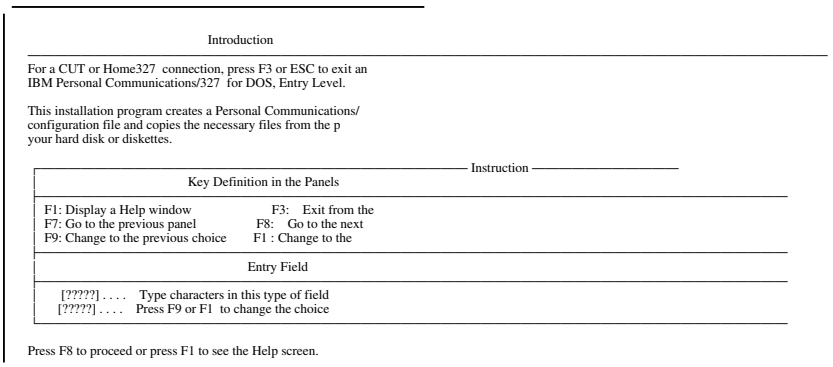


Figure 1. Introduction Panel

a The panel refers to CUT and Home3270 connections. The term *CUT* means control unit terminal and defines one of two modes of connecting a PC to a host-system terminal controller; the other mode is distributed function terminal (DFT). DFT mode is provided by the program you are now using; CUT mode is provided by PC/3270's entry-level mode.

Home3270 refers to a method of connecting a PC to a host system by an asynchronous communications line; this is also provided by PC/3270's entry-level mode.

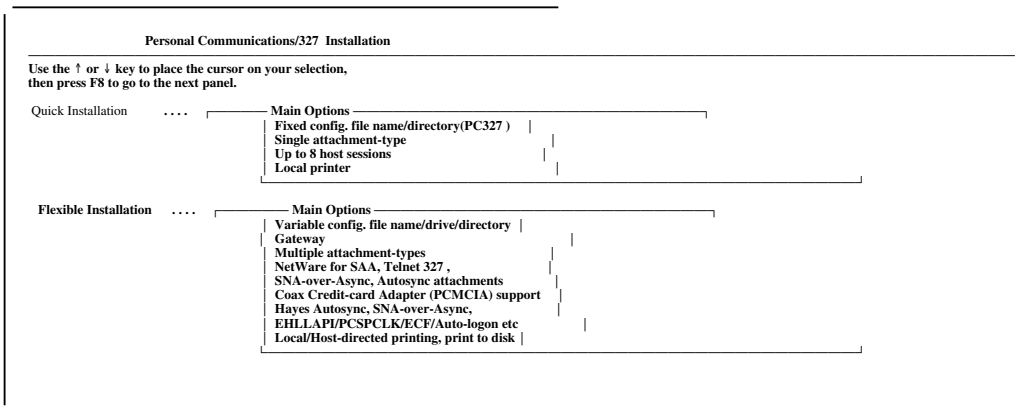
For Help Press F1

Each option on every panel of the installation program is explained with help text; just move the cursor to the option concerned and press F1.

b Press F8 to continue.

Quick Installation

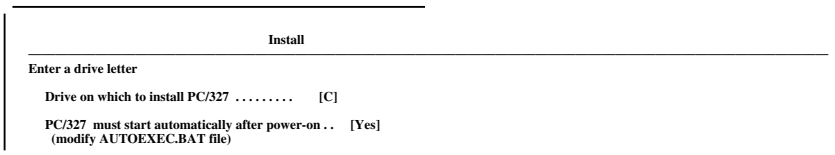
5 The following panel appears.



a Move the cursor to “Quick Installation.”

b Press F8 to continue.

6 The following panel appears.

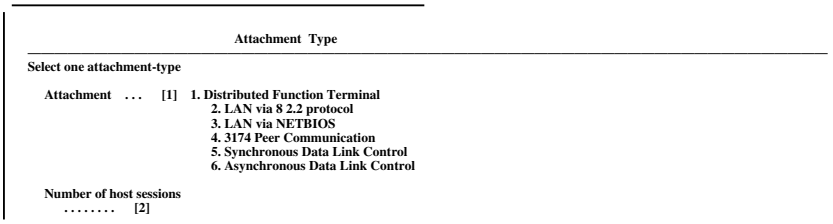


a If you are installing from diskettes, enter the letter for one of the hard disk drives on your PC. If you are installing from a network server, enter the letter for the drive on which you want to install your private files; this can be on your own PC or on the server.

b If you want PC/3270 to start automatically when you turn on your PC, answer **Yes** to the second question.

c Press F8 to continue.

7 The following panel appears.



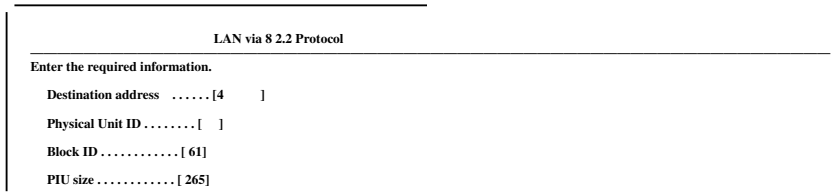
a Enter your attachment type and the number of host sessions. Press F1 for additional information about each attachment type.

b Press F8 to continue.

8 Depending on your selection for **Attachment**, go to the appropriate step as follows:

Selection	Go To
Distributed Function Terminal (DFT)	Step 14 on page 20
LAN via 802.2 protocol	Step 9 on page 18
LAN via NetBIOS	Step 10 on page 18
3174 Peer Communication	Step 13 on page 20
SDLC Attachment	Step 11 on page 19
Asynchronous Attachment	Step 12 on page 19

9 LAN via 802.2 Protocol

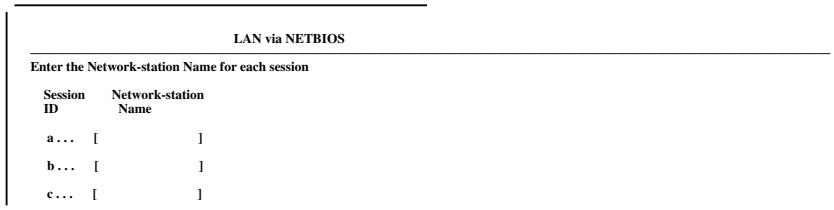


a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 14 on page 20.

10 LAN via NetBIOS



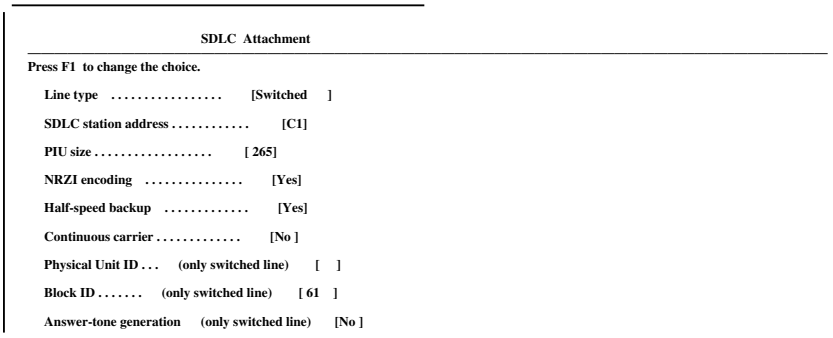
Note: This example shows that you selected three host sessions on the previous panel.

a Enter the network-station names. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 14 on page 20.

11 SDLC Attachment

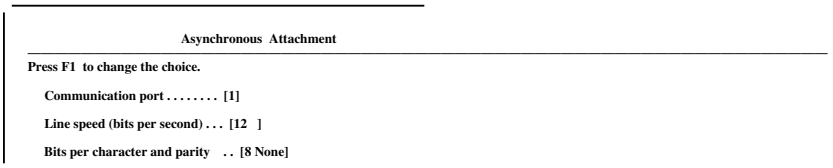


a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 14 on page 20.

12 Asynchronous Attachment

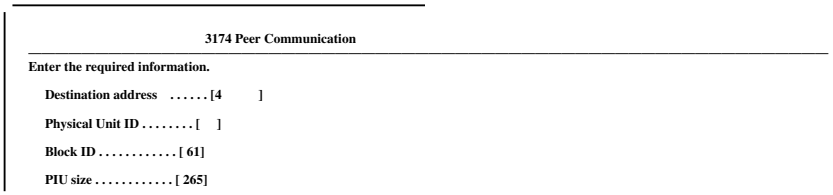


a Change the field entries as necessary. Press F1 or refer to “Asynchronous Data Link Control Attachment” on page 151 for additional information.

b Press F8 to continue.

c Go to step 14 on page 20.

13 3174 Peer Communication

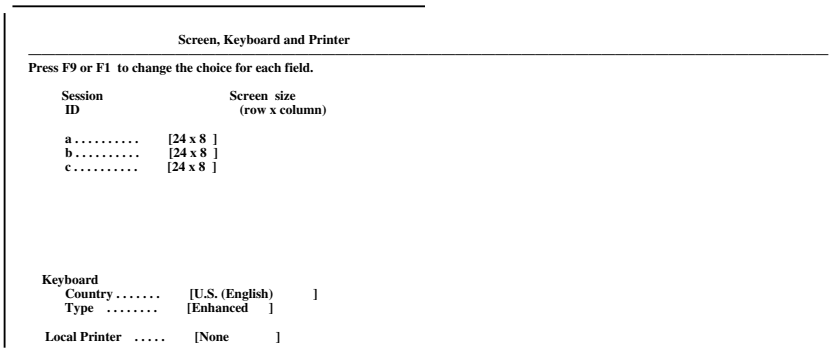


a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 14.

14 The following panel appears.

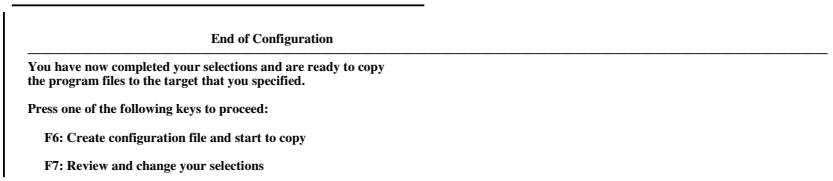


Note: This example shows that you selected three host sessions.

a PC/3270 automatically uses the country and type of keyboard from the PC's configuration and shows them in this panel. If they are wrong or you want to change them, press F1 for help or refer to the installation planning section of the *Reference for DOS (Full-Function Mode)*.

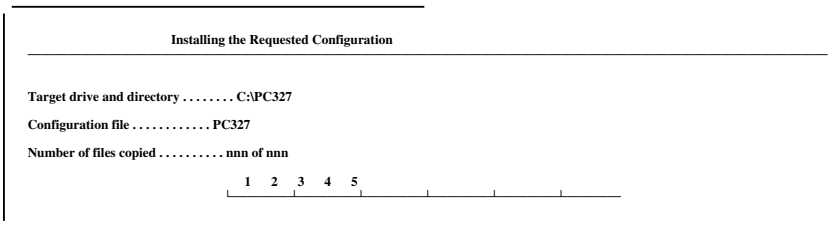
b Press F8 to continue.

15 The following panel appears.



Press F6 to create your configuration file and copy the PC/3270 program files to the target drive. Press F7 if you want to review or change your selections before installation.

16 When you press F6, the following panel appears.



Follow the instructions at the bottom of the screen to insert the necessary diskettes.

When installation is complete, press F3 to exit and then remove the installation diskette.

17 When the installation program has finished, instructions appear telling you how to start PC/3270.

Installation Completed

The PC/3270 programs are installed in the target drive and directory. To start PC/3270 from the DOS prompt, change the current drive and directory to those for PC/3270 and type the name of the configuration file, such as:

```
C:   "┘
CD PC327     "┘
PC327    "┘
```

When PC/3270 starts correctly, you will see an IBM logo and then the host session screen.

Press and hold Alt, then press Esc to change sessions.

Quick Installation

Note: The keyboard functions for PC/3270 are supplied; choose the one that is appropriate to the layout of your keyboard. Refer to the keyboard layouts and the Installation chapter in *Reference for DOS (Full-Function Mode)* to identify your keyboard type.

Flexible Installation

This installation procedure provides maximum flexibility for the installation of a network station. It must also be used to install a gateway.

You can choose Base Link Options, which allow you only one attachment and limited configuration options, or Advanced Link Options, which allow you multiple attachments and all the possible configuration options. The criteria are listed on Page 28.

This section contains the following subsections:

Panel Index 23
Flexible Installation Procedures 25
Base Link Options 30
Advanced Link Options 40
Base and Advanced Link Options - Common Panels 57
Advanced Configuration Options 61

Changing the Configuration

If you install ALL the PC/3270 program files, you will be able to change the configuration later by running the CONFIG program. If not, you must run INSTALL again. The installation program gives you the options to install all the files on its last screen.

Panel Index

Table 4 shows the panel titles for the flexible installation process and their related pages. If you lose your place during the installation operation, refer to the panel title and resume the current step.

Table 4 (Page 1 of 2). Panel Reference

Panel Title	Page
Advanced Configuration Options	60
Advanced Options for Asynchronous Attachment, part I	51
Advanced Options for Asynchronous Attachment, part II	51
Advanced Options for AutoSync Attachment (Hayes AutoSync)	53
Advanced Options for DFT Attachment	44
Advanced Options for LAN Attachment via 802.2 Protocol	46
Advanced Options for LAN via NetBIOS	47
Advanced Options for NetWare-for-SAA Gateway Attachment	48
Advanced Options for Network Stations	55

Flexible Installation

Table 4 (Page 2 of 2). Panel Reference

Panel Title	Page
Advanced Options for SDLC Attachment, part I	49
Advanced Options for SDLC Attachment, part II	50
Advanced Options for SNA-over-Async Attachment, part I	52
Advanced Options for SNA-over-Async Attachment, part II	52
Advanced Options for Telnet 3270 Attachment	48
Advanced Options for X.25 Attachment, part I	54
Advanced Options for X.25 Attachment, part II	55
Advanced Options for 3174 Peer Communication	49
Asynchronous Attachment	38
Attachment Types	30, 40
Automatic Connection	39
AutoSync Attachment	39
Choose Configuration	28
Create Configuration File	27
DFT Attachment	34
Display Options	64
End of Configuration	67
End of Link Options	59
Facilities, part I	62
Facilities, part II	63
Installation Options	66
Installing the Requested Configuration	67
Introduction	26
Keyboard and Code Pages	58
LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment)	37
LAN via NetBIOS	36
LAN via TCP/IP (Telnet 3270 Attachment)	36
LAN via 802.2 Protocol	35
MAP Sessions to Printers	66
PC/3270-Startup Options	58
Personal Communications/3270 Installation	27
Printer Communications	65
Printer Options	64
Screen Sizes	57
Session Types	65
SDLC Attachment	37
SNA-over-Async Attachment	38
3174 Peer Communication	35

Flexible Installation Procedures

You can use flexible installation to install PC/3270 from diskettes or from a network server onto diskettes or into a directory on a hard disk; that disk can be on your own PC or on the server. If you install from a server, you have two options: to share the program files with other users and create just a few files that are specific to yourself; or to have your own copy of the program files. The first alternative is recommended because it is more economical of disk space and makes updating the program files much easier. You should consult your system administrator about this.

Follow the steps below to install PC/3270:

Installation from Diskettes

1 Before you start to install PC/3270, make a backup copy of the program diskettes and put the original diskettes in a safe place; you should install from the copy, not from original, because the program might write to the diskette.

2 Insert the copy of the *Full-Function DOS Diskette 1 (Installation)* into drive A and change the current drive to A: (type A: and press Enter).

3 Type **INSTALL** and press Enter. You will see the IBM logo, followed by the Introduction panel shown Figure 2 on page 26.

Installation from a Network Server

Your system administrator will tell you the location of the PC/3270 program files on the server; they will be in a directory that will be known by its PC name (H:\APPS\PC3270, for example) or by an alias, such as HOSTCOMM. In either case, the location will be referred to below as **netdrive**.

1 Connect to the network in the usual way.

2 Make current the path (drive and directory) in which the PC/3270 program files are stored on the server (for example, type H:\APPS\PC3270 and press Enter).

3 At the DOS prompt, enter:

INSTALL

Flexible Installation

Sharing the Program Files

When you install PC/3270 from a server, you will normally store, in one of your own directories, only the files that are private to you such as a configuration file, a keyboard file and a few others; you will share with other users the program files that are stored on the server. You can store your private files on your own PC or in a personal directory (which will be called \PC3270) on the server.

If you want to do this type of installation, type **CONFIG** instead of **INSTALL**.

4 You will see the IBM logo, followed by the Introduction panel shown below. The files will be installed in the **PC3270** directory on the drive that you specify in the Install panel, which will appear shortly.

5 The following panel appears after the logo panel.

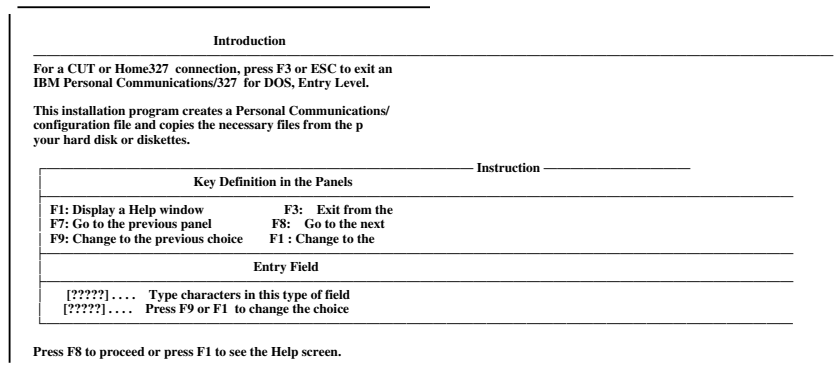


Figure 2. Introduction Panel

a The panel refers to CUT and Home3270 connections. The term *CUT* means control unit terminal and defines one of two modes of connecting a PC to a host-system terminal controller; the other mode is distributed function terminal (DFT). DFT mode is provided by the program you are now using; CUT mode is provided by PC/3270's entry-level mode.

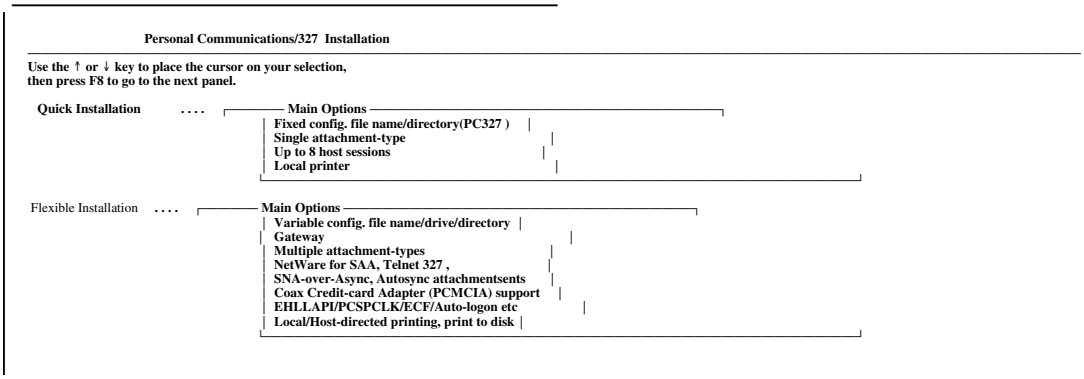
Home3270 refers to a method of connecting a PC to a host system by an asynchronous communications line; this is also provided by PC/3270's entry-level mode.

For Help Press F1

Each option on every panel of the installation program is explained with help text; just move the cursor to the option concerned and press F1.

b Press F8 to continue.

6 The following panel appears.

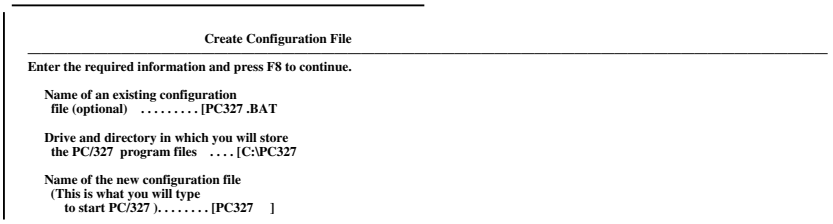


a Move the cursor to “Flexible Installation.”

Note: Pressing F1 displays a help panel for each selection on every panel.

b Press F8 to continue.

7 The following panel appears.



a Change the field entries as necessary.

Note: Refer to “Required Information” on page 32.

Name of an existing configuration file

Enter the name of an existing configuration file if you are retrying the installation or are installing PC/3270 by using a configuration file provided by your system administrator. Otherwise leave the field blank.

Drive and directory in which you will store PC/3270 program files

If you are installing from diskettes, enter the name of the drive and directory on your PC in which you want to install the PC/3270 files. If you are installing from a network server, enter the drive and

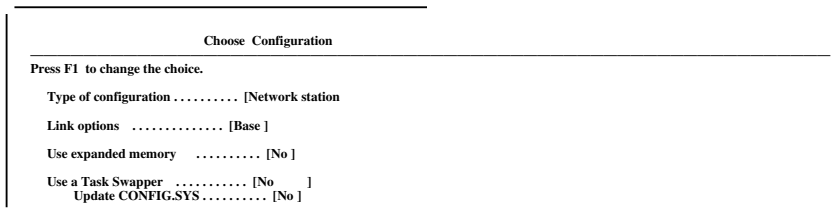
directory in which you want to install your private files; this can be on your own PC or on the server.

Note: If you have already installed PC/3270 Windows mode in your PC, make sure that you specify a directory other than the one for PC/3270 Windows mode.

Name of the new configuration file
Enter a name for the configuration file that you are creating. This file name is used as the start command for PC/3270 after installation.

b Press F8 to continue.

8 The following panel appears.



a Leave **Type of Configuration** as **Network Station**.

b Select **Advanced** for **Link options**, if you want to:

Use more than one adapter card for host communication
Use LAN sessions through more than one gateway
Use an X.25 packet switching data network (PSDN)
LU address or LT number
Use a nondefault setting for an adapter card
Specify the file-transfer block size

Otherwise select **Base**.

c Select **Yes** for **Use expanded memory** if you will use expanded memory for PC/3270. Refer to the *Reference for DOS (Full-Function Mode)* if you need information.

Otherwise select **No**.

d Select **PCSSWAP** or **DOSSWAP** for **Use a Task Swapper** if you will use the PC/3270 task swapper PCSSWAP or the DOS 5.0 Task Swapper to swap PC/3270 out of memory when you want to use other application programs.

e Select **Yes** for **Update CONFIG.SYS** if you want the installation program to update **CONFIG.SYS** so that you can use PCSSWAP or the DOS 5.0 Task Swapper. The original **CONFIG.SYS** file will be renamed.

Details about the task swappers are given in the help panels for the options **Use a Task Swapper** and **Update CONFIG.SYS**.

f Depending on your selection for **Link options**, go to the appropriate step as follows:

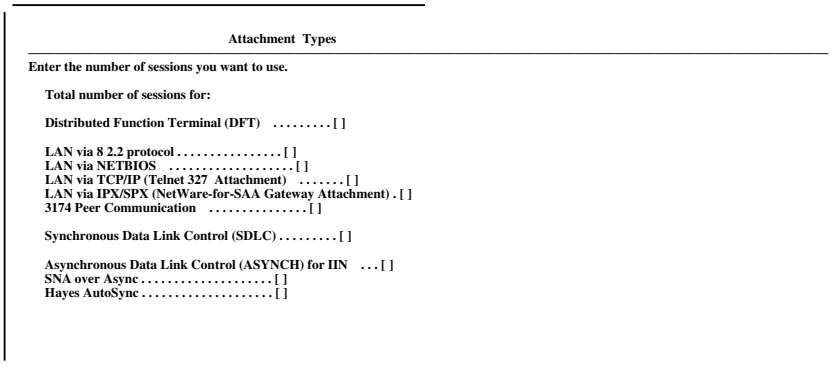
Link Option	Go To
Base	“Base Link Options” on page 30
Advanced	“Advanced Link Options” on page 40

Base Link Options

In the Choose Configuration panel (step 8 on page 28), you chose Base Link Options; this allows you to specify only one attachment-type and to use the defaults for many of the other options. If you want a larger choice, return to the Choose Configuration panel and select Advanced Link Options.

The sequence of panels is shown in Figure 3 on page 32, and the information you will need is listed in Table 5 on page 32.

When you press F8 from the Choose Configuration panel, the following Attachment Types panel appears.



1 Enter the number of sessions for your attachment type; you can select only one type.

The following table shows the maximum number of sessions that are allowed for each attachment type:

Attachment Type	Maximum Number of Sessions
DFT Attachment	5
ASYNCH for IIN	4
Others	8

Note: If you want to select more than one attachment type or if you want to attach to an X.25 network, press F7 to go back to the previous panel and select **Advanced link options**. However, the following attachments will not coexist with each other:

3174 Peer Communication
LAN via TCP/IP (Telnet 3270)
LAN via IPX/SPX (NetWare-for-SAA Gateway)

And the following attachments will not coexist with each other:

Asynchronus Data Link Control (ASYNCH) for IIN
SNA-over-Async
Hayes Autosync

2 Press F8 to continue.

3 Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
DFT Attachment	Step 1 on page 34
3174 Peer Communication	Step 3 on page 35
LAN via 802.2 Protocol	Step 4 on page 35
LAN via NetBIOS	Step 5 on page 36
LAN via TCP/IP (Telnet 3270 Attachment)	Step 6 on page 36
LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment)	Step 7 on page 37
SDLC Attachment	Step 8 on page 37
Asynchronous Attachment	Step 9 on page 38
SNA-over-Async Attachment	Step 10 on page 38
Hayes AutoSync Attachment	Step 11 on page 39

Base Link Option

Figure 3 shows the sequence of panels for the next part of the installation operation.

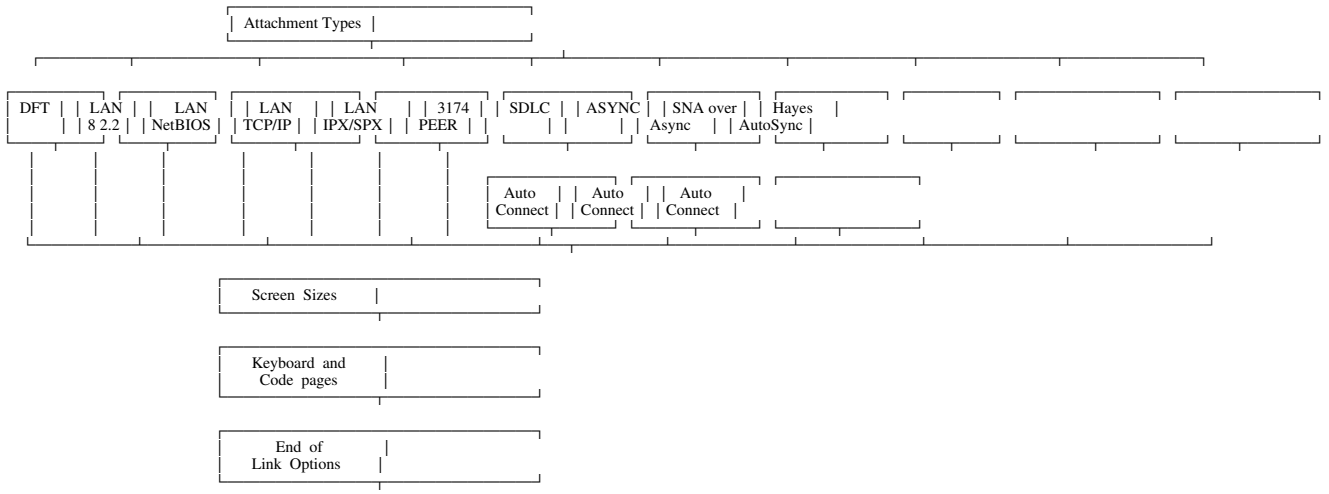


Figure 3. Single-Attachment-Type Panel Flow

Required Information

You can change the default settings of the following selections. Obtain the required selection information according to your attachment type (refer to the table below), then go to “Flexible Installation Procedures” on page 25.

For help, please refer to the *Reference for DOS (Full-Function Mode)* to obtain additional information.

Table 5 (Page 1 of 2). Base Link Options

Attachment Type	Required Selection Information
For all attachment types	Use expanded memory Use a Task Swapper* Update CONFIG.SYS*
Distributed Function Terminal (DFT)	Protocol (SNA*/Non-SNA) Adapter buffer address Use 3270 Credit Card Adapter PCMCIA slot number Update AUTOEXEC.BAT
LAN via 802.2 protocol	Destination address Physical unit ID Block ID PIU size
LAN via NetBIOS (3270 Emulation Program Gateway Version 3)	Network-station name

Base Link Option

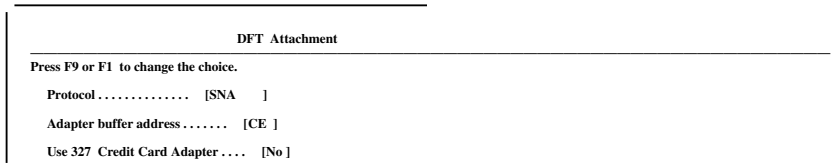
Table 5 (Page 2 of 2). Base Link Options

Attachment Type	Required Selection Information
LAN via TCP/IP (Telnet 3270 Attachment)	Server Host IP address Server Host Name
LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment)	User name Password Server name Service name LU category LU pool name LU name
3174 Peer Communication	Destination address Physical unit ID Block ID PIU size
Synchronous Data Link Control (SDLC)	Line type SDLC station address PIU size NRZI encoding Half-speed backup Continuous carrier Physical unit ID Block ID Answer-tone generation
Asynchronous	Communication port Line speed in BPS Bits per character and parity PAD maximum poll delay (seconds) PAD response time-out (seconds) PAD buffer size Automatic Dial Facility Dial information
SNA-over-Async (SNA/A)	Communication port Line speed Enable Transparency negotiation Transparency level Bit per character and parity Block ID Physical unit ID Link-station address PIU size
Hayes AutoSync	Communication port SDLC station address PIU size NRZI encoding Physical Unit ID Block ID

Note: * Not for DFT, TCP/IP, or NetWare.

Base Link Option

1 DFT Attachment



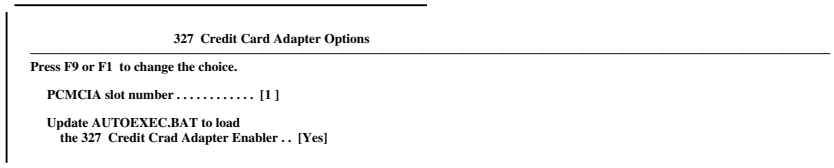
a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Depending on the panel that appears, go to the appropriate steps as follows;

Panel Title	Go To
3270 Credit Card Adapter Options	Step 2
Screen Sizes	Step 1 on page 57

2 3270 Credit Card Adapter Option

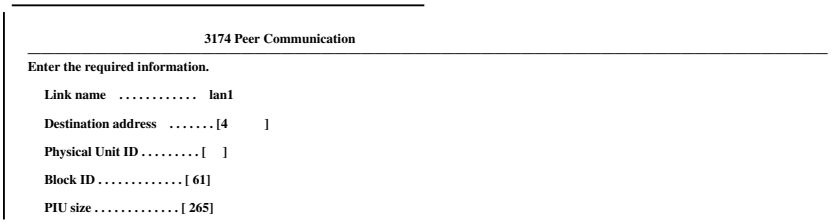


a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 1 on page 57.

3 3174 Peer Communication

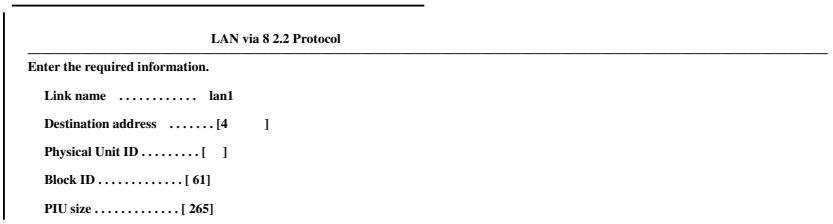


a Change the field entries as necessary. Press F1 or refer to "3174 Peer Communication" on page 148 for additional information.

b Press F8 to continue.

c Go to step 1 on page 57.

4 LAN via 802.2 Protocol



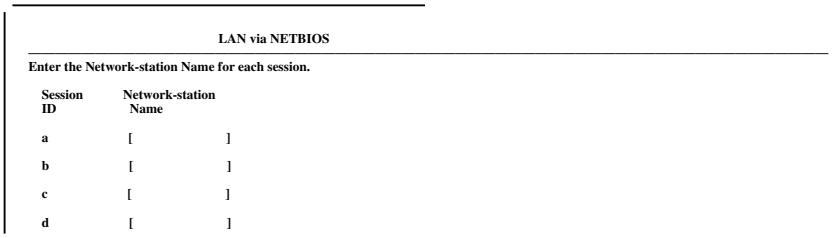
a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 1 on page 57.

Base Link Option

5 LAN via NetBIOS



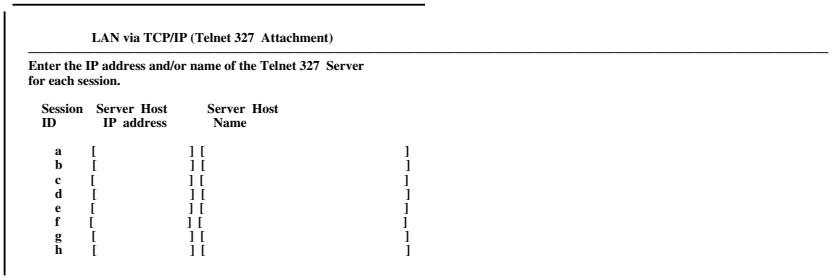
```
                    LAN via NETBIOS
Enter the Network-station Name for each session.

  Session      Network-station
  ID            Name

  a            [                ]

  b            [                ]

  c            [                ]

  d            [                ]
```

a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 1 on page 57.

6 LAN via TCP/IP (Telnet 3270 Attachment)



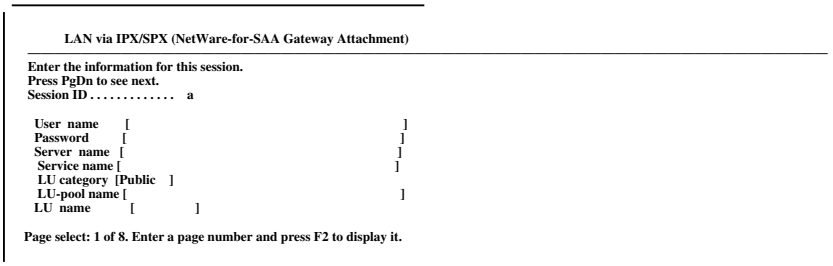
```
          LAN via TCP/IP (Telnet 327  Attachment)
Enter the IP address and/or name of the Telnet 327  Server
for each session.

  Session   Server  Host        Server  Host
  ID         IP  address         Name

    a      [                ] [                              ]
    b      [                ] [                              ]
    c      [                ] [                              ]
    d      [                ] [                              ]
    e      [                ] [                              ]
    f      [                ] [                              ]
    g      [                ] [                              ]
    h      [                ] [                              ]
```

a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 1 on page 57.

7 LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment)

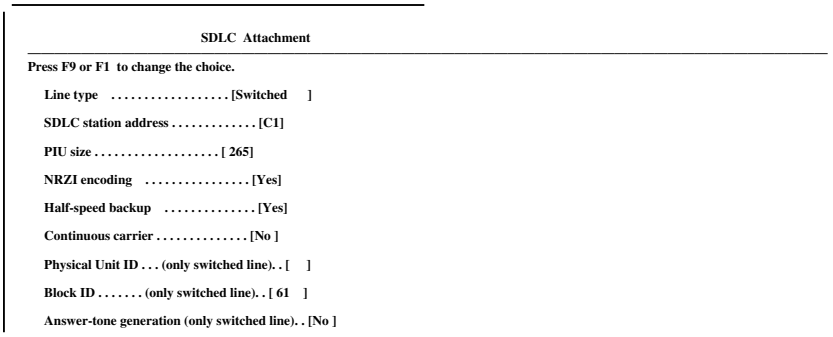


a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 1 on page 57.

8 SDLC Attachment



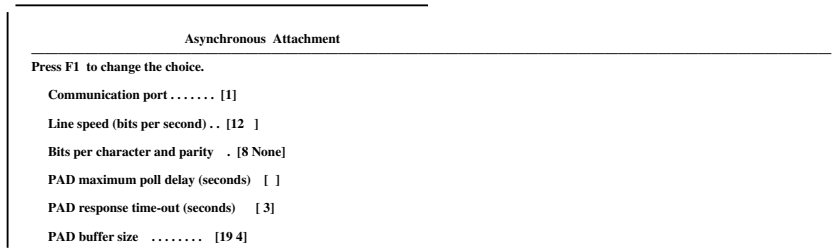
a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 1 on page 57.

Base Link Option

9 Asynchronous Attachment

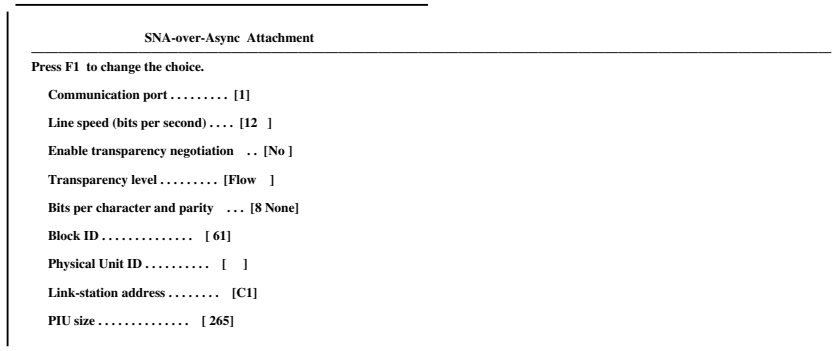


a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 12 on page 39.

10 SNA-over-Async Attachment

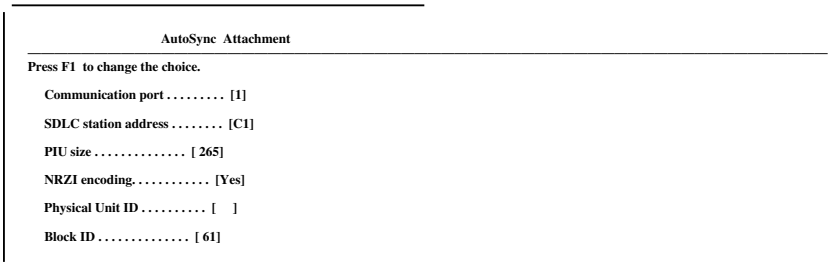


a Change the field entries as necessary.

b Press F8 to continue.

c Go to step 12 on page 39.

11 Hayes AutoSync Attachment

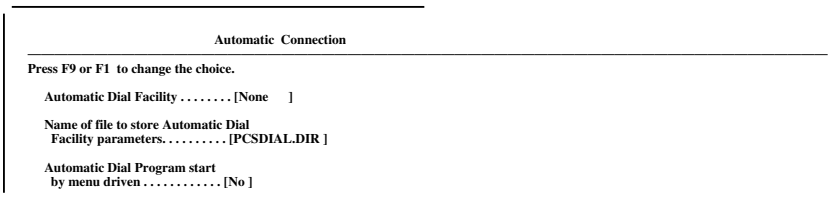


a Change the field entries as necessary.

b Press F8 to continue.

c Go to step 12.

12 Automatic Connection



a Change the field entries as necessary.

Notes:

1) If you select an option other than **None**, the Automatic Access Utility is invoked; this includes three programs, one of which is the Advanced Dial Facility. This lets you define and save, in the file that you name, the information necessary for you to connect to one or more SNA gateways that support SNA-over-Asynchronous protocols. You can define several sets of information (known as "Entries") and use them to dial the destinations automatically. After you have saved the dialing information, you are returned to the installation or configuration program.

2) For *AutoSync Attachment*, the entry for *Automatic Dial Facility* is not selectable. This entry is always **DIRECT**, that is, *Automatic Dial Facility* is always enabled. After the Automatic Dial Facility setup, go to step 12c on page 40. Refer to the *Reference for DOS (Full-Function Mode)* for the Automatic Dial Facility setup.

b Press F8 to continue.

c Go to step 1 on page 57.

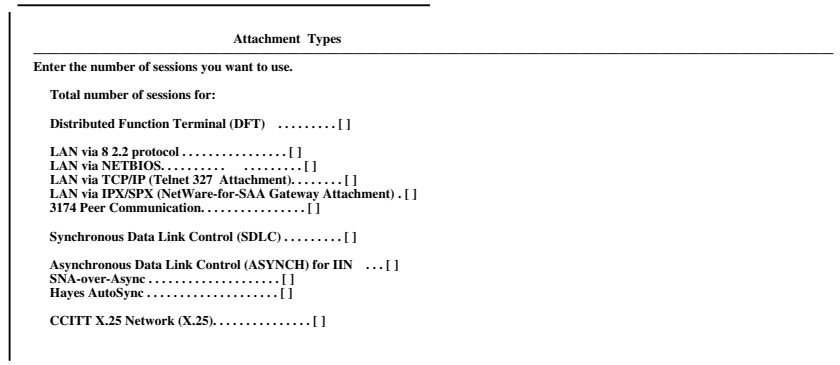
d You have to complete the panels that are specific to Base Link Options. Go to Base and Advanced Link Options, Common Panels, step 1 on page 57.

Advanced Link Options

In the Choose Configuration panel (step 8 on page 28), you chose Advanced Link Options; this allows you maximum flexibility in your configuration. You can use more than one attachment type (subject to some restrictions) and connect to more than one gateway, use more than one adapter of the same type, have an X.25 connection, and change many options.

The sequence of panels is shown in Figure 4 on page 41 and the information you will need is listed in Table 6 on page 42.

When you press F8 from the Choose Configuration panel, the following Attachment Types panel appears.



Enter the number of sessions required for each type of attachment that you want to use; you can have up to 8 sessions for any attachment except asynchronous, which is limited to 4, but the total must not exceed 8.

Notes:

1. The following attachments cannot coexist with each other:

   3174 Peer Communication
   LAN via TCP/IP (Telnet 3270)
   LAN via IPX/SPX

2. The following attachments cannot coexist with each other:

   Asynchronous Data Link Control (ASYNCH) for IIN
   SNA-over-Async (SNA/A)
   Hayes AutoSync

Figure 4 shows the sequence of panels for Advanced Link Options.

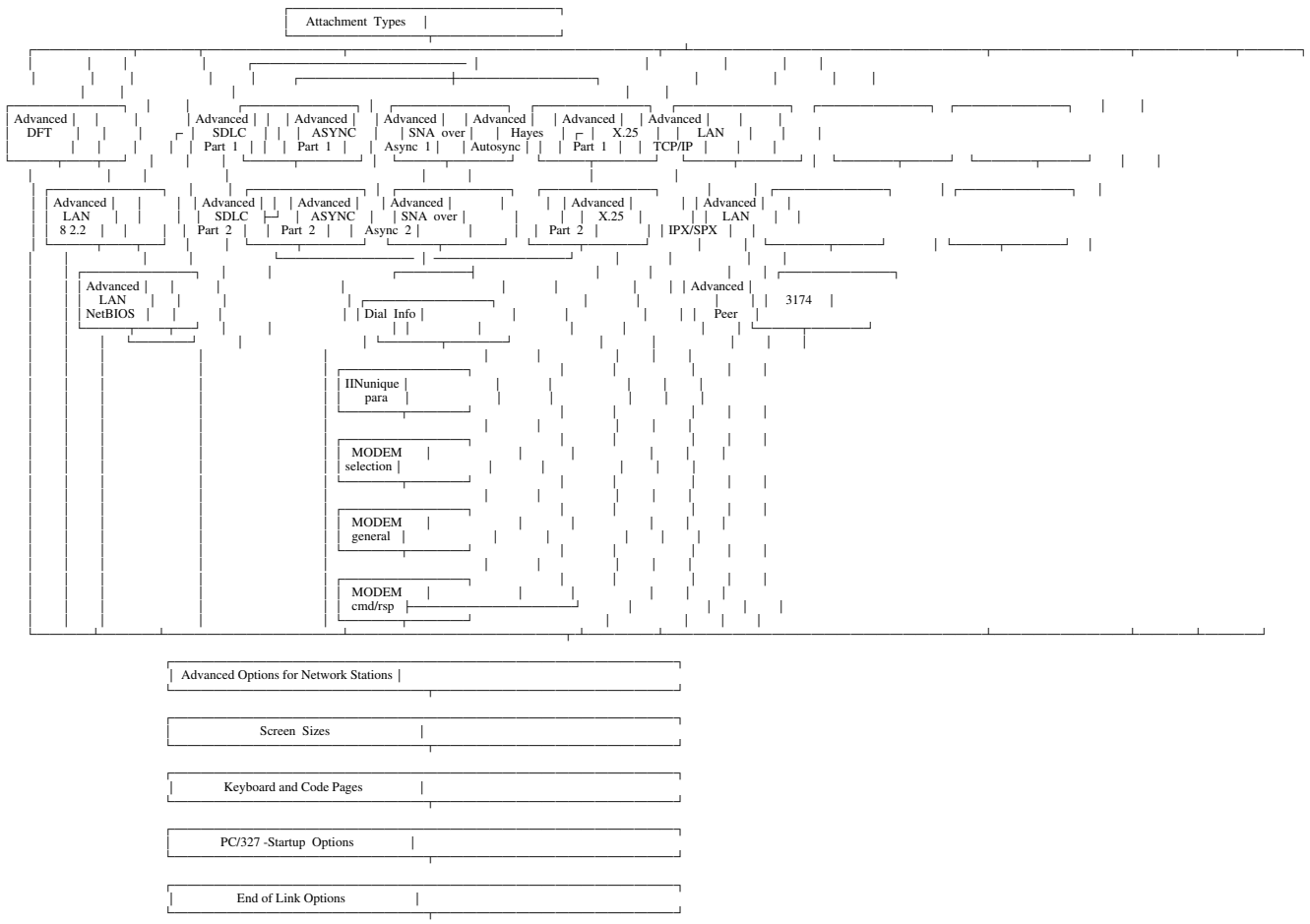


Figure 4. Advanced Link Options Panel Flow

Advanced Link Option

Required Information

Obtain the required selection information according to your attachment type.

Refer to the *Reference for DOS (Full-Function Mode)* for details of the required selection information.

Table 6 (Page 1 of 2). Advanced Link Options

Attachment Type	Required Selection Information
For all attachment types	Use expanded memory Use a Task Swapper Update CONFIG.SYS Non-SNA block size SNA block size LU address/LT number (optional)
Distributed Function Terminal (DFT)	Adapter number Number of sessions for each adapter Protocol (SNA/Non-SNA) Adapter buffer address Use 3270 Credit Card Adapter PCMCIA slot number Update AUTOEXEC.BAT
LAN via 802.2	Destination address Number of sessions for each gateway Physical unit ID Adapter number Remote SAP Local SAP Block ID PIU size
LAN via NetBIOS (3270 Emulation Program Gateway)	Network-station name Adapter number for each session
LAN via TCP/IP (Telnet 3270 Attachment)	Server Host IP address Server Host Name File-transfer packet size
LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment)	User name Password Server name Service name LU category LU pool name LU name File-transfer packet size
3174 Peer Communication	Destination address Number of sessions for each gateway Physical unit ID Adapter number Remote SAP Local SAP Block ID PIU size

Advanced Link Option

Table 6 (Page 2 of 2). Advanced Link Options

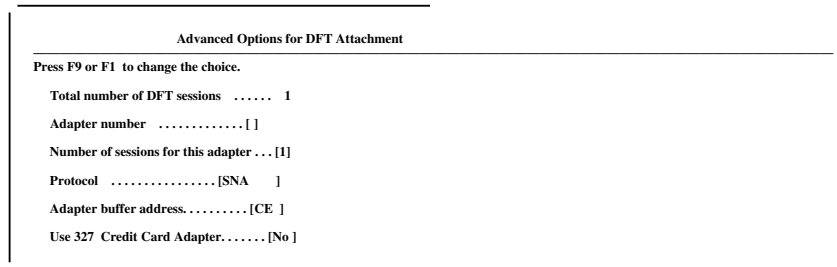
Attachment Type	Required Selection Information
Synchronous Data Link Control (SDLC)	Adapter number Number of sessions for each adapter Line type SDLC station address PIU size NRZI encoding (Yes/No) Half-speed backup(Yes/No) Continuous carrier (Yes/No) Physical unit ID Block ID Answer-tone generation (Yes/No)
Asynchronous	Block ID Communications port Number of sessions for each port Physical unit ID Link-station address Line speed in BPS Bits per character and parity Automatic Dial Facility Dial Information
SNA-over-Async(SNA/A)	Total number of SNA-over-Async sessions Communications port Number of sessions for this port Block ID Physical Unit ID Link-station address PIU size Line speed in BPS Enable Transparency negotiation Transparency level Bit per character and parity Automatic Dial facility Dial Information
Hayes AutoSync	Total number of sessions Communications port Number of sessions for this port SDLC station address PIU size NRZI encoding Physical Unit ID Block ID
X.25 Attachment	CCITT X.25 level X.25 Support Program trace name Number of sessions for this link X.25 station address Link-profile name PVC logical channel number Block ID Physical Unit ID Destination-station name Own-station name **Note:** Several of these parameters are defined by the X.25 Co-Processor Support Program.

Advanced Link Option

1 Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Advanced Options for DFT Attachment	Step 2
Advanced Options for LAN Attachment via 802.2 Protocol	Step 4 on page 46
Advanced Options for LAN via NetBIOS	Step 5 on page 47
Advanced Options for Telnet 3270 Attachment	Step 6 on page 48
Advanced Options for NetWare-for-SAA Gateway Attachment	Step 7 on page 48
Advanced Options for 3174 Peer Communication	Step 8 on page 49
Advanced Options for SDLC Attachment, part I	Step 9 on page 49
Advanced Options for Asynchronous Attachment, part I	Step 11 on page 51
Advanced Options for SNA-over-Async Attachment part I	Step 13 on page 52
Advanced Options for AutoSync Attachment (Hayes Autosync Attachment)	Step 15 on page 53
Advanced Options for X.25 Attachment, part I	Step 17 on page 54

2 DFT Attachment



a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

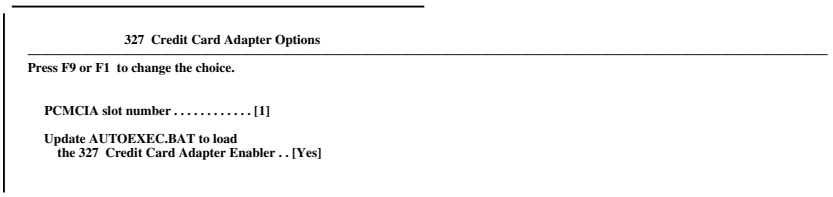
c Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
3270 Credit Card Options	Step 3 on page 45
Advanced Options for LAN Attachment via 802.2 Protocol	Step 4 on page 46

Advanced Link Option

Panel Title	Go To
Advanced Options for LAN via NetBIOS	Step 5 on page 47
Advanced Options for SDLC Attachment, Part I	Step 9 on page 49
Advanced Options for Asynchronous Attachment, Part I	Step 11 on page 51
Advanced Options for SNA-over-Async Attachment, part I	Step 13 on page 52
Advanced Options for AutoSync Attachment (Hayes Autosync Attachment)	Step 15 on page 53
Advanced Options for X.25 Attachment, part I	Step 17 on page 54

3 3270 Credit Card Adapter Options



a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

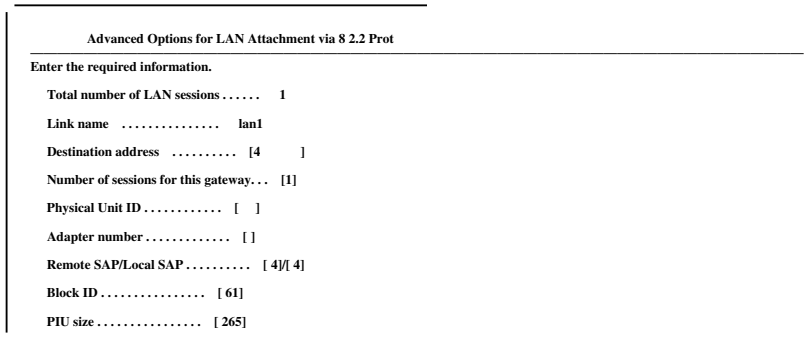
b Press F8 to continue.

c Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Advanced Options for LAN Attachment via 802.2 Protocol	Step 4 on page 46
Advanced Options for LAN via NetBIOS	Step 5 on page 47
Advanced Options for SDLC Attachment, Part I	Step 9 on page 49
Advanced Options for Asynchronous Attachment, Part I	Step 11 on page 51
Advanced Options for SNA-over-Async Attachment, part I	Step 13 on page 52
Advanced Options for AutoSync Attachment (Hayes Autosync Attachment)	Step 15 on page 53
Advanced Options for X.25 Attachment, part I	Step 17 on page 54

Advanced Link Option

4 LAN via 802.2



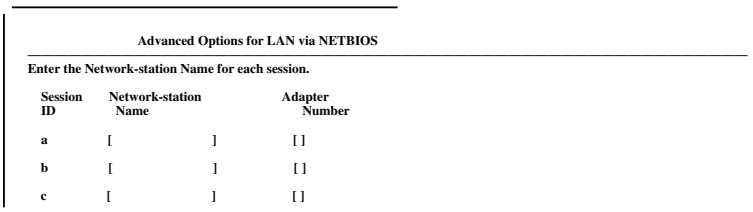
a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Advanced Options for LAN via NetBIOS	Step 5 on page 47
Advanced Options for SDLC Attachment, Part I	Step 9 on page 49
Advanced Options for Asynchronous Attachment, Part I	Step 11 on page 51
Advanced Options for SNA-over-Async Attachment, part I	Step 13 on page 52
Advanced Options for AutoSync Attachment (Hayes Autosync Attachment)	Step 15 on page 53
Advanced Options for X.25 Attachment, part I	Step 17 on page 54
Advanced Options for Network Stations	Step 19 on page 55

5 LAN via NetBIOS



a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

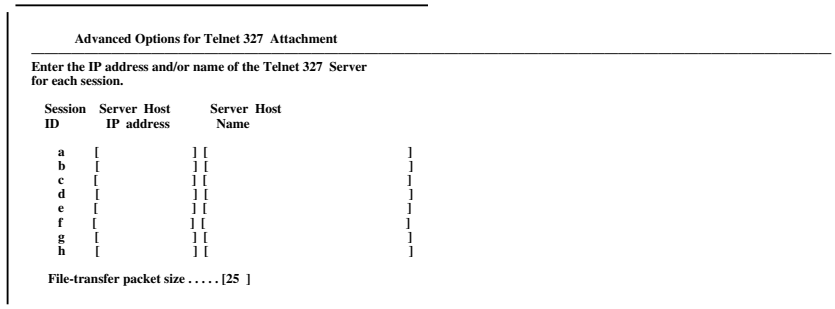
b Press F8 to continue.

c Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Advanced Options for SDLC Attachment, Part I	Step 9 on page 49
Advanced Options for Asynchronous Attachment, Part I	Step 11 on page 51
Advanced Options for SNA-over-Async Attachment, part I	Step 13 on page 52
Advanced Options for AutoSync Attachment (Hayes Autosync Attachment)	Step 15 on page 53
Advanced Options for X.25 Attachment, part I	Step 17 on page 54
Advanced Options for Network Stations	Step 19 on page 55

Advanced Link Option

6 LAN via TCP/IP (Telnet 3270 Attachment)

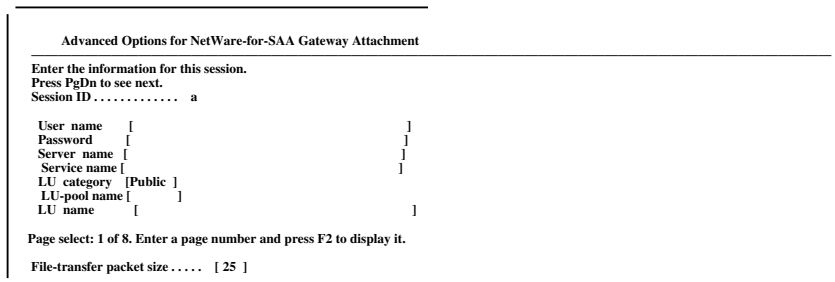


a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 19 on page 55.

7 LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment)



a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 19 on page 55.

8 3174 Peer Communication

```
                Advanced Options for 3174 Peer Communication
Enter the required information.
   Total number of LAN sessions  ......  1
   Link name ..................  lan1
   Destination address ..........[4         ]
   Number of sessions for this gateway . . . [1]
   Physical Unit ID  ............[    ]
   Adapter number  ..............
   Remote SAP/Local SAP  ..........[ 4]/[ 4]
   Block ID  ..................[ 61 ]
   PIU size  ..................[ 265]
```

a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Go to step 19 on page 55.

9 SDLC Attachment, part I

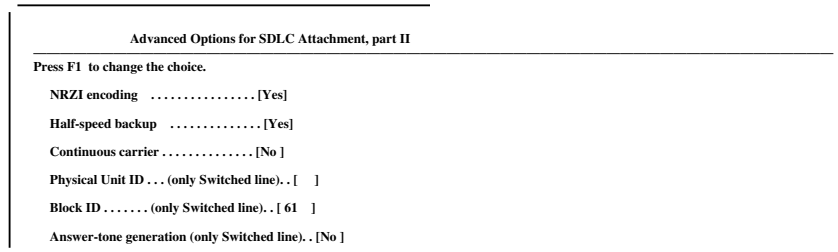
```
                Advanced Options for SDLC Attachment, part I
Press F1  to change the choice.
   Total number of sessions  ........  1
   Adapter number  ..............[ ]
   Number of sessions for this adapter . . . [1]
   Line type ..................[Switched]
   SDLC station address  ..........[C1]
   PIU size  ..................[ 265]
```

a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

Advanced Link Option

10 SDLC Attachment, part II



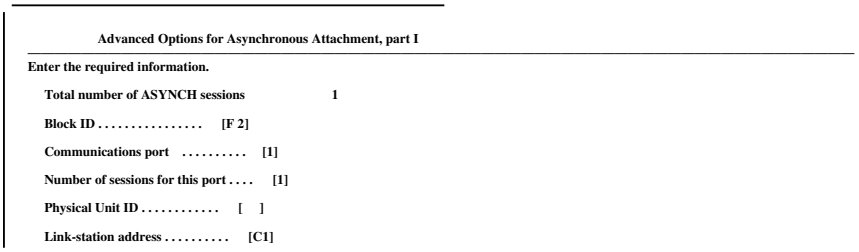
a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

c Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Advanced Options for Asynchronous Attachment, Part I	Step 11 on page 51
Advanced Options for SNA-over-Async Attachment, part I	Step 13 on page 52
Advanced Options for AutoSync Attachment (Hayes Autosync Attachment)	Step 15 on page 53
Advanced Options for X.25 Attachment, part I	Step 17 on page 54
Advanced Options for Network Stations	Step 19 on page 55

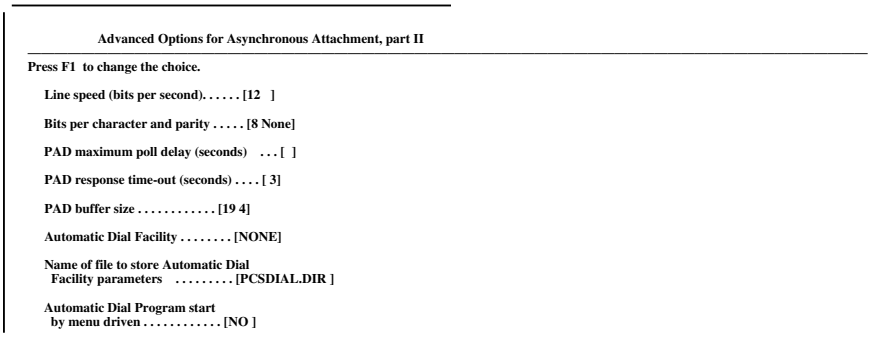
11 Asynchronous Attachment, part I



a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

12 Asynchronous Attachment, part II



a Change the field entries as necessary.

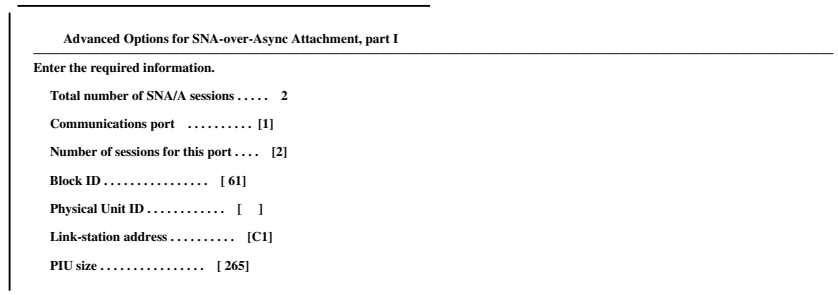
Note: If you select an option other than **None**, the Automatic Access Facility is invoked; this includes three programs, one of which is the Advanced Dial Facility. This lets you define and save, in the file you name, the information necessary for you to connect to one or more Series/1 gateways; you can define several sets of information (known as “Entries”) and use them to dial the destinations automatically. After you have saved the dialing information, you are returned to the installation or configuration program.

b Press F8 to continue.

c Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Advanced Options for X.25 Attachment, part I	Step 17 on page 54
Advanced Options for Network Stations	Step 19 on page 55

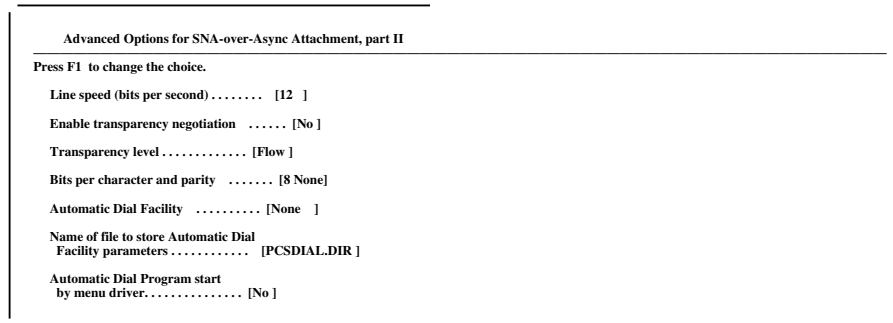
13 SNA-over-Async Attachment, part I



a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

14 SNA-over-Async Attachment, part II



a Change the field entries as necessary.

Note: If you select an option other than **None**, the Automatic Access Facility is invoked; this includes three programs, one of which is the Advanced Dial Facility. This lets you define and save, in the file that you name, the information necessary for you to connect to one

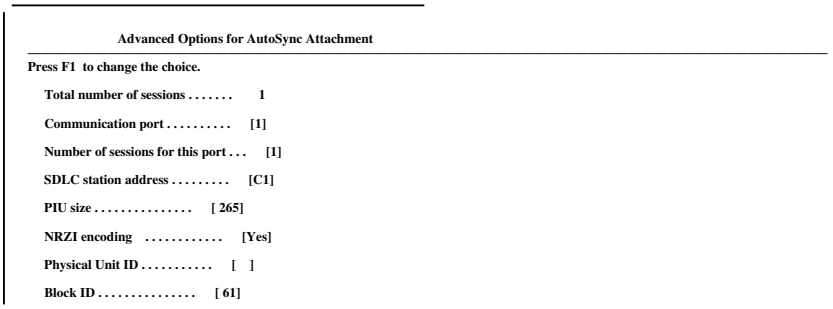
or more SNA gateways that support SNA-over-Asynchronous protocols; you can define several sets of information (known as "Entries") and use them to dial the destinations automatically. After you have saved the dialing information, you are returned to the installation or configuration program.

b Press F8 to continue.

c Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Advanced Options for X.25 Attachment, part I	Step 17 on page 54
Advanced Options for Network Stations	Step 19 on page 55

15 Hayes AutoSync Attachment

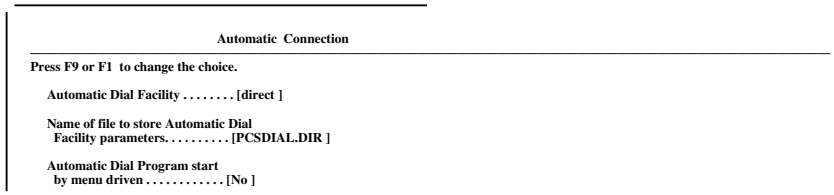


a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

Advanced Link Option

16 Automatic Connection



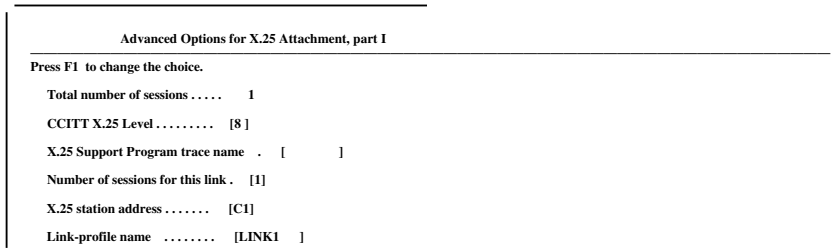
a Change the field entries as necessary.

b Press F8 to continue.

c After Automatic Dial Facility setup, go to the appropriate step as follows. Refer to the *Reference for DOS (Full-Function Mode)* for the Automatic Dial Facility setup.

Panel Title	Go To
Advanced Options for X.25 Attachment, part I	Step 17
Advanced Options for Network Stations	Step 19 on page 55

17 X.25 Attachment, part I



a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for additional information.

b Press F8 to continue.

18 X.25 Attachment, part II

```
Advanced Options for X.25 Attachment, part II
Enter the required information.
  PVC logical channel number . . . .  [    ]
  Block ID . . . . . . . . . . . .  [ 61]
  Physical Unit ID . . . . . . . .  [    ]
  Destination-station name . . . . .  [          ]
  Own-station name . . . . . . . . .  [          ]
```

a Update the fields according to your selection information.

b Press F8 to continue.

c Go to Step 19.

19 Network Stations

```
Advanced Options for Network Stations
Enter the required information.
  File-transfer packet size for non-SNA . . .   [ 716 ]
  File-transfer packet size for SNA       . . .   [ 25  ]

                                          LU  address/
Session    Link        Adapter        LT  number
ID          name        number          (optional)

 a         sdft                        [LT    ]
 b         sdft                        [LT    ]
 c         sdft                        [LT    ]
```

The second column lists the **Link name** that is assigned to each session. You cannot change the values in this column, which can be any of the following:

sdft SNA DFT
nsdft Non-SNA DFT
sdlc SDLC
asynch ASYNCH
pclan LAN via NetBIOS
lann LAN via 802.2 protocol or 3174 Peer
telnet Telnet 3270
ipxlan IPX/SPX (NetWare-for-SAA Gateway Attachment)
adlc SNA-over-Async(SNA/A)
hadlc Hayes AutoSync
x25 X.25.

a Change the field entries as necessary. Press F1 for additional information.

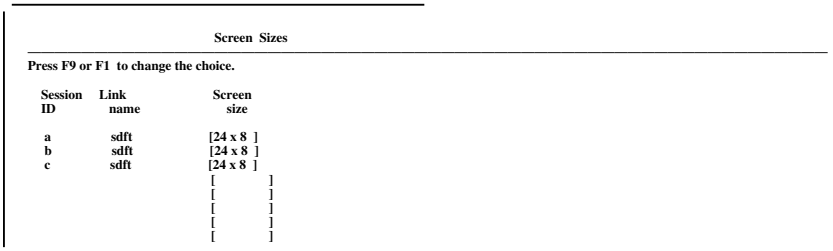
b Press F8 to continue.

Advanced Link Option

C You have now completed the panels that are specific to advanced link options. Go to Base and Advanced Link Options, Common Panels, step 1 on page 57.

Base and Advanced Link Options - Common Panels

1 Screen Sizes



The second column lists the **Link name** that is assigned to each session. You cannot change the values in this column, which can be any of the following:

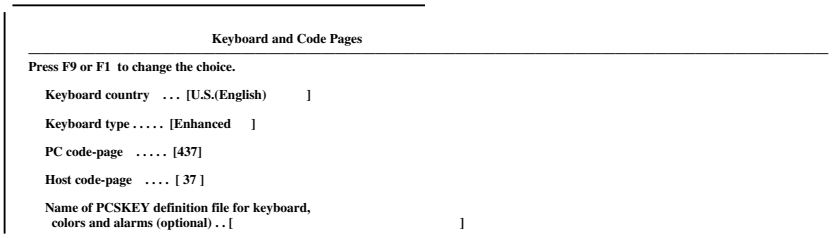
sdft SNA DFT
nsdft Non-SNA DFT
sdlc SDLC
asynch ASYNCH
pclan LAN via NetBIOS
lann LAN via 802.2 protocol or 3174 Peer
telnet Telnet 3270
ipxlan IPX/SPX (NetWare-for-SAA Gateway Attachment)
adlc SNA-over-Async (SNA/A)
hadlc Hayes AutoSync
x25 X.25.

a Change the screen-size values, if you want to, by pressing F9 or F10.

b Press F8 to continue.

Common Panels

2 Keyboard and Code Pages



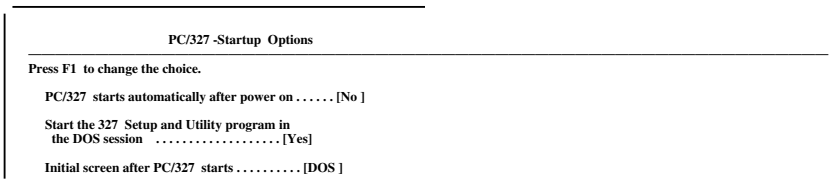
a Change the field entries as necessary. Press F1 or refer to the *Reference for DOS (Full-Function Mode)* for information about your keyboard type.

b Leave **Name of PCSKEY definition file for keyboard, color and alarms** blank unless you have your own definition file. You can create this later if you want to.

The PCSKEY program is described in the *Reference for DOS (Full-Function Mode)*; it can be used as an alternative to the Keyboard Definition Utility that is part of the 3270 Setup and Utility Program (PCSUTIL).

c Press F8 to continue.

3 PC/3270-Startup Options

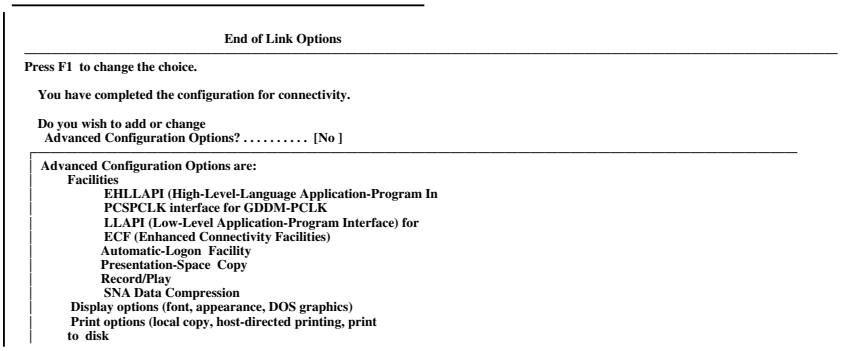


a Change the field entries as necessary.

If you select **Yes** for **Start the 3270 Setup and Utility program in the DOS session**, the 3270 utility program automatically loads in the DOS session when PC/3270 is started.

b Press F8 to continue.

4 End of Link Options



a Select **Yes** for **Advanced Configuration Options** if you want to do any of the following:

Facilities

Use an application program that needs the EHLLAPI programming interface
Use GDDM-PCLK for host graphics applications
Use Personal Services/PC
Use Enhanced Connectivity Facilities (ECF)
Copy parts of your host-session screen to elsewhere
Use the Auto-Logon (automated-user) program
Record and replay series of host keystrokes
Have the DOS session start in resume mode, so that DOS applications can continue to run while a host session is being displayed
Use a mouse in a host session
Improve SDLC performance by using data compression

Display Options

Change the font used for the host screens
Save about 1KB of memory by degrading the screen appearance
Have the screens of DOS graphics applications restored correctly when you switch back to them (this uses about 5KB of memory)
Use two displays concurrently (PC XT and AT only)

Print Options

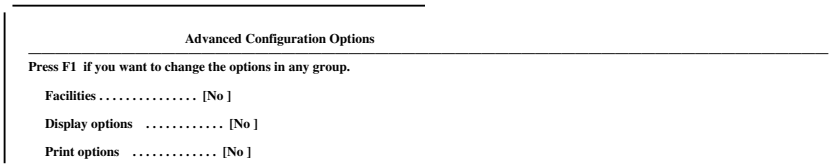
Print host screens or files on a PC printer or save them in a PC file.

b Press F8 to continue.

c Depending on your selection for **Advanced Configuration Options**, go to the appropriate step as follows:

Advanced Configuration Option	Go To
Yes	Step 5
No	Step 10 on page 67

5 Advanced Configuration Options



a Select **Yes** for the appropriate item if you want to select any of the facilities, display options or printer options described in step 4a on page 59.

b Press F8 to continue.

c Depending on the panel that appears, go to the appropriate step in the next section, Advanced Configuration Options.

Panel Title	Go To
Facilities	Step 2 on page 62
Display Options	Step 4 on page 64
Print Options	Step 5 on page 64
Installation Options	Step 9 on page 66

Advanced Configuration Options

Figure 5 shows the sequence of panels for advanced configuration options. You will see only the panels necessary to configure the options you select.

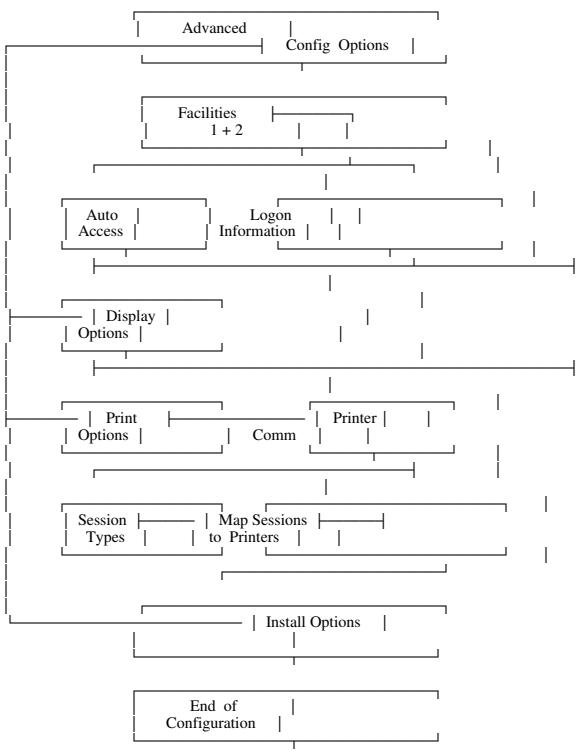


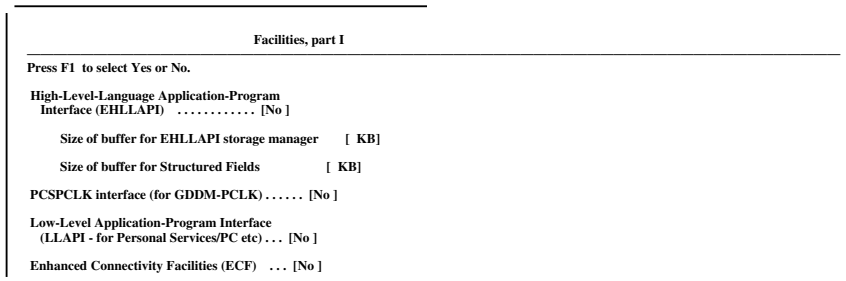
Figure 5. Panel Flow for Advanced Configuration Options

Advanced Configuration

1 Depending on the panel that appeared after you pressed F8, go to the appropriate step, as follows

Panel Title	Go To
Facilities, part I	Step 2
Facilities, part II	Step 3 on page 63
Display Options	Step 4 on page 64
Print Options	Step 5 on page 64
Printer Communications	Step 6 on page 65
Session Types	Step 7 on page 65
Map Session to Printers	Step 8 on page 66
Installation Options	Step 9 on page 66
End of Configuration	Step 10 on page 67
Installing the Requested Configuration	Step 11 on page 67

2 Facilities, part I

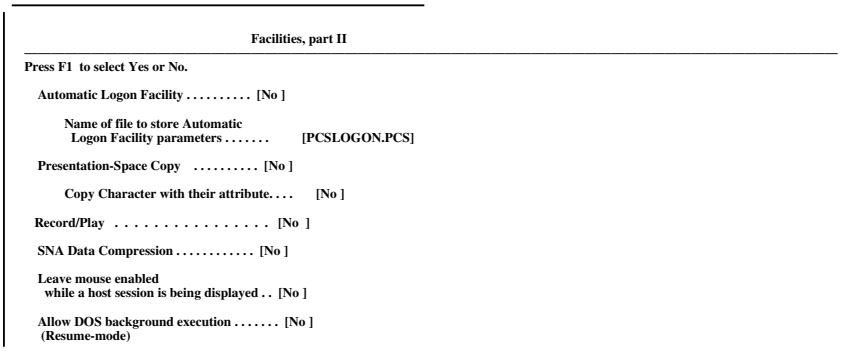


a Select **Yes** for the options you want to configure and enter figures for the buffer sizes if necessary.

Details about each option are given in help panels.

b Press F8 to continue.

3 Facilities, part II



a Change the field entries as necessary.

b Leave **Name of file to store Automatic Logon Facility parameters** unchanged.

c Select **Yes** for the options you want to configure.

Press F1 for additional information.

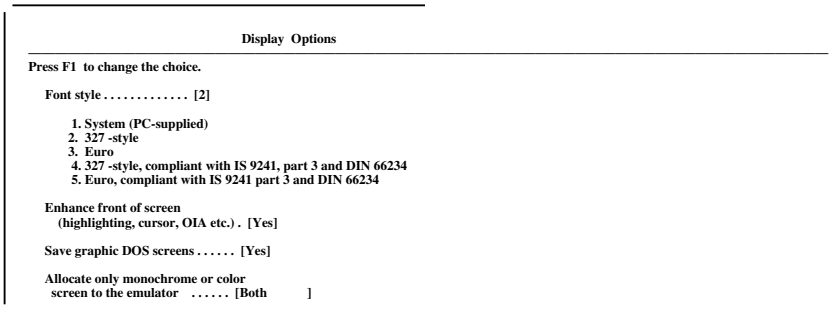
d Press F8 to continue.

e Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Display Options	Step 4 on page 64
Print Options	Step 5 on page 64
Installation Options	Step 9 on page 66

Advanced Configuration

4 Display Options



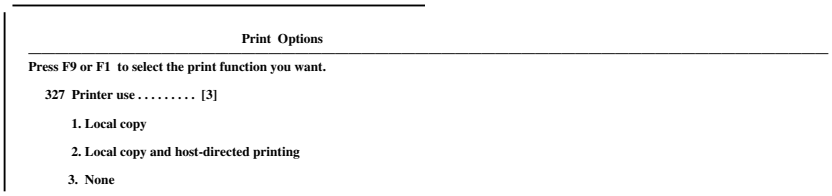
a Change the field entries as necessary. Press F1 for additional information.

b Press F8 to continue.

c Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Print Options	Step 5
Installation Options	Step 9 on page 66

5 Print Options



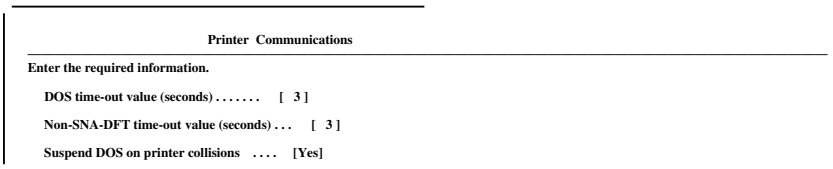
a Change the field entries as necessary.

b Press F8 to continue.

c Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Printer Communications	Step 6 on page 65
Installation Options	Step 9 on page 66

6 Printer Communications



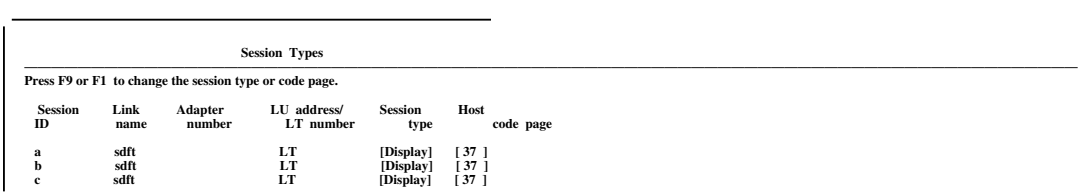
a Change the field entries as necessary. Press F1 for additional information.

b Press F8 to continue.

c Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Session Types	Step 7
Map Sessions to Printers	Step 8 on page 66
Installation Options	Step 9 on page 66

7 Session Types



a Change the field entries as necessary. Press F1 for additional information.

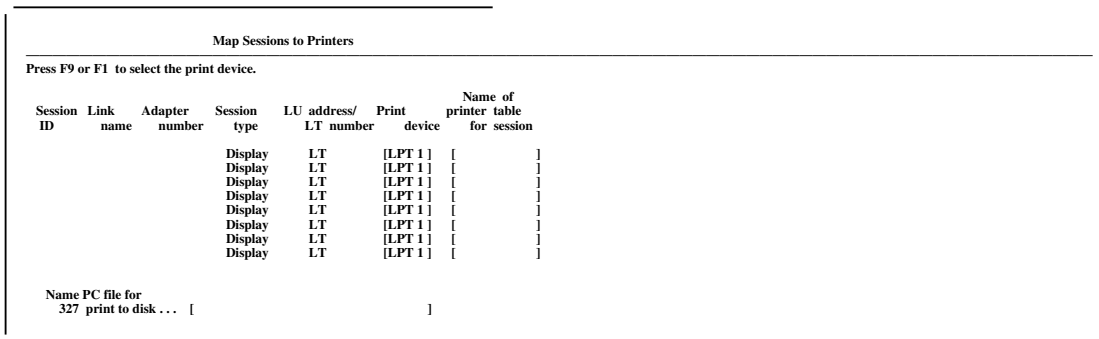
Note: If you need a session for a host addressable printer, select **Printer** for **Session type**. The session must correspond to a printer session configured in the gateway or host system.

b Press F8 to continue.

c Go to step 9 on page 66.

Advanced Configuration

8 Map Sessions to Printers

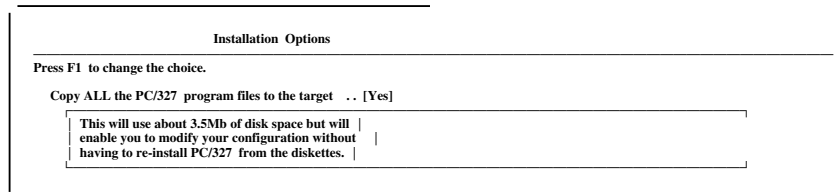


a Change the field entries as necessary. Press F1 for additional information.

Note: To define a printer for your PC, type the appropriate printer table file name in **Name of printer table for session**. Press F1 for help and check the file names for supported printers.

b Press F8 to continue.

9 Installation Options

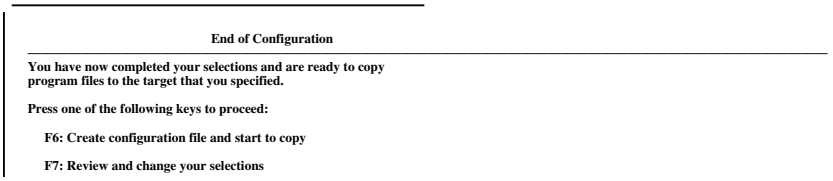


a Change the field entries as necessary. Press F1 for additional information.

b Press F8 to continue.

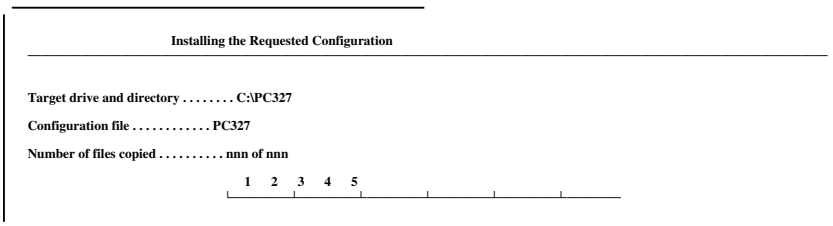
Note: Depending on the memory available in your PC, you might be prompted to run PCSINST from the DOS prompt. Follow the displayed instructions.

10 End of Configuration



Press F6 to create your configuration file, or press F7 to review (or change) previous selections.

11 Installing the Requested Configuration



Follow the instructions on the panel to install your configuration and the PC/3270 program files.

12 Follow the instructions on the panel to exit the installation program and start PC/3270. Depending on your selection, you will either:

Restart the PC
Exit the installation program by pressing F3.

Note: Several templates showing the keyboard functions for PC/3270 are supplied; choose the one appropriate to the layout of your keyboard. A keyboard template is not available for the host-connected keyboard.

Advanced Configuration

Installation Completed

The PC/3270 programs are installed in the target drive and directory. To start PC/3270 from the DOS prompt, change the current drive and directory to those for PC/3270 and type the name of the configuration file, for example:

```
C:    "┘
CD PC327     "┘
PC327    "┘
```

When PC/3270 starts correctly, you will see an IBM logo and then the initial screen for PC/3270; this will be the host session, the DOS prompt, or the first screen of the 3270 Setup and Utility, depending on your installation selections.

You can switch between sessions by using the Alt+Esc hot key.

Chapter 4. Using PC/3270 - Basic Operations

This chapter describes the operations of Personal Communications/3270 (PC/3270) in Full-Function DOS Mode.

Managing Host Communications

If you have access to multiple host systems, you can log on to one or more of them (unless you are in a gateway configuration) and can switch between the DOS and host display sessions.

Before You Start

PC/3270 can be started either interactively (using the start command), or automatically (using an **AUTOEXEC.BAT** file that contains a start command). The start command is the name of the file that invokes the PC/3270 configuration. In this guide, **PC327 .BAT** is used as an example of this; thus, *PC3270* is the start command. Your own batch-file name might be different.

Before you begin using PC/3270, you need the following:

PC/3270 installed for your environment. The installation procedures are given in the *Reference for DOS (Full-Function Mode)*.

For a U.S. English configuration only, an Auto3270 diskette is provided; this includes the files necessary to start PC/3270 automatically with four host sessions on a DFT attachment. No installation process is necessary. If the diskette is in drive A when the PC is started and if the correct adapter is installed, the host connection will be made automatically.

To know the start command; this is the name of the configuration file that was created during installation of PC/3270. However, if PC/3270 has been configured to start automatically, it will do so whenever you start your PC.

Your work diskettes if you are to start PC/3270 from diskettes.

The telephone number to set up the connection, if you will use dial-up communication. Request this number from your system administrator.

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Note: There is a README file on PC/3270 diskette 1. This might contain information that supplements or supersedes some aspects of this guide, so it is a good idea to read it before you start to use PC/3270

Starting PC/3270

The procedure necessary to start PC/3270 depends on whether you will start the program from a hard disk or diskettes.

If you have difficulty starting the program, ask your system administrator for assistance.

Starting from a Hard Disk

PC/3270 can be run automatically at system startup or interactively by your typing the start command. When you install PC/3270 on a hard disk using the default settings, the programs are stored in subdirectory **PC327** of drive C. The start command, which is defined as a configuration file in the installation procedure, is *PC3270*.

Automatically: If, during installation, PC/3270 was configured to start automatically, it will do so whenever you turn your PC on or reboot it.

Interactively: To start the program interactively, change the current drive and directory to those for PC/3270 and type the name of the configuration file; for example:

```
C: "↵
CD PC327  "↵
PC327  "↵
```

Starting from Diskettes

PC/3270 can be run automatically at system startup from a diskette or started interactively from the DOS prompt.

Automatically: If, during installation, PC/3270 was configured to start automatically, it will do so whenever you turn your PC on or reboot it, as long as you have Work Diskette 1 in drive A.

Interactively: To start the program interactively:

1. Insert Work Diskette 1 into drive A.
2. Change the current drive to A and type the name of the configuration file; for example:

   ```
   A: "↵
   PC327  "↵
   ```

When PC/3270 has started, you will see a host-session screen, a DOS prompt, or the first screen of the 3270 Setup and Utility, depending on how the program was configured.

Keyboard Layout

Many of the keys on the PC keyboard have different functions when the PC is being used as 3270 terminal from when it is being used for other applications; except for the Host-connected keyboard (which has 24 Function-keys above the others), the keyboards do not have any 3270 functions engraved on their keys.

For this reason, a template is available for each type of keyboard; this has marked on it all the 3270 functions that PC/3270 provides. Your system administrator should have a template available for you. You will find it very helpful in learning how to use PC/3270.

Version Notice

Version Notice

You can see the version and release level of PC/3270 that you are using if you add the parameter /V to its start command; for example:

PC327 /V

If you report a problem to IBM, you will be asked for this information.

Switching between DOS and Host Sessions

PC/3270 allows you to connect to several host systems at the same time or to one host system several times; each host connection is known as a *session*. Your PC can be configured for up to 8 host sessions and will always have 1 DOS session; only one session is displayed at a time (unless you have a PC XT or AT, which allows you to have two screens attached, each of which will display a session).

Each host session is allocated a *short-name*, from a to h; you will see this toward the left-hand end of the bottom line of the screen.

Session-Switching Keys

There are four keys that you can use to switch between the nine possible sessions:

Alt+Esc: This switches the screen sequentially from one session to the next, including the DOS session.

Ctrl+Esc: This switches the screen from the currently-displayed host session to the DOS session (and from the DOS session back to the previously-displayed host session).

SetUp: If the 3270 Setup and Utility is loaded in the DOS session, this key switches the screen between the currently-displayed host session and the utility. The SetUp key is engraved only on the 122-key keyboard, but it is marked on the templates for the others.

Alt+Tab: This applies only to the PC XT or AT. If you have two displays attached, it switches the active session between the displays; if you have only one display, it switches between sessions.

Notes:

1. If you switch from DOS to a host session while a DOS application (file transfer, for example) is running, you will probably have to press a key (such as Enter) to restore the DOS session correctly when you return to it. You might also find that information from the DOS application is displayed on the host-session screen (see "Suspending and Resuming DOS" below).
2. If you have several host sessions, you will find it quicker if you are able to jump directly to the session you want. You can achieve this by using the Keyboard Definition Utility to remap a key for each session (including DOS) to be a *jump* key (for example, you might remap Alt+A to be *Jump to session a* (Jump A) and so on).

Suspending and Resuming DOS

If your PC has only one display and you switch from the DOS session to a host session, the DOS application is normally suspended. You *can* make the DOS application continue to run by pressing Alt+R but beware that, if the DOS application sends information to the screen, it will overwrite the host-session screen. If this happens, you can restore the host-session screen by pressing Alt+Del (Refresh).

You can suspend the DOS session by pressing Alt+S.

The benefits of suspending and resuming DOS depend on the application running in the DOS session. Suspending and resuming DOS is not a good idea if:

You are using an application that writes to the screen or uses graphics, because your host display might be overwritten with DOS information.

Your DOS application reads the screen buffer, because the application might read the host information rather than DOS information.

Note: Do not suspend DOS when running X.25 communications or when a HLLAPI application is running; if you do, communications or the application will stop.

Understanding the OIA

The ***operator information area*** (OIA) is the bottom line (status line) of your host screen. It contains status information about your host session, which is provided by the host or control unit. For information about the symbols and messages that can be displayed on this line, please refer to Appendix A, “OIA Messages” on page 125.

Stopping PC/3270

You might want to unload PC/3270 from memory in order to use your PC for some other purpose; you can do this in either of two ways. Before you do so, it is best to log off your host sessions.

To unload PC/3270, either:

Enter **PCSEND** at the DOS prompt, or

Press Ctrl+End from any host session.

Note: If PC/3270 is not the last program that was loaded into memory, the result of trying to unload it is uncertain. For this reason, you should load other programs before you start PC/3270. For example, the DOS PRINT program stays in memory after it has been loaded; you should therefore arrange for it to be loaded before PC/3270.

If You Have Difficulty

There will probably be times when your host connection fails, or file transfer does not work as it should, or you have difficulty using one of the utilities. If these or any other difficulties arise, there are various sources of help available:

The *Reference for DOS (Full-Function Mode)*, which lists all the symbols that can appear in the Operator Information Area at the foot of your screen and all the messages that can appear from time to time. It also describes the function of all the host-session keys and has a diagram of your keyboard layout.

The *Reference for DOS (Full-Function Mode)*, which contains information about many PC/3270 functions that you will probably not use every day.

This manual also has an extensive problem-determination section, which suggests reasons for and solutions to many common problems.

When you are using the utility functions, every operation has a help panel that will guide you through the process.

Your system administrator.

Chapter 5. Using the 3270 Setup and Utility

The 3270 Setup and Utility is a set of programs that support PC/3270 operations.

The 3270 Setup and Utility initial panel appears when the PCSUTIL program is started in the DOS session; this program can be started either automatically or interactively.[7] It will start automatically if it was specified to do so during configuration; to start it interactively, change the drive and directory to those for PC/3270 and type PCSUTIL:

```
C: "↵
CD PC327  "↵
PCSUTIL  "↵
```

Note: PCSUTIL can be used only when PC/3270 is loaded.

While the 3270 Setup and Utility is running in the DOS session, you can switch directly to it from the host session by pressing Setup (please refer to the *Quick Reference* for the Setup key location).

Note: When you press Setup and the 3270 Setup and Utility is not running in the DOS session, symbol **X–f** appears in the operator information area.

Help

If you need assistance with any function of a utility, press F1; every option has a help panel that explains how to use it.

7 If the quick installation process was used, PCSUTIL loads automatically when PC/3270 is started

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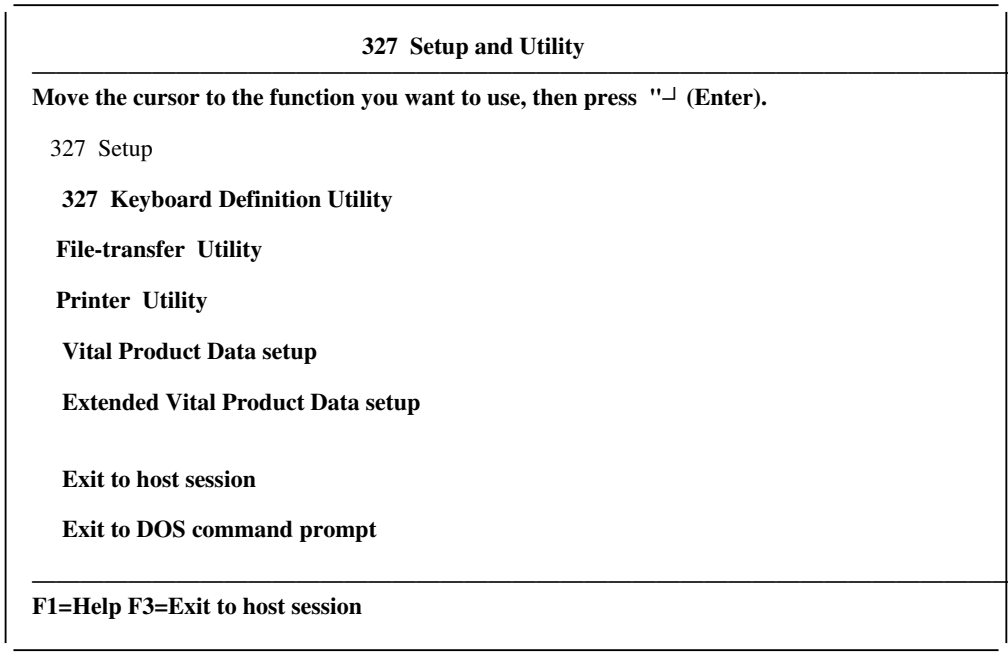
Using the 3270 Setup and Utility



Note: Some of the selections might not appear, depending on your PC and PC/3270 configurations.

Here is a summary of the utility programs; each is described fully on the following pages.

3270 Setup
Allows you to change:

- Cursor style and blinking state
- 3270 field numeric lock state
- Auto dim delay
- Mono case[8]
- Underline style
- Base colors
- Extended colors
- Default background color
- Rule line style, type, and color
- Clicker and alarm settings

3270 Keyboard Definition Utility
Allows you to change the keyboard layout.

8 This selection is available for U.S. English configurations only.

File-Transfer Utility
Provides an easy way of transferring files between a host system and your PC.

Printer Utility
Allows you to:

- Display the status of printers
- Reconfigure printer sessions
- Emulate the PA1, PA2, and Cancel Print switches
- Set printer settings such as characters per inch, lines per inch, left margin, and top margin

Vital Product Data Setup
Allows you to enter vital product data.

Note: This selection is not available unless a DFT host session is active.

Extended Vital Product Data Setup
Allows you to enter extended vital product data.

Note: This selection is not available unless a DFT host session is active.

Indications and Function Keys in the Utility

A solid triangle indicates the current setting of a function. The function keys are listed below.

Esc	Cancel the selections and exit the panel
F1	Display a help panel
F2	Select the desired choice
Spacebar	Select the desired choice (alternative)
F3	Save the selections and exit the panel
F6	Restores the default selections (one at a time)
F7	Go to the previous panel
F8	Go to the next panel

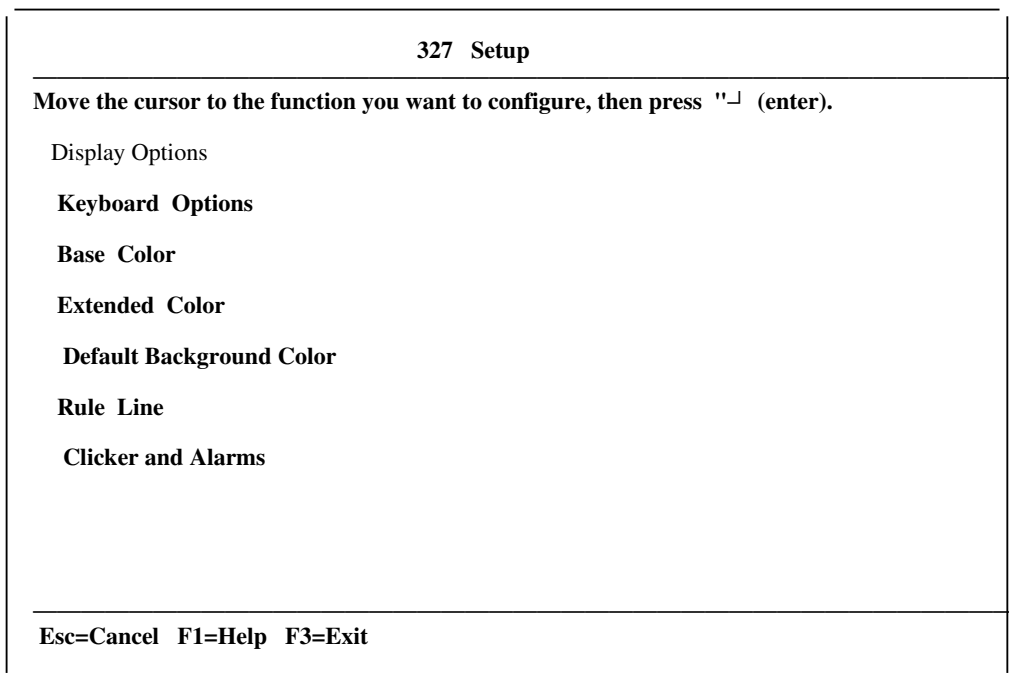
3270 Setup

The 3270 Setup utility consists of one main panel and 7 subsidiary panels if you have a color monitor; some of them are not displayed if you do not have a color monitor. The main panel is shown below.

To display the 3270 Setup panel, do the following:

1. Press Setup from a host session or enter **PCSUTIL** at the DOS prompt.
2. Select **3270 Setup** and press Enter ("┘).

   The following panel appears.



Note: Some of the selections will not appear if you do not have a color monitor.

3. Place the cursor and press Enter ("┘) to make a selection.

Display Options

Select **Display options** in the 3270 Setup panel and press Enter ("┘). The following panel appears.

```
                         Display  Options
Move the cursor to your selection, then press the spacebar or F2 to select it.

  Cursor
     Style  ...........  Underline    Block
     Blink  ...........  Yes          No

  327  numeric lock .......  Yes          No


  Auto dim  ...........  Yes          No
    Delay (minutes) .......  5            1      2

  Mono case ...........  Yes          No


  Underline style ........  _ _ _        ____


Esc=Cancel  F1=Help  F3=Save  and  Exit  F6=Reset  value
```

You can change the following display characteristics:

Cursor Style
You can select either underline or block cursor.

Cursor Blink
You can choose whether the cursor should blink or not.

3270 numeric lock
When the 3270 numeric lock is enabled, only numeric characters (0–9), a minus sign, a period, a comma, and the DUP keyboard entry can be entered into unprotected numeric fields specified by host application programs.

Auto dim and delay
If you set the auto-dim function to **Yes**, the screen will go blank after the specified delay. It will remain blank until you press a key or until the host system is able to write to the screen.

To restore the screen, press any key; this keystroke is not passed to the session.

Mono case[9]
When Mono case is enabled, the lowercase alphabetic characters appear in uppercase.

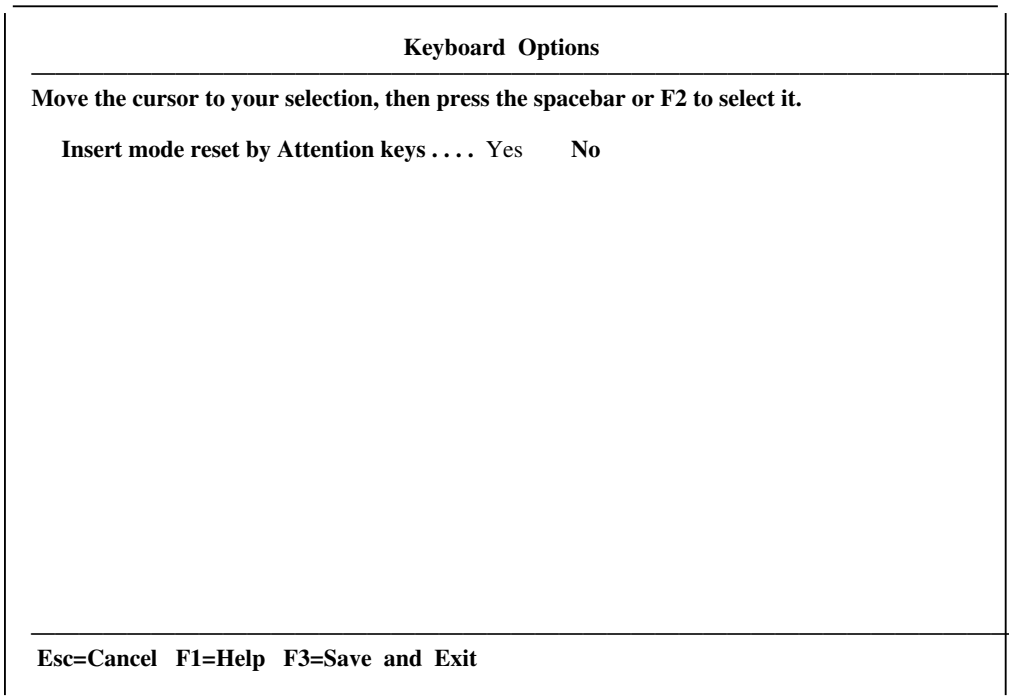
Underline style
The style of the underline can be selected as either a broken bar or a continuous bar.

Some of the options might not appear, depending on your display hardware.

9 This selection is available for U.S. English configurations only.

Keyboard Options

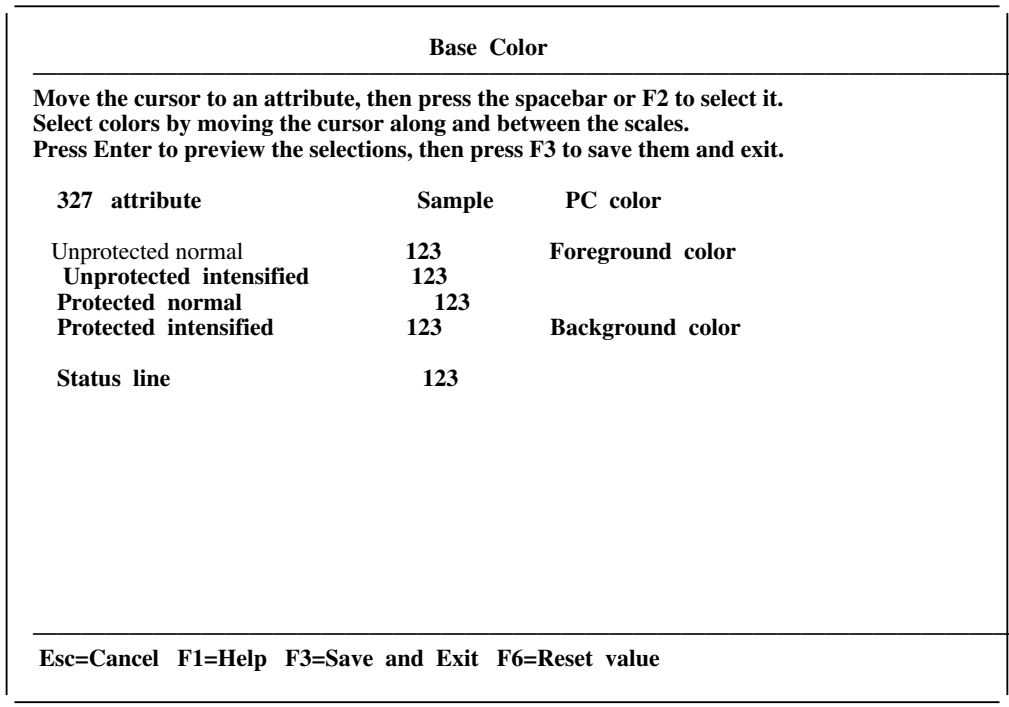
Select **Keyboard Options** in the 3270 Setup panel and press Enter ("┘). The following panel appears.



Insert mode can be reset to *off* automatically when an attention key, such as Enter, Clear, PA1, PA2, PA3, and F1 (PF1) through F24 (PF24) is pressed. If you want this mode of operation, select Yes. If you want to exit from insert mode manually by pressing the Insert key or the Reset key, select No.

Base Color

Select **Base Color** in the 3270 Setup panel and press Enter ("┘).
The following panel appears.



If you have a color display, this panel allows you to change any of the four 3270 base colors and the status-line color (these are known as attributes); you can also change the background color for each attribute. If you have a monochrome monitor, the panel will not appear.

If Enhanced Front-of-Screen was selected when PC/3270 was configured (this is the default), you will see 8 colors in the scale; if Enhanced Front-of-Screen was not selected or is not supported by your PC, you will see 16 colors. In either case, you can select any of them for the foreground or background color of any of the attributes.

A description of each attribute follows:

Unprotected normal
: Input fields where you can enter or modify characters. The characters are displayed with normal brightness.

Unprotected intensified
Input fields where you can enter or modify characters. The characters are displayed with intense brightness.

Protected normal
Fields where you cannot enter or modify characters. The characters are displayed with normal brightness.

Protected intensified
Fields where you cannot enter or modify characters. The characters are displayed with intense brightness.

Status line
Operator information area at the bottom of the screen where various status information is indicated.

To change a color setting, proceed as follows:

1. Move the cursor to the required attribute (left-hand column).
2. Press F2 or the Spacebar to select the attribute; the cursor moves to the foreground-color scale.
3. Move the cursor to the color you want (it is indicated by the solid triangle). Press the Spacebar or F2 to select it. The cursor moves to the background-color scale.
4. Move the cursor to the color you want.
5. Press Enter to set the colors you have selected; they will be shown in the Sample column so that you can view them before you save them.
6. Move the cursor to the next attribute and repeat the operations.
7. Press F3 to save your selections and exit.

To reset the values for a single attribute to the defaults, press F6; you can do this at any time until you have pressed F3.

To exit the panel without making any changes, press Esc.

Extended Color

Select **Extended Color** in the 3270 Setup panel and press Enter ("┘).
The following panel appears.

Extended Color

Move the cursor to an attribute, then press the spacebar or F2 to select it.
Select colors by moving the cursor along and between the scales.
Press Enter to preview your selections, then press F3 to save them and exit.

327 attribute	Sample	PC color
Blue	123	Foreground color
Red	123	
Pink	123	
Green	123	Background color
Turquoise	123	
Yellow	123	
White	123	
Default highlight	123	
Default no highlight	123	
Underline	123	
Blink	123	

Esc=Cancel F1=Help F3=Save and Exit F6=Reset value

This panel allows you to change the mapping between the colors actually displayed and the extended attribute colors specified by the host application program. If you have a monochrome monitor, this panel will not appear.

The description of the color scales and the procedure for changing the colors are exactly the same as for the base colors.

Default Background Color

Select **Default Background Color** in the 3270 Setup panel and press Enter ("┘). The following panel appears.

```
                    Default Background Color

Move the cursor to each color and enter an RGB value.
Press enter to preview the result, then press F3 to save it and exit.

                    Red     [  ] ( -63)

                    Green   [  ] ( -63)

                    Blue    [  ] ( -63)

Esc=Cancel  F1=Help  F3=Save and Exit  F6=Reset all values
```

This panel allows you to change the background color of the entire screen, but is effective only in the fields for which you specify black (this is the default value) as the background color of the field attribute (in the Base-Color panel) or extended attribute (in the Extended-Color panel).

The background color is made up of a combination of red, green, and blue (the default, black, is the result of a 0,0,0 selection); this panel allows you to change the combination of the three colors to produce the color you want.

To change the color settings, place the cursor on the bracketed number beside the color you want to change and enter a value (between 0 and 63).

Having entered one or more values, you can see the result of your choices by pressing Enter ("┘).

Rule Line

Select **Rule Line** in the 3270 Setup panel and press Enter ("┘).
The following panel appears.

```
                              Rule Line

Move the cursor to your selection, then press the spacebar or F2 to select it.
To select colors, move the cursor to each scale and then along it.
Press Enter to preview your selections, then press F3 to save them and exit.

     Style ..........  Cross     Horizontal     Vertical

     Follows cursor .....  Yes          No

     Color                          123  - Sample

          Foreground .....

          Background .....

Esc=Cancel  F1=Help  F3=Save and Exit  F6=Reset value
```

This panel allows you to change the style, motion, and color of the rule line; solid triangles indicate the current settings. If you have a monochrome monitor, the color selection will not appear.

To change the *color* of the rule, proceed as follows:

1. Move the cursor to the foreground-color scale and then to the color you want. Press the Spacebar or F2 to select it. The cursor moves to the background-color scale.
2. Move the cursor to the color you want.

   To return to the style or motion options, press Enter or Esc.
3. Press Enter to set the colors you have selected; they will be shown in the Sample just above the scales. Note that, if you select the same color for foreground and background, PC/3270 changes the foreground color so that characters on the rule lines remain visible.
4. Press Enter to save your selections and exit.

Clicker and Alarms

Select **Clicker and Alarms** in the 3270 Setup panel and press Enter ("┘). The following panel appears.

```
                         Clicker and Alarms

Move the cursor to your selection, then press the spacebar or F2 to select it.

     Clicker  ...........   On          Off
       Tone   ...........   Low         Middle      High

     Host alarm ..........   On          Off
       Tone   ...........   Low         Middle      High

     Invalid-input alarm......   On          Off
       Tone   ...........   Low         Middle      High

     Screen-update alarm......   On          Off
       Tone   ...........   Low         Middle      High

     Undefined-key alarm  .....   On          Off
       Tone   ...........   Low         Middle      High

Esc=Cancel  F1=Help  F3=Save  and  Exit  F6=Reset  value
```

You can adjust the following audible signals:

Clicker
If **On** is selected, the clicker sounds when a keystroke is accepted; it does not sound when input is inhibited. If **Off** is selected, the clicker never sounds.

Host alarm
This alarm sounds when a host application sends a message to a session, even if the session is in the background.

Invalid-input alarm
This alarm sounds when a keystroke is not accepted because you are typing in a protected field on the screen or because input is inhibited.

Screen-update alarm
This alarm sounds when a host application tries to update its screen while the screen is in the background (not assigned to a real screen).

Undefined-key alarm
This alarm sounds when you press a key that is not defined.

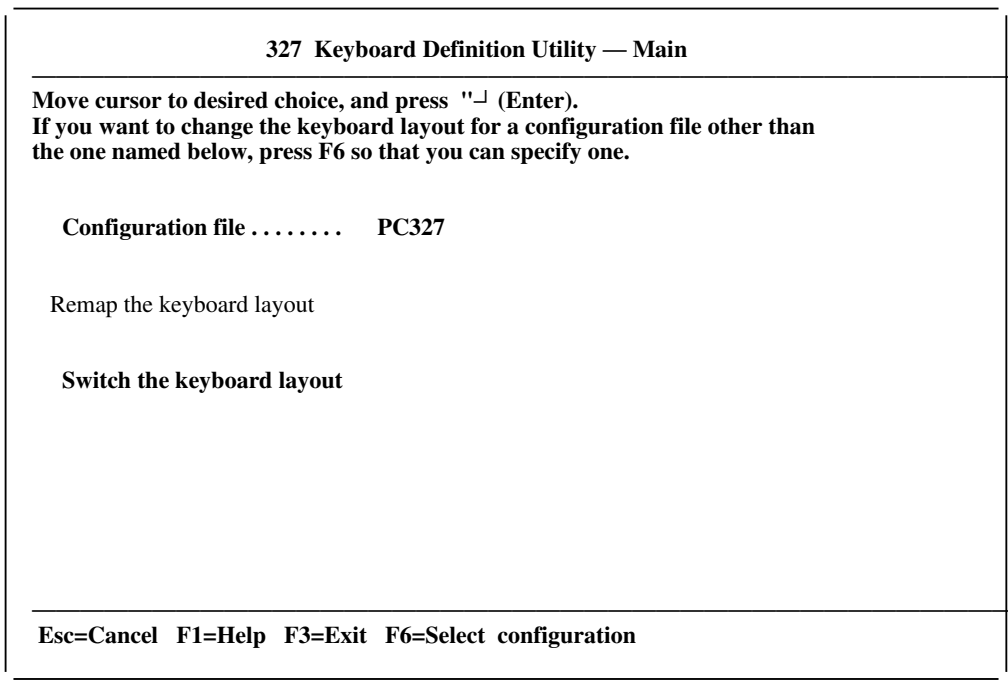
Tone
The tone of the clicker and of each alarm can be set to Low, Middle, or High.

3270 Keyboard Definition Utility

This utility enables you to define your own keyboard layout by exchanging the current key-function/character assignments of two keys or by assigning a different function or character to a key. You can also change your keyboard layout interactively.

To use the utility, do the following:

1. Press Setup from a host session or enter **PCSUTIL** at the DOS prompt.
2. Select **3270 Keyboard Definition Utility** and press Enter ("┘).
   The following panel appears.



In this panel, you can select the following:

Configuration File
If you have more than one configuration file for PC/3270 (like **PC327 .BAT**), you can create three redefined keyboard layouts for each. To select a nondefault

configuration file, press F6 and type in the configuration file name in the **Select** panel.

Remap the Keyboard Layout
To define the keyboard layout, follow the instructions on each panel or press F1 for help information. The "Swap Key Assignments Example" shows an example of *exchanging* the key assignments of two keys and the "Change Key Assignments Example" on page 93 shows an example of assigning a different function to a key.

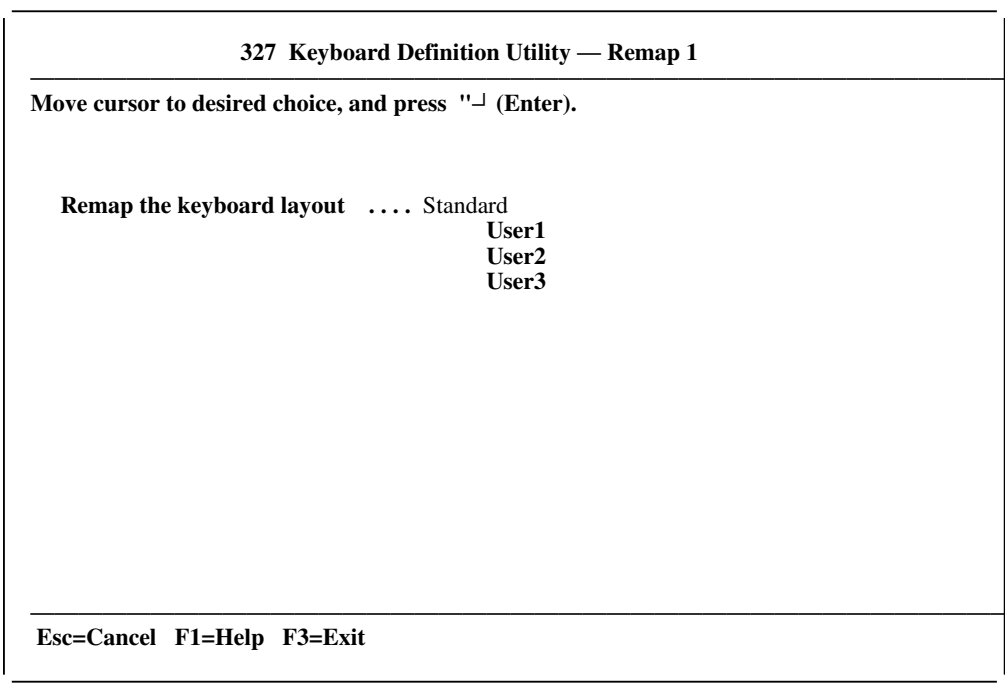
Switch the Keyboard Layout
You can change the keyboard layout for the configuration file that is currently displayed. The change becomes effective immediately and will be the default the next time PC/3270 is started by this configuration file.

Swap Key Assignments Example

The following example shows how to swap the key assignments of the letters **A** and **B** and to save the new layout as User 1.

1. Select **Remap the keyboard layout** in the 3270 Keyboard Definition Utility panel.

   The 3270 Keyboard Definition Utility - Remap 1 panel appears.



2. Select **Standard** and press Enter ("┘).

   The 3270 Keyboard Definition Utility - Remap 2 panel appears.

327 Keyboard Definition Utility — Remap 2

Note: The help panel includes a list of the keys that *cannot* be remapped.

3. Select key **A** and press Enter ("┘). The Current Selection window appears.

Current Selection	
Key State	Contents
Shift	A
Base	a
Alt	[No Operation]
Ctrl	[No Operation]

4. Select key **B** and press Enter ("┘). The contents of the Current Selection window are transferred to the Prior Selection window.

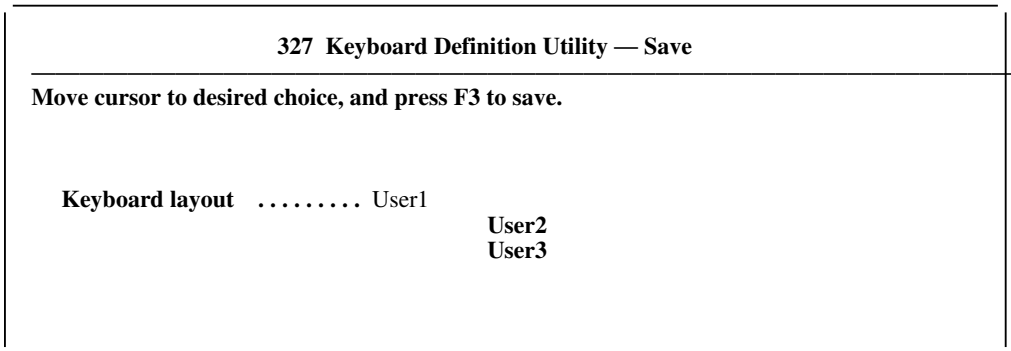
Prior Selection	
Key State	Contents
Shift	A
Base	a
Alt	[No Operation]
Ctrl	[No Operation]

Current Selection	
Key State	Contents
Shift	B
Base	b
Alt	[No Operation]
Ctrl	[No Operation]

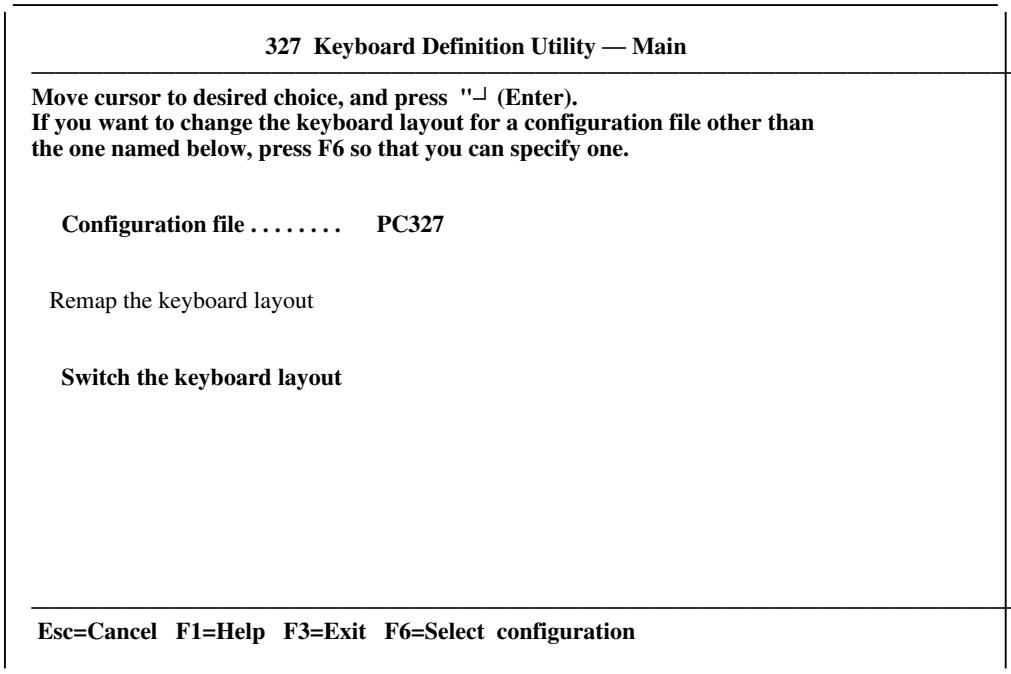
5. Press F4 to swap the key assignments.

   Note: If you want to remap other keys, repeat steps 3 to 5.

6. Press F3 to exit. The Save panel appears.

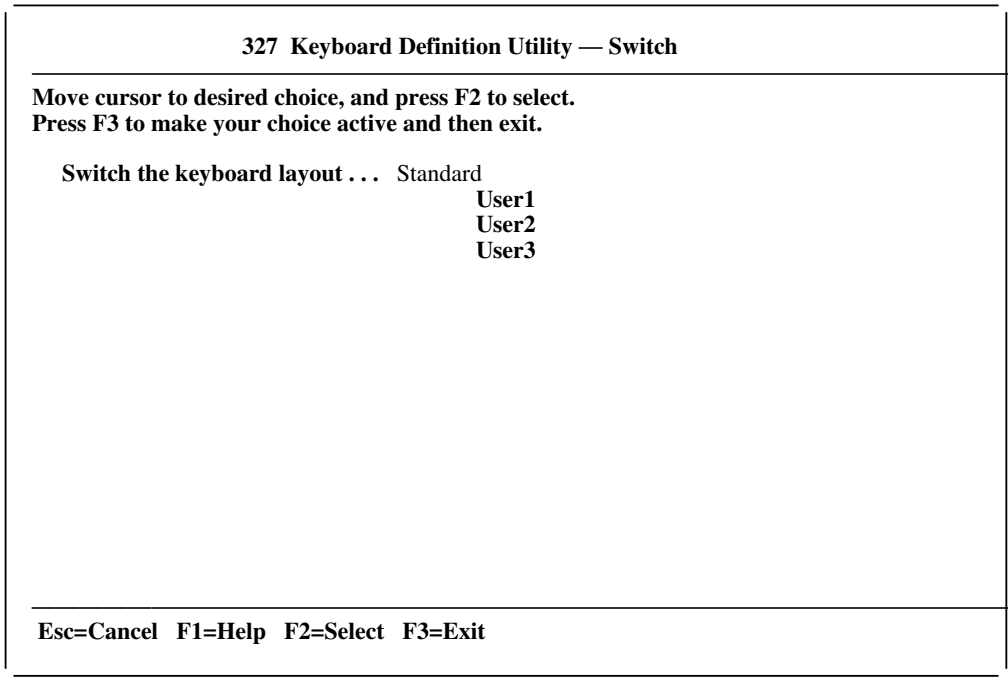


7. Select the keyboard layout to which you want to assign the changed layout, User 1, for example.
8. Press F3 to save the new layout and exit. The Remap 1 panel appears. Press F3 to return to the Main panel.



9. If you want to use the new layout immediately, select **Switch the keyboard layout** and press Enter ("┘).

   The 3270 Keyboard Definition Utility - Switch panel appears.



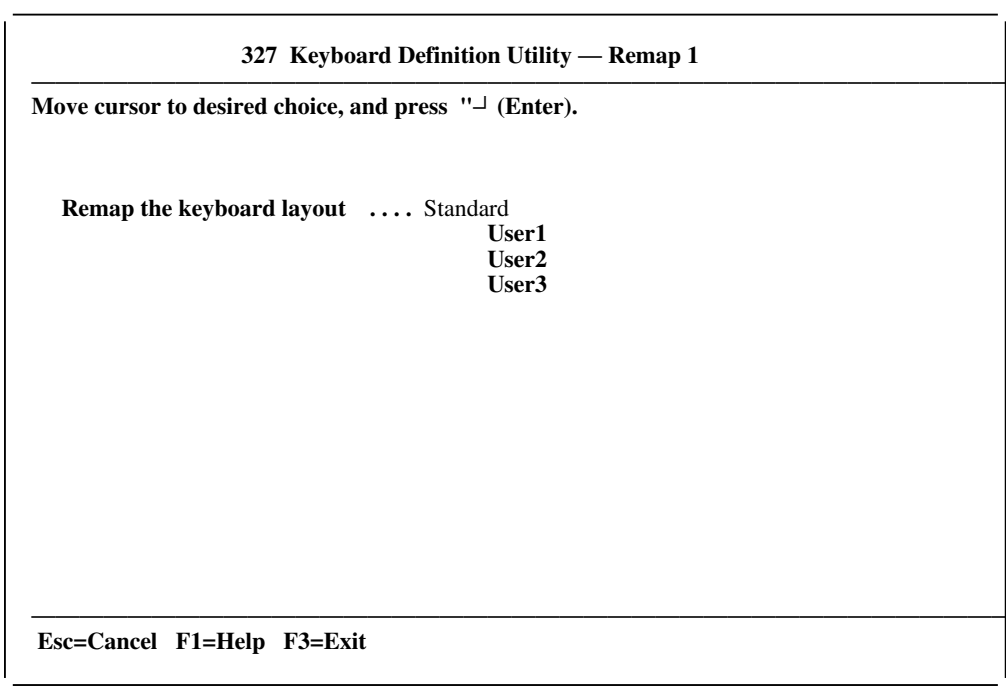
10. Select **User1** and press F3 to make the new layout effective and to exit.

Change Key Assignments Example

The following example shows how to assign F1 to the Alt shift-state of the A key and to save the new layout as User 1.

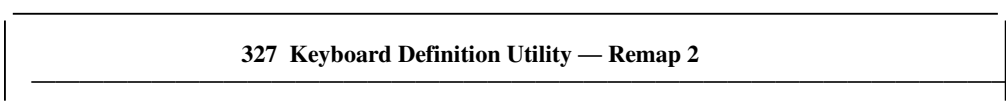
1. Select **Remap the keyboard layout** in the 3270 Keyboard Definition Utility panel.

   The 3270 Keyboard Definition Utility - Remap 1 panel appears.



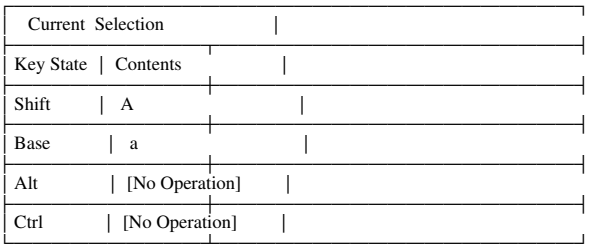
2. Select **Standard** and press Enter ("┘).

   The 3270 Keyboard Definition Utility - Remap 2 panel appears.



3270 Keyboard Definition Utility

3. Select key **A** and press Enter ("┘). The Current Selection window appears.



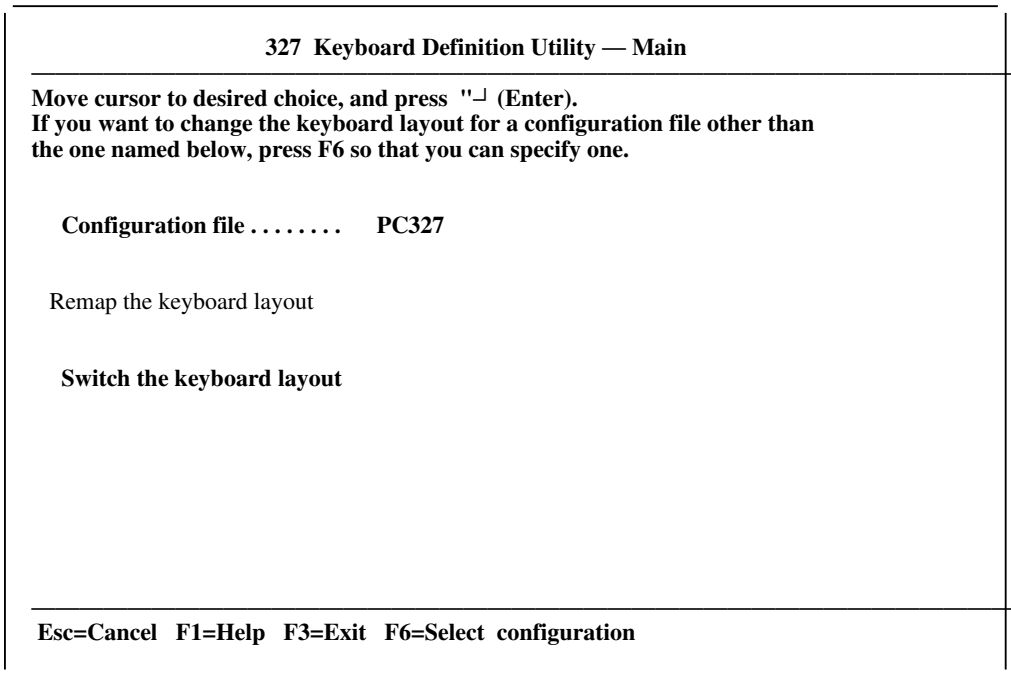
4. Press F5; the Update Selected Key window appears.
5. Move the cursor to the Alt shift-state.
6. Press F5 to display the Function List window.
7. Select **F1** and press Enter ("┘); F1 becomes the Alt function of the A key.
8. Press F3 to exit the Update Selected Key window. The Remap 2 panel reappears.
9. If you want to remap other keys, repeat steps 3 to 8. When you have finished, press F3 to save the changes and exit. The Save panel appears.

327 Keyboard Definition Utility — Save

Move cursor to desired choice, and press F3 to save.

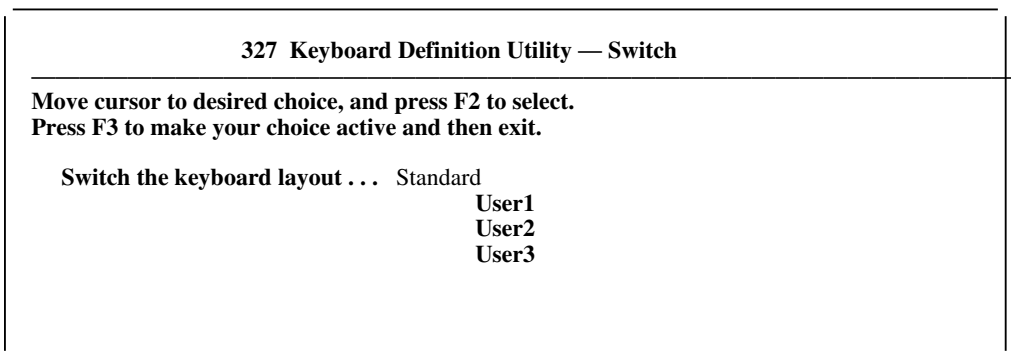
Keyboard layout User1
User2
User3

10. Select the keyboard layout that you want to change (in this example, User 1).
11. Press F3 to save the new layout and exit. The Remap 1 panel appears. Press F3 to return to the Main panel.



12. If you want to use the new layout immediately, select **Switch the keyboard layout** and press Enter ("┘).

    The 3270 Keyboard Definition Utility - Switch panel appears.



13. Select **User1** and press F3 to make the new layout effective and to exit.

File Transfer Utility

This utility enables you to transfer a PC file to the host system (SEND), or to transfer a host-system file to the PC (RECEIVE).

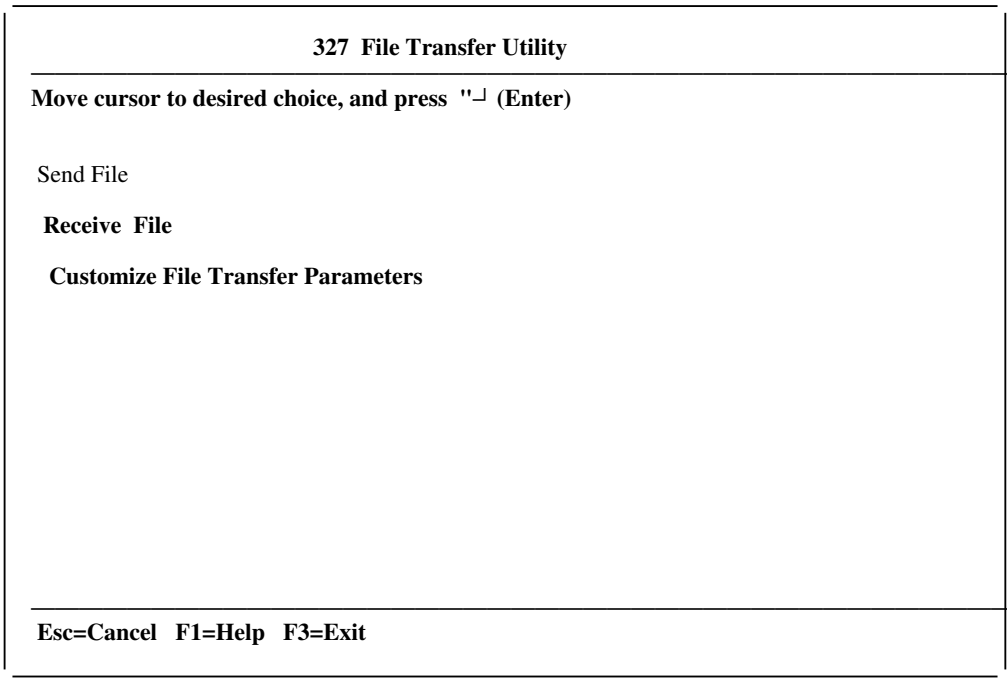
Note: You can also transfer files by issuing appropriate commands from the DOS command prompt. Refer to the *Reference for DOS (Full-Function Mode)* for details.

To display the 3270 File Transfer Utility panel:

1. Press Setup from a host session or enter **PCSUTIL** at the DOS prompt.
2. Select **File Transfer Utility** and press Enter ("┘).

   Note: Unless PC/3270 is running, this selection does not appear on the main panel.

   The following panel appears.



Note: Make sure that the target host session is ready for file transfer.

Send/Receive Files

When you want to transfer a PC file to the host system, select **Send File**. When you want to transfer a host file to the PC, select **Receive File**.

When you select **Send File** in the 3270 File Transfer Utility panel, the following panel appears.

```
                              Send File

Move cursor to desired choice, and press F2 to select.
Fill in the field. Press "┘ (Enter) to execute.

   File transfer profile  . . . . . .     1  2  3

   Terminal session identifier  . . . .   A  B  C  D  E  F  G  H

   PC file name . . . . . .
            [                                                    ]

   Host File name . . . . . .
            [                                  ]

   Host system  . . . . . .        VM/CMS

   Options  . . . . . .            ASCII
                                   CR/LF
                                   No Append

Esc=Cancel  F1=Help  F2=Select  F3=Exit
```

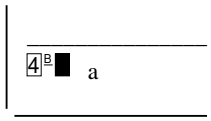
Note: The terminal session identifiers that appear on the panel depend on the PC/3270 configuration.

File Transfer Utility

In the Send File and Receive File panels, you need to select the following:

File transfer profile
This contains such definitions as the host-application type, ASCII/EBCDIC translation, record length, and other parameters. You can store these profiles.

Terminal session identifier



The alphabetic character that appears in the operator information area of the session to or from which you will transfer a file (in this example, a).

PC file name
The name of the PC file that will be transferred to the host system (SEND) or the name that you want the file to have when it has been transferred from the host system (RECEIVE).

Host file name
The name of the host file that will be transferred to the PC (RECEIVE) or the name that you want the file to have when it has been transferred to the host system (SEND).

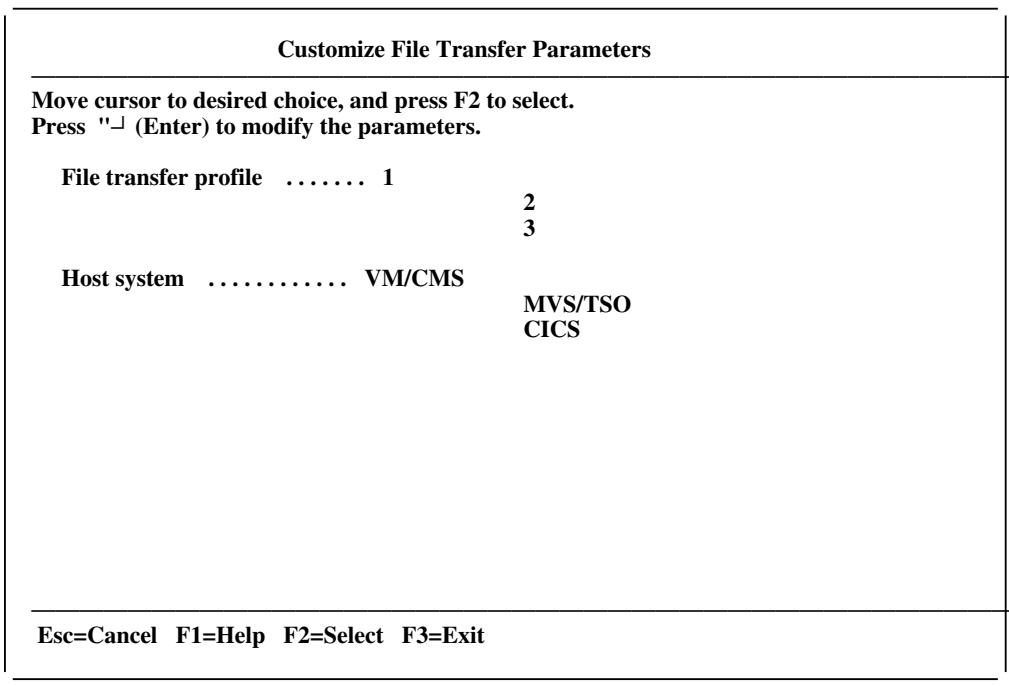
Host system
VM/CMS, MVS/TSO, or CICS as defined in the file transfer profile.

Options
The options that are defined in the file transfer profile appear. A typical example for a text file is: ASCII, CR/LF, No Append; and for a program file: Binary, No Append.

File Transfer Parameters

To change the target host system or options in the Send File or the Receive File panels, select **Customize File Transfer Parameters** in the 3270 File Transfer Utility panel. This option presents a series of panels that allow you to define options for each file transfer profile.

The following panel appears.



To configure your file transfer profile:

1. Select the file transfer profile number that you want to define.
2. Select the host system for which you want to define the profile.
3. Press Enter ("┘) to display the panel in which you can define the parameters.

Some of the following parameters are available, depending on the host system you selected:

ASCII ASCII to or from EBCDIC translation
CRLF Use CR/LF as the record separator
APPEND Append to a target file
TIME Wait period, in seconds
PKTSIZE Number of bytes to be transferred in each block of data

NOCLEAR	Suppress the sending of a Clear Screen command
LRECL	Logical record length
RECFM	Record format of the host file
BLKSIZE	Block size of the file
SPACE	Units for space allocation

Note: The parameters depend on the host system. Each parameter is explained in a help panel and more information is available in the *Reference for DOS (Full-Function Mode)*.

Printer Utility

If your system is configured for 3270 printing, you can use the printer utility to manage some aspects of your printers. The utility allows you to do the following:

View the current status of printers.

View the current allocation of printers to sessions and, if more than one printer or printer table is configured, reconfigure printer assignments.

If one of the available print devices is DISK, you can change the name of the file in which you want print data to be saved.

Select host-print control options: PA1, PA2, or Cancel Print. PA1 and PA2 are 3270 keyboard functions that perform actions assigned by the host system. These options apply to LU type 1 sessions only.

Change printer settings such as characters per inch, lines per inch, left margin, top margin, and so on.

To display the Printer Utility panel:

1. Press Setup from a host session or enter **PCSUTIL** at the DOS prompt.
2. Select **Printer Utility** and press Enter.

   Note: If your PC is not configured for printing, this selection will not appear on the panel.

The following panel appears.

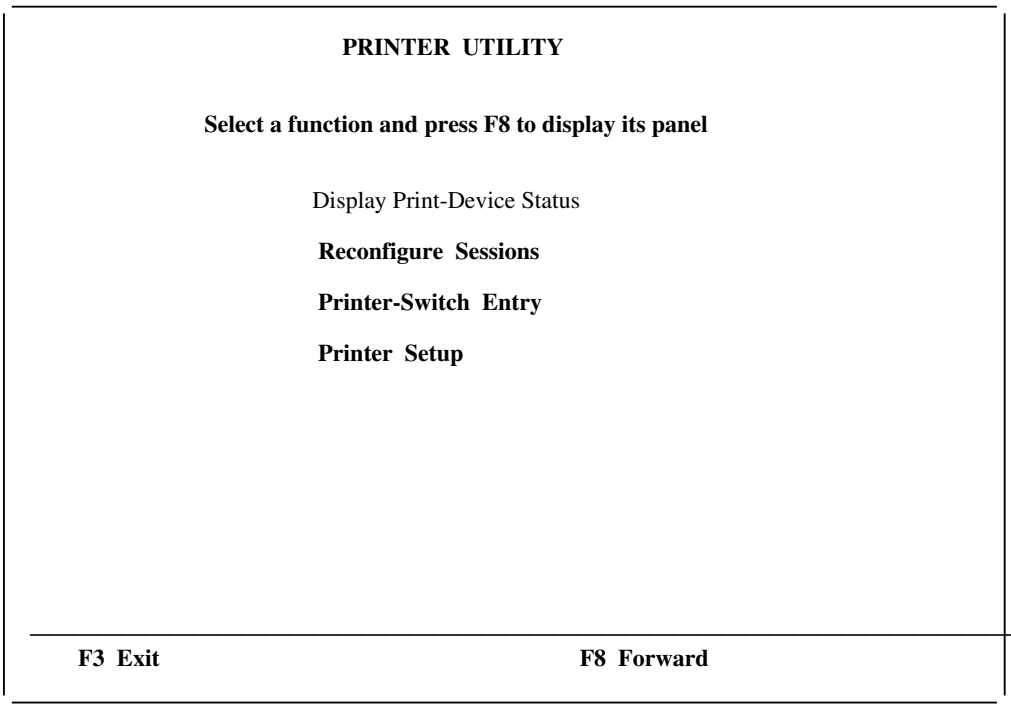


Figure 6. PRINTER UTILITY Menu

3. Move the cursor to the option you want by using Cursor Up (↑), Cursor Down (↓), Tab, Shift+Tab, or Enter ("┘). Then press F8.

Display Print-Device Status
Displays the status of your printers.

Reconfigure Sessions Allows you to view or change your allocation of printer-devices to sessions.

Printer Switch Entry Controls LU1 printer activities.

Printer Setup Allows you to change printer settings.

The following sections explain how to use each option. If you need to exit to DOS, press F3 at any time.

Displaying the Status of Printers

The Display Print-Device Status panel allows you to view the status of your printers. An example is shown below.

```
                    Display Print-Device Status



        Print  device      Status                    Error  Status

        LPT    1           Available                 Paper  End
         LPT    2           In Use - DOS
         DISK               In Use - Session a




   Name of PC file for
     327   Print-to-Disk:     C:\PC327 \PRT2DSK.OUT

   DOS Timeout Value:   3       seconds


    F3  Exit     F7  Return
```

Figure 7. Example of a Display Print-Device Status Panel

The error status indication in this panel (Paper End, Disk Full, Disk Not Ready, ...) helps you resolve problems in printing operations.

This screen only provides information, so you cannot change anything. The status information is updated continuously. Press F7 to return to the PRINTER UTILITY screen, or press F3 to return to DOS.

Reconfiguring Printer Sessions

The Reconfigure Sessions panel allows you to view the allocation of printers to sessions and to change them. An example is shown in Figure 8.

```
                        Reconfigure  Sessions

      Make Changes, then Press F6 to Send Reconfiguration Request(s)

Session     Session      Print          Printer  Table  /  Host  Codepage
              Type       Device

   a         Display     LPT  1              IBM42 1   /   37
   b         Printer     LPT  2              IBM42 1   /   37
   c         Printer     DISK                IBM42 1   /   37




Name PC file for
  327   Print-to-Disk:    C:\PC327 \PRT2DSK.OUT

DOS Timeout Value: 3        seconds


  F3 Exit       F6 Execute     F7 Return       F9 Prev choice    F1  Next choice
```

Figure 8. Example of a Reconfigure Sessions Panel

To reconfigure sessions, do the following:

1. Highlight the field you want to change.
2. Press F9 or F10 to scroll the valid settings for each field; all valid print-devices and table/code page pairs were defined when your system was configured.
3. To change the Name of PC file for 3270 Print to Disk, move the cursor to that field. Enter a PC file name. If no drive and path is specified, the current drive and path are assumed.
4. To change the DOS timeout value, move the cursor to that field. Enter a number (in seconds) between 1 and 32000. If you enter a number outside this range, a beep sounds and the original value is restored when you press F6.
5. Press F6 to effect your changes, which become active for the next printing job. Press F7 to return to the PRINTER UTILITY menu, or press F3 to return to DOS. Note that the changes will be discarded when you stop PC/3270.

Addressing Printers

The Printer-Switch Entry panel allows you to emulate the PA1, PA2, or Cancel Print switches on LU1 printer sessions. An example is shown in Figure 9.

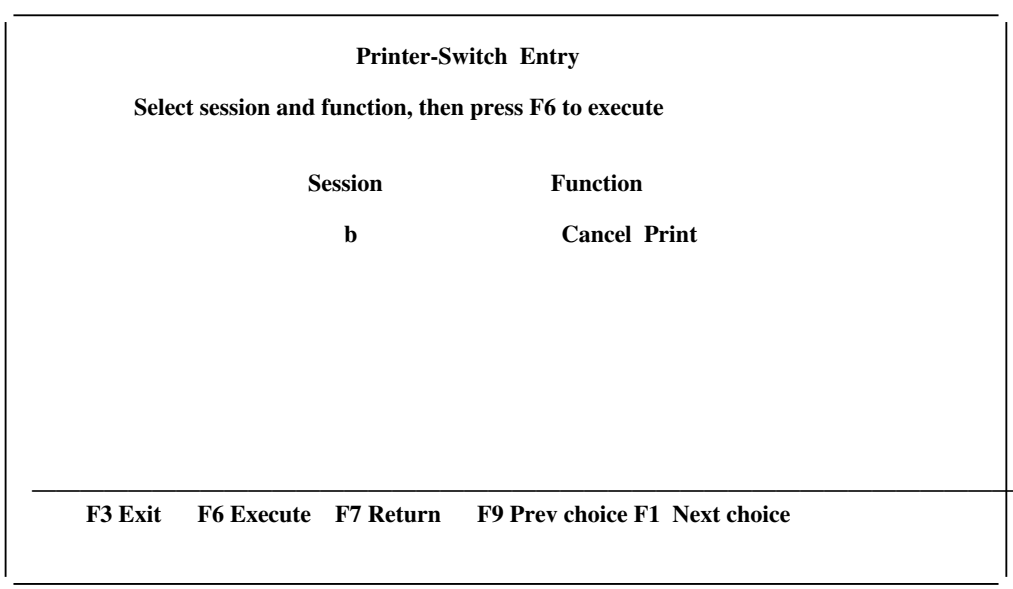


Figure 9. Example of a Printer-Switch Entry Panel

To emulate printer switches, do the following:

1. Highlight the field you want to change by pressing Tab or Shift+Tab.
2. Press F9 or F10 to scroll the options for the fields. The **Session** option scrolls through the defined printer session names. The **Function** option scrolls through the following: **PA1**, **PA2**, and **Cancel Print**.

   Note: Both LU1 and LU3 printer sessions are displayed, but the functions affect only LU1 printer sessions.
3. Press F6 to execute the function; the command will be sent to the host system immediately. If you selected **Cancel Print**, the host system stops sending data to the specified PC printer, but bear in mind that there might be data already in the print buffer; this will print anyway.

Printer Setup

The Printer Setup panel allows you to change dynamically the default printer settings for LU3 printer sessions or for local copy from display sessions. Changes on this screen are effective until PC/3270 is terminated. An example is shown in Figure 10. If you want to make these changes permanent, you must edit the appropriate printer definition file (**.PDF**) and recompile it; ask your system administrator for assistance. You cannot use this function to change the setup for an LU1 session because this is under the control of the host application.

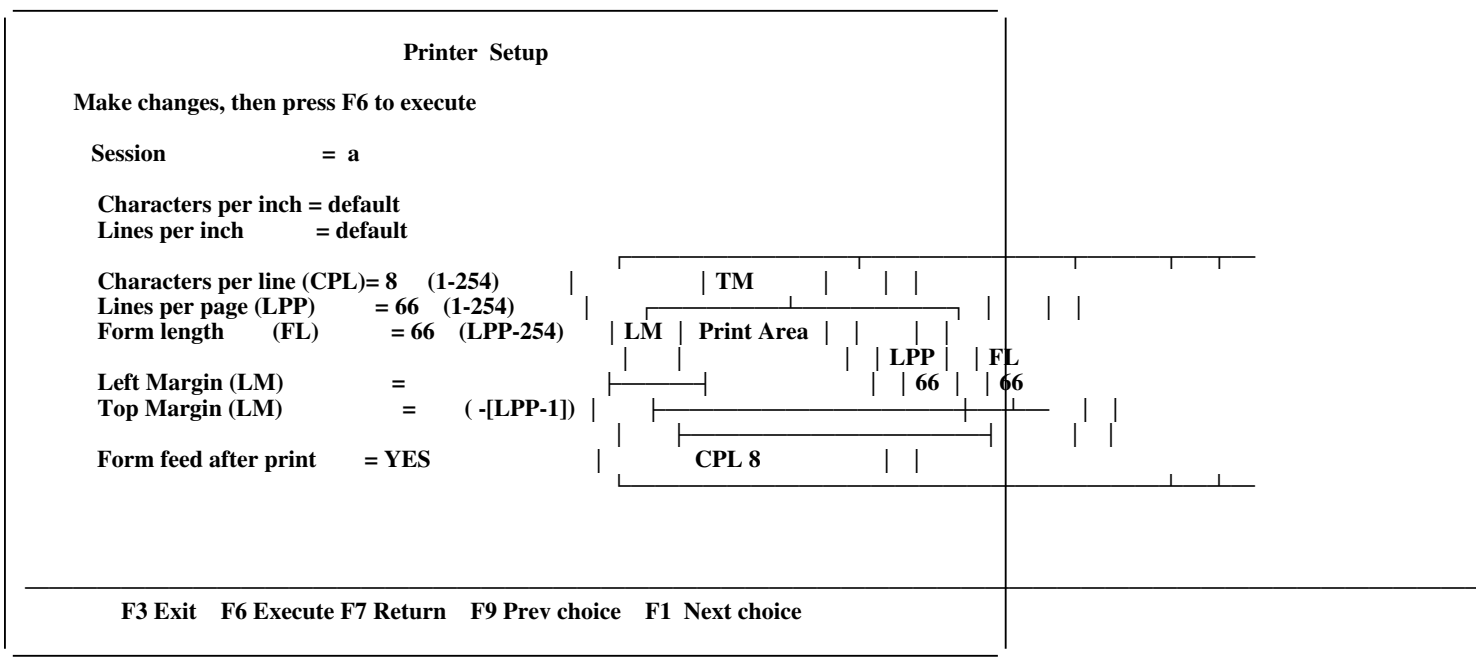


Figure 10. Example of a Printer Setup Panel

To change default printer settings, do as follows:

1. Highlight the field you want to change by pressing Tab, Shift+Tab, Cursor Up(↑), Cursor Down (↓), or Enter ("┘).
2. To change Session, Characters per inch, Lines per inch, and Form feed after print, press F9 or F10 to scroll the valid settings for each field.
3. To change Characters per line, Lines per page, Form length, Left Margin, and Top Margin, move the cursor to those fields and enter a number within the acceptable range (shown in parentheses). If you enter a number outside the range, a beep sounds.
4. Press F6 to effect your changes. The changes become effective when printing next starts.

Printer Utility

5. Press F7 to return to the PRINTER UTILITY menu, or press F3 to return to DOS.

Notes:

1. If you want to have different printer settings for each session, specify different printer table names for the sessions (different **.PDT** file names) in the Map Sessions to Printers panel during installation (INSTALL) or configuration (CONFIG).
2. There are some settings that some printers do not support.
3. If you are likely to use this utility, do not enter a SET_AUTO_PERFORATION_SKIP statement in a printer definition file (**.PDF** file).
4. Printer-table modification and the installation and configuration processes are described in the *Reference for DOS (Full-Function Mode)*.

Vital Product Data Setup

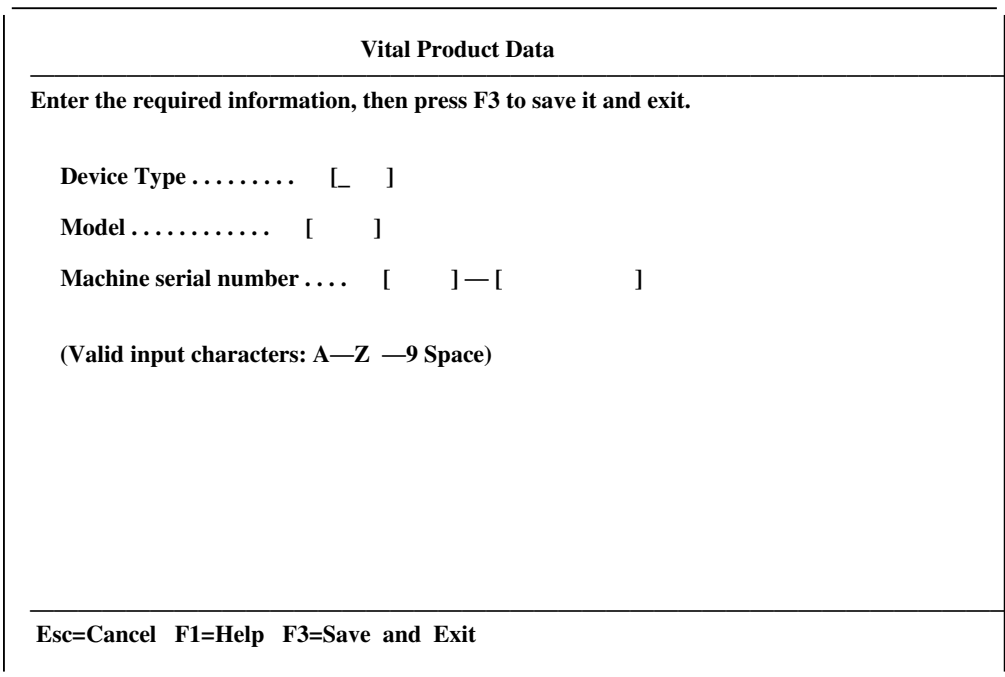
The Vital Product Data panel lets you enter some information about your PC that can be used for network asset management. The data is stored in a PC file and is sent to the control unit when PC/3270 is started.

Note: This function is available only for a DFT connection.

To display the Vital Product Data panel, do the following:

1. Press Setup from a host session or enter **PCSUTIL** at the DOS prompt.
2. Select **Vital Product Data** and press Enter ("┘).

   The following panel appears.



3. Enter information about your PC and press F3 to save it and exit.

Extended Vital Product Data Setup

This panel enables you to enter further data that can be used for network asset management. The entries in the Label field are defined by host-system personnel and the user is required to enter the data requested for each label. For example:

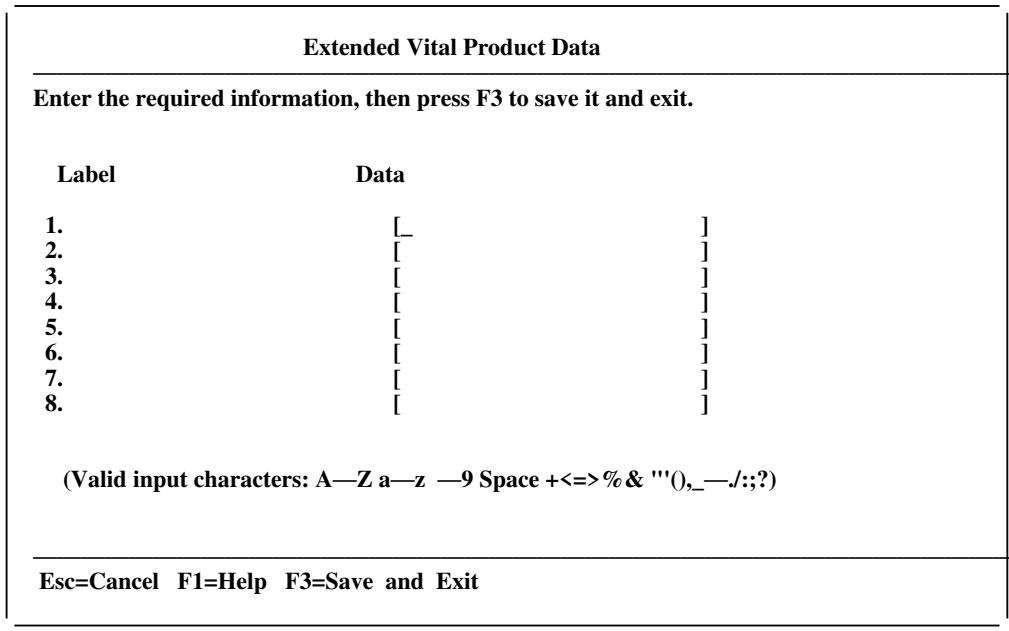
Label 1. Name
2. Department
3. Location
4. Wall-socket number

Note: This function is available only if you are connected to an appropriately-configured 3174 control unit. If you are not, the panel will not appear.

To display the Extended Vital Product Data panel, do the following:

1. Press Setup from a host session or enter **PCSUTIL** at the DOS prompt.
2. Select **Extended Vital Product Data** and press Enter ("┘).

   The following panel appears.



3. Enter information requested and press F3 to save it and exit.

Chapter 6. Copying and Printing Screens and Files

You can copy and print information from a host session screen. You can also save the screen contents in a DOS file and save host-print output in a PC file.

PC/3270 provides the following copy and print functions:

Presentation-Space Copy
: Allows you to copy a part of the screen contents from one session to another or within the same session

Local Copy
: Allows you or the host to print the whole presentation space, or a part of it, on a PC printer or to save it in a PC file

  Note: You cannot use this function to print a screen on a controller-attached printer.

PCSRDSC program
: Allows you to save and print host-session screens

Host-Directed Print
: Allows you or other users to direct a host print job to a PC printer or to a PC file.

Note: In this section, the term *PC printer* includes a printer attached to your own PC or to a LAN print server.

Presentation-Space Copy

With this function, you can copy a part of one host-session screen (the presentation space) to another session screen or to another portion of the same screen.

Various indicators are displayed in the Operator Information Area (OIA) to indicate the status of the copy function and the available function keys.

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Copying and Printing

Example

This example shows an operation that copies the display contents from session a to session b.

1. In session a, press the Copy key(Alt+F6). The operator information area changes as follows.

```
COPY    a   Copy or Paste     F1=Copy F2=Paste F3=Exit
```

2. Press F1 to enter copy mode.

```
COPY    a   Set  Source       F1=Retry   F2=Set  Box
```

3. Place the cursor at one corner of the copy area and press F2.

```
                    Account  Report

This line is to be copied.
This line is to be copied.
```

4. Place the cursor at the diagonally-opposite corner of the copy area and press F2. The copy area is highlighted.

   Note: You can move the cursor with the cursor keys, Home, NewLine, Tab, or Word Tab.

```
                    Account  Report

 This line is to be copied.
 This line is to be copied.
```

   The operator information area changes as follows:

```
COPY    a   Copy   F1=Retry   F2=Save  F3=Exit  F6=Save&Paste
```

5. Press F6 to save the selected area and to enter the paste mode.

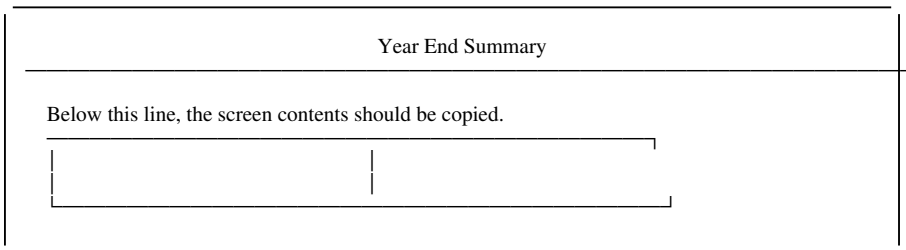
   Note: If you want to save the selected area and exit copy mode, press F2. The data in the selected area is stored in a buffer that keeps the latest copied

data until it is overwritten or you terminate PC/3270. This allows "Copy once and Paste many" operations.

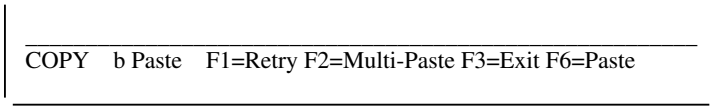
When you want to use the copied data later, press the Copy key and then F2 to enter paste mode in Step 1 above.

6. Switch to session b.
7. Place the cursor at the top-left corner of the area to which you want to paste the data. Press F2 to confirm the position.

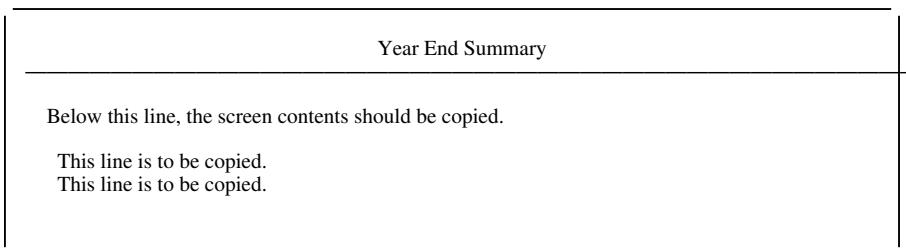
   Note: The area of the session to which you want to paste must be unprotected (that is, you must be able to enter data into it) and it must be large enough to accept all the data you want to move; if it is not, the data will be truncated.



   The operator information area changes as follows.



8. Press F6 to paste the data into the b session and exit the copy function.



   Note: If you need to paste many times consecutively, press F2 (Multi-Paste); this pastes without exiting copy mode.

Using the Local Copy Function

The local copy function allows you to print the whole or a part of a presentation space (screen) on a PC printer or to save it in a file. The copy reproduces all graphics that your printer is able to support and, if you have a color printer, the copy will print in color. You can continue to work in DOS or another host session during printing. The presentation space can be larger than that displayed on your screen. The OIA is not printed.

Whole-Screen Print

To print the whole contents of the screen, do the following:

1. Press the PC/3270 Print key. The PRINT menu appears in the operator information area. The default option is **FULL**.
2. Press F6. When finished, PC/3270 automatically exits from print mode.

Partial-Screen Print

To print a part of the screen contents, do the following:

1. Press the Print key.
2. Press F1 to change the option to **TRIM**. The current print area is highlighted.
3. To change the area to be printed:
   a. Move the cursor to the top-left corner of the area and press F2 to confirm the corner.
   b. Move the cursor to the bottom-right corner of the area and press F2 to confirm the corner.
4. Press F6. When finished, PC/3270 automatically exits from print mode.

Input is inhibited while printing is in progress, printer intervention is required, or the printer is in a busy state.

Notes:

1. If your printer is not available (turned off or not ready, for example) when you try to do a local copy, you will see, in the PRINT menu, a small black rectangle with a line through it. When you press F6, you will hear a beep.

   When the printer becomes available, you must initiate the print operation again, but the area you marked is preserved.
2. To cancel printing, press the Device Cancel key. If you have a spooler or printer buffer, the printer might not stop immediately; characters are no longer sent to the printer, but the contents of the spooler or buffer are printed.
3. If your printer requires intervention, printing stops. When printing resumes, the print job is started again from the beginning. However, if you press the Device Cancel key sequence while the printer is offline, printing does not resume.

4. You can also use the Device Cancel key to cancel a printing job that is being held pending the availability of a printer.
5. You can cancel a host-initiated Local Copy by pressing the Device Cancel key. In this case, the host system is sent a message that printing has finished.

Using the PCSRDSC Program

The PCSRDSC program allows you to save or print screens from any of your sessions. To use it, display the data that you want to save or print, then switch to the DOS session and enter the command, as shown below.

The following are some examples of how to use the PCSRDSC program. The host session whose screen is to be saved or printed is identified by its short name (**a**).

Saving the Contents of a Screen

To save the screen contents to a file, enter:

PCSRDSC =a > [d:][path]fn.ext

where **a** is the short name of the logical terminal and **fn.ext** is the name of the file to be created.

Appending the Contents of a Screen to a File

Warning: In this procedure, you must use the DOS redirection facility >> to append a file to an existing file. If you type > (instead of >>) the existing file will be overwritten.

To append the screen contents to an existing file, enter:

PCSRDSC =a >> [d:][path]fn.ext

Printing the Contents of a Screen

To print a copy of a screen, enter:

PCSRDSC =a > LPTn

Notes:

1. If you are using a screen-size of 27 lines by 132 columns, you might need to enter a MODE command so that your printer will print 132-character lines:

   MODE LPTn COLS=132

   where **n** is the LPT address used by the printer.

2. This command format is only valid for DOS 4.0 or later.

PCSRDSC -A and -Q Parameters

The following two parameters are available for PCSRDSC.EXE:

PCSRDSC [**-Q**] [**-A** row column "string"]

The **-Q** parameter is used to suppress output.

The **-A** parameter is used to make the program wait until the string is displayed at the screen location specified by row and column.

Example: These parameters can be used to synchronize the PC and host sessions when multiple file transfers are invoked from a DOS batch file. When some panels, such as the TSO ISPF Option 6 panel, are displayed on the host screen, there might be a delay before the panel is redisplayed after a file transfer is finished, and this might cause subsequent transfers to fail; in this case, the following lines:

```
SEND A.A A:A.A ASCII CRLF NOCLEAR
SEND B.B B:B.B ASCII CRLF NOCLEAR
```

should be changed to

```
SEND A.A A:A.A ASCII CRLF NOCLEAR
PCSRDSC -Q -A 4 2 "===>"
SEND B.B B:B.B ASCII CRLF NOCLEAR
```

The **PCSRDSC** line causes the next file transfer to wait until the string ===> appears at row 4 and column2.

Printing Files Using the Host-Directed Print Function

Host-directed printing occurs when you or another user issues a command to the host, requesting a file to be sent to a PC printer; the printer can be attached to your PC or to another PC. You can also save the file in a PC.

When PC/3270 was configured, one or more of your host sessions might have been defined as host-directed printer sessions. In this case, your PC printer will be known to the host system, which will assume that it is like any other host printers; you and other users can print host files on it by issuing a normal host-print command. Two types of host-printer session are possible, known as LU1 and LU3. If you have an LU1 session, you can use the printer utility to send some commands to the printer. Please ask your host-system personnel for assistance.

Chapter 7. Other Useful Functions

The Rule Function

The rule function allows you to set a reference line on the display to assist in data alignment. Only one rule can be generated, but you can choose from three styles:

Cross rule (both horizontal and vertical rules) default
Horizontal rule
Vertical rule

You can also specify whether the rule follows the cursor or remains stationary. In the latter case, the cursor can be moved without affecting the position of the rule line.

The rule is presented by intensifying every character in a row and a column, using user-selected foreground and background colors. By default, the rule will have white lines on a black background.

Rule Key

The Rule key invokes the rule; pressing the key again removes the rule. The Rule key is mapped for each keyboard type as follows:

Table 7. Key Position for the Rule Key

Keyboard	Position
XT/AT	Ctrl + Cursor Down
Enhanced	Ctrl + Cursor Down
122-key	Rule

The Rule key can be remapped by means of the 3270 Keyboard Definition Utility or the PCSKEY program.

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The Record/Play Facility

PC/3270 has a record and play function, which allows frequently-used keystroke sequences to be stored (recorded) and retrieved (played). Up to 12 sequences can be stored; they can contain up to 2KB (1000 keystrokes) in total. A function key is assigned to each recording in record mode and is used to retrieve the recording in play mode. Recordings can be overwritten or erased; they are stored in a file in the PC/3270 directory and therefore remain available until overwritten or erased.

Various indicators are displayed in the Operator Information Area (OIA) to indicate the status of the record and play functions.

Key Assignments

The keys used for the record and play functions are as follows:

Table 8. Key Assignments for the Record and Play Functions

Keyboard	Record (Resume)	Play (Resume)	Pause	Quit
XT/AT	Alt + F8	Alt + F10	Alt + F5	Shift + ScrollLock
Enhanced	Alt + F4	Alt + F5	Alt + F3	Alt + Left Ctrl
122	Record	Play	Pause	Quit

Record/Play Program

If you want to use the record/play facility, it must have been included in your configuration. If it was not, you can add it by using the CONFIG program to reconfigure PC/3270.

Recording

1. Press the Record key. A menu appears in the OIA, containing several prompts and indicators. The characters in the OIA change to black on a white background.

   RECRD: This indicates that the program has entered record mode and is waiting for you to select a recording number.

   Fkey=Record: This is a prompt to select a recording number.

Rnnnn: This is the available storage indicator (ASI), which indicates the number of bytes still available in the recording pool. The number starts at 2000 and decreases as you enter keystrokes.

oooo oooo oooo: This is the list of recordings, representing the function keys (F1 to F12). When a function key has been used, the indicator for that key changes to an x.

If you decide not to record, press the Record key again.

2. Press a function key. The list of recordings is replaced by the number of the key you pressed.

   If the key you pressed has already been used for a recording, you will hear a beep; the key number appears and the ASI shows how many characters remain in the pool (Rnnnn). If you no longer want this recording, you can;

   Overwrite it by entering keystrokes

   Delete it by pressing one of the normal Delete keys. That function key can then be reused.

   If you decide not to record, press the Quit key.

3. Begin entering keystrokes. The OIA returns to normal. Every keystroke is stored in memory, including Attention keys (Enter, PF, PA). The response time of the host to each command entered is also stored and will be reproduced when the recording is played back.
4. When you have finished recording, press the Record key again to save the keystrokes.
5. If you want to end the recording at any time, press the Quit key.

Suspending Recording (Pause/Resume)

If, while you are recording, you want to enter keystrokes that should **not** be recorded, press the Pause key. The Pause indicator, a man with an insert sign next to him, appears in place of the ASI. To resume recording, press the Record key. To end the recording, press the Quit key.

The Pause keystroke is included in the recording and will be reproduced during playback.

When recording is suspended, you can use most key functions, but you cannot use Pause, Play, Print Screen, Copy, Setup, Change Task, Jump, or Next LT. If you press an incorrect key, the alarm will sound.

Playing Back

1. To play back a recorded sequence, press the Play key. The word **Play**, the Play indicator (P), and the list of recordings appear in the OIA.

   If you decide not to play, press the Play key again.

2. Press the function key (F) that represents the recording that you want to play back.

   If you have recorded a Pause, playback will stop at that point and the Pause indicator will be displayed. To resume playback, press the Play key.

   If you want to end playback, press the Quit key.

Making Room for Large DOS Programs

While you are running PC/3270 to communicate with your host system, you might want to use a DOS program that needs more memory than is available while PC/3270 is loaded. If you are connected to your host system via a local area network or by an SDLC communications link, you can make room for the DOS program by swapping PC/3270 out of memory temporarily; your connection to the host will be suspended until you swap PC/3270 back into memory. Then you can resume communication with the host system.

If your PC is using DOS 5 and if PC/3270 was installed so that you normally start it from DOS 5's menu (also called Shell), PC/3270 will be swapped out of memory when you load another program.

If you do *not* start PC/3270 through the DOS 5 menu, you can use PC/3270's own swapper for the same purpose. To do so:

1. Switch to your DOS session.
2. Type **PCSSWAP** at the DOS prompt; all but approximately 10KB of the memory used by PC/3270 will be freed.
3. Start your other application.

When you want to use your 3270 sessions again:

1. Terminate the other application.
2. Type **EXIT** at the DOS prompt.

   PC/3270 will be returned to memory and you can work with your host system again.

PCSSWAP -A Parameter

PCSSWAP accepts, as a parameter, the command that starts the DOS application that you want to run when PC/3270 has been swapped out. The command must be preceded by **-A**; the syntax is as follows:

PCSSWAP -A doscommand

For example, if you want to run Lotus 1-2-3**, enter:

PCSSWAP -A 123

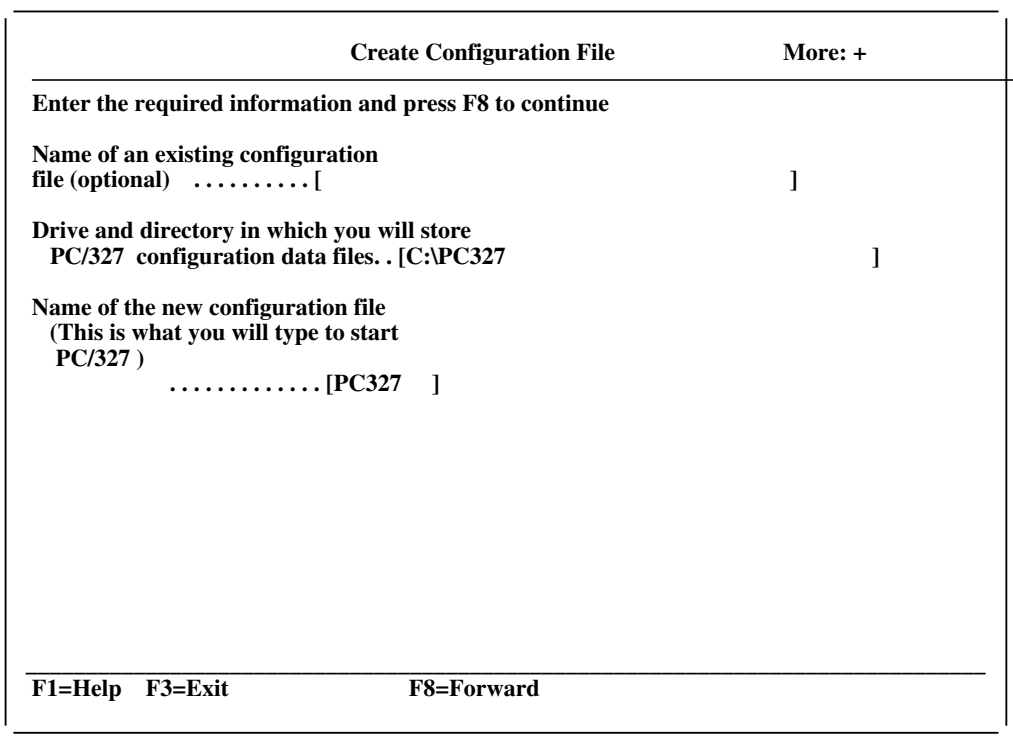
When you issue this command, PC/3270 will be swapped out and the application will start; when you quit the application, PC/3270 will be swapped back automatically and will resume where it left off.

Changing Your PC/3270 Configuration

You can reconfigure PC/3270 by using the configuration program, **CONFIG.EXE**, which will be on your hard disk if all the PC/3270 files were copied to the disk during installation. If this is not the case or if you are running PC/3270 from diskettes, you must rerun the INSTALL program from the product diskettes.

To reconfigure PC/3270, do the following:

1. Type **CONFIG** and press Enter ("┘). The IBM logo appears briefly, then the Create Configuration File panel appears.



2. In the first field, enter the name of the configuration file that you want to change.
3. In the second field, enter the drive letter and the name of the directory in which you want your PC/3270 files to be kept.
4. In the third field, enter the same name as in the first field or, if you want to create a new configuration, enter a new name. Refer to the Flexible Installation section in the *Reference for DOS (Full-Function Mode)* if you need guidance.

Help

You can get more information about each selection on the panels by pressing F1 to see the help panel.

Restarting Your PC after Changing the Configuration

If you have a LAN connection, PC/3270 opens the LAN adapter when it starts (if it is not already open). When PC/3270 is stopped, however, it does not close the adapter in case another application is using it. This means that the PC must be restarted when the PC/3270 configuration has been changed, so that the adapter parameters can be reset.

It could also be that the **CONFIG.SYS** or **AUTOEXEC.BAT** files have been changed; this is another reason for restarting the PC.

To restart your PC, you can either reboot it or switch it off then on.

Appendix A. OIA Messages

Messages are displayed in the operator information area (OIA; the bottom line of the host screen) or the DOS session screen. The messages from the PC/3270 utilities are displayed in the DOS session screen, and the messages from the host system are displayed in the OIA.

The messages are categorized as follows:

OIA messages
PC/3270 messages
Document-distribution file-transfer messages
Interchange document profile messages
LAN memory-management module messages
Host file-transfer program messages
XMA messages

For OIA messages, refer to “Message Reference” on page 132, and for the other messages, refer to the *PC/3270 Reference for Version 4.1 Full-Function DOS*.

Note: Error messages generated by one program might indicate a problem with another area. For example, a message generated by PCSDIAL can indicate an asynchronous communications problem. Error messages do not necessarily reflect the source of the error.

If your message is not listed in this chapter, ask your system administrator for assistance.

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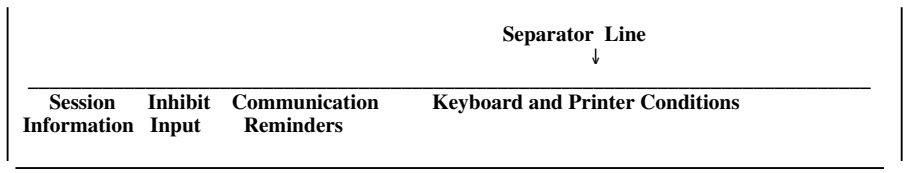
Operator Information Area Messages

The bottom line of the screen is the operator information area (OIA). OIA indicators show information about the workstation, host, and connections, as well as the status of PC/3270.

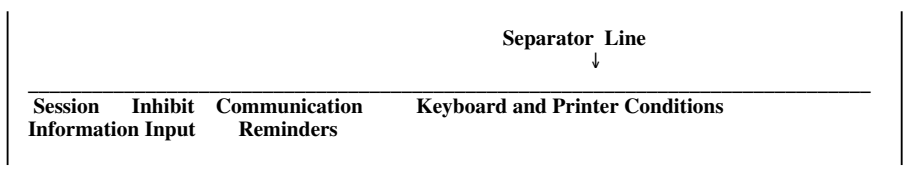
The following figure shows valid PC/3270 symbols that can be displayed in various fields. Not all columns are defined for use by PC/3270.



The fields are grouped and described in the following subsections.

Columns 1–7 provide session information.
Column 8 is undefined.
Columns 9–17 provide information about inhibited input.
Column 18 is undefined.
Columns 19–26 provide a field for communications reminders and error messages.
Columns 27–34 are undefined.
Columns 35–80 provide information about keyboard and printer conditions.

Session Information Indicators



Control Unit Status (Column 1)

Presence of a character indicates that a session is actively using a control unit. The character indicates a type of control unit attachment. For example:

4 (or **4**)
DFT connection to the host through a 3274 Control Unit
S DFT connection to the host through a 3174 Control Unit
N DFT connection to the 9370 host
M Connection to the host other than above

Connection Type (Column 2)

A
(or **A**)
The connection method is not Systems Network Architecture (SNA).

B
(or **B**)
The connection method is SNA.

System Available (Column 3)
A symbol indicates whether your PC is accessing a host or an application.

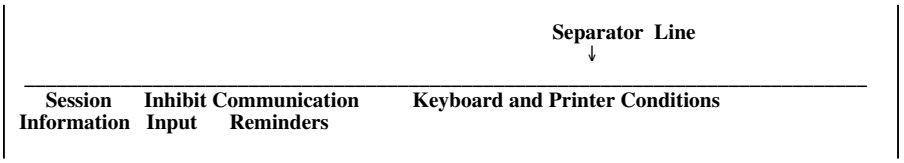
(or ■)
The PC is working on your application program.

(or ♀)
Your PC is connected to a host system.

?
(or **?**)
A question mark indicates that your PC is connected to the host system but is not connected to your application program.

Host Shortname (Column 7)
A single character (**a**–**h**) identifies a host session.

Input Inhibit Indicators



Input Inhibited (Columns 9–17)
This message accompanies the X in column 9, and explains why input is inhibited.

X (or **X []**)
Time is required for the host system to perform a function.

X SYSTEM The host system has locked your keyboard. See if a message appears. Wait, or press Reset.

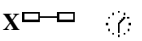
X ♀NUM (or **X ♀NUM**)
You entered a keystroke other than a number (0–9), a minus sign, a period, a comma, or DUP in the 3270 numeric lock field.

X nnn (or **X MACH**nnn)
The terminal is not configured correctly or is malfunctioning. Refer to error messages on pages 137 through 139 for an explanation of the value nnn.

OIA Messages

X nnn (or **X COMM**nnn)
The communications link is broken or malfunctioning. Refer to error messages on pages 132 through 137 for an explanation of the value nnn.

X (or **X o-**\)
You requested a local copy, but the printer configured for the terminal session is not working. The keyboard locks (keystrokes are queued) while this symbol is displayed.

X  (or **X**o-o[])
You requested a local copy, but the printer configured for that logical terminal is in use.

X –f (or **X** –**f**)
You requested a function that is not supported. Press Reset and select a valid function.

X (or **X** ♀>)
You entered more data in a field than is allowed. Press Reset and correct the entry.

X ?+ (or **X ?+**)
You pressed the Response Time Monitor (RTM) key when the RTM function is not enabled. Press Reset.

X (or **X** ←♀→)
You tried to alter data in a protected field. Press Reset.

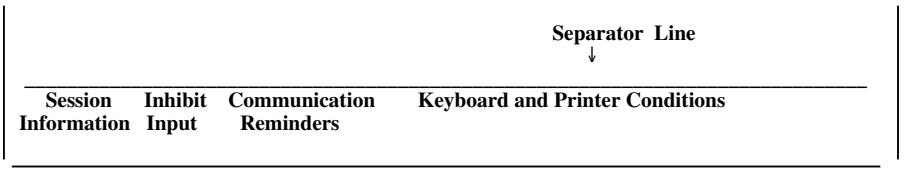
X –f **X** (or **X -f**♀**X**)
You are not authorized to perform this function. Press Reset and try a valid function.

X PROGnnn A program error has occurred. Refer to error messages on pages 139 through 143.

X –S You attempted to enter a graphic character that is not available. This character might not be in the base character set. Press Reset. Do not select the symbol that caused the indicator to appear.

X **'+?** (or **X** ♀**'+?**)
You tried to enter an incorrect character to be used with a diacritic key sequence. Press Reset and try a valid sequence.

Communication Reminders



Columns 19–26 contain the Communication Reminders (refer to “Message Reference” on page 132) and Response Time Monitor field.

Pressing the RTM key displays the Response Time Monitor indicator.

: The control unit enabled the response time monitor function, but the host system does not allow your PC to display the response time.

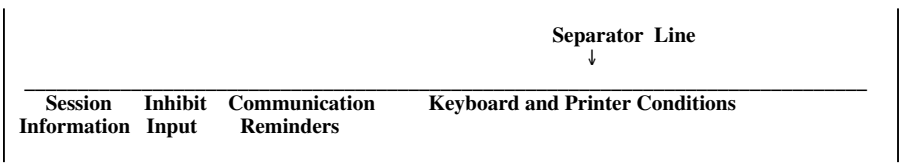
:ss.t The symbol shows the time required for the last data transmission to the host system. (ss: seconds, t: tenths of a second)

:mm.ss The symbol shows the time required for the last data transmission to the host system. (mm: minutes, ss: seconds)

:??.? The current response time measurement was cancelled.

The indicator continues to show each data transmission to the host system until the RTM key is pressed again to cancel this function.

Keyboard and Printer Conditions



Columns 35–80 display fields that provide information about keyboard and printer conditions.

Keyboard Shift (Column 36)
Displays an upward arrow (⇧) when you temporarily press Shift.

3270 Numeric Lock (Columns 36–38)
When the cursor is in a numeric field and the 3270 numeric lock feature is enabled, **NUM** is displayed.

Caps Lock (Column 37)
Caps Lock is indicated by a capital **A**.

OIA Messages

National Language Support (Columns 39–41)
The **NLS** characters indicate that your keyboard is switched to a second keyboard layer. A keyboard layer might be used for these languages, for example:

Arabic
Greek
Hebrew

If the normal keyboard definition table is used, no characters are displayed in columns 39–41.

Insert Mode (Column 52)
When insert mode is selected, a caret (^) is displayed in this field. If no ^ is displayed, character insertion does not occur. Instead, entered characters overwrite existing characters.

Printer Status (Columns 61–65)
A local copy request is being processed. Printer status indicators can be:

nnn (or **o-*** nnn)
Data is being sent to the indicated printer. A local copy request is being processed for this terminal session.

nnn (or **o-o** nnn)
The printer is ready but not printing. You have printer support. No local copy request is currently pending or being processed.

nnn indicates the printer number (1, 2, 3, or 255) that is assigned to this terminal session.

Keyboard Owner Status (Column 73)
The smiling face symbol ( ) indicates that your keyboard is logically connected to the session that is displayed on your screen. This symbol is only displayed if you use more than one display.

Note: This information is available for full-function DOS mode only.

Cursor Row/Column (Columns 75–80)
The cursor row/column position indicator shows the current cursor screen position.

PC/3270 Symbols

If **2.3** or **4** is selected for **Font Style** during flexible installation, PC/3270 uses special fonts to display 3270 terminal-like symbols in the OIA with VGA (or upper compatible) adapters. Otherwise, the standard PC fonts are used to display symbols.

Table 9. PC/3270 Symbols

Screen and VGA (or Upper Compatible Adapters)	Others
S	S
4	**4**
A	**A**
B	**B**
■	■
♀	♀
?	?
X [ ]	**X [ ]**
X SYSTEM	**X SYSTEM**
X ♀NUM	**X ♀NUM**
X MACHnnn	**X MACH**nnn
X COMMnnn	**X COMM**nnn
X -f	**X –f**
X ♀ >	**X ♀>**
X ←♀→	**X ←♀→**
X -f ♀ X	**X –f♀X**
X PROG nnn	**X PROG**nnn
X -S	**X –S**
X ♀ ´+?	**X ♀'+?**
X ?+	**X ?+**
N	N
M	M

Message Reference

COMM (or —\z_) messages are communication reminders that can be sent by the Token-Ring Network or the PC Network. Refer to the *IBM LAN Technical Reference* or the *IBM PC Network Technical Reference* for the return code.

Some 68n messages can appear as either COMM or MACH (or ⌧) checks. The explanations for COMM 68n codes also apply to MACH 68n codes.

To resolve program check PROG 7nn problems, press Reset and try the operation again. If the problem persists, note the PROG message number and ask your system administrator for assistance.

For other COMM, MACH, or PROG messages not listed, refer to the *IBM 3270 Information Display System: Reference Summary*.

COMM 0A *(or —\z_ 0A)*

Explanation: The IBM PC 3270 Emulation Program Version 3 gateway is not operating.

COMM 16 *(or —\z_ 16)*

Explanation: The network name specified for your PC is already in use by another PC on your LAN.

COMM 501 *(or —\z_ 501)*

Explanation: The 3274 or 3174 control unit is not online with the host system.

COMM 504 *(or —\z_ 504)*

Explanation: There is no telephone connection with the host. Dial the host to establish the connection.

COMM 505 *(or —\z_ 505)*

Explanation: The host system is not operating. If you have a leased SDLC connection, your link might be inoperative.

COMM 510 *(or —\z_ 510)*

Explanation: The PU is not active; the host has not activated the display station.

COMM 519 *(or —\z_ 519)*

Explanation: Data that exceeded the size of PIU was received.

COMM 645 *(or —\z— 645)*

Explanation: The workstation failed to find any NetWare server for the LAN it is attached to.

COMM 646 *(or —\z— 646)*

Explanation: The connection with the NetWare server failed.

COMM 647 *(or —\z— 647)*

Explanation: The workstation failed to find the specified NetWare server for the LAN it is attached to.

COMM 648 *(or —\z— 648)*

Explanation: The workstation failed to attach to the specified NetWare server.

COMM 649 *(or —\z— 649)*

Explanation: The workstation failed to get the specified server resources from the NetWare server.

COMM 650 *(or —\z— 650)*

Explanation: An internal error occurred between the workstation and the NetWare server.

COMM 655 *(or —\z— 655)*

Explanation: Waiting for Telnet option negotiation from the Telnet 3270 server.

User Response: If this communication reminder does not disappear, make sure that the IP address of the Telnet 3270 server is correct and the Telnet 3270 server is active.

COMM 656 *(or —\z— 656)*

Explanation: Initializing TCP/IP socket interface for Telnet 3270.

User Response: If this communication reminder does not disappear, make sure that INET on IBM TCP/IP Version 2.1 for DOS is active.

COMM 657 *(or —\z— 657)*

Explanation: Resolving the host name of the Telnet 3270 server.

User Response: If this communication reminder does not disappear, make sure that the host name of the Telnet 3270 server is correct and the name server is active.

COMM 658 *(or —\z— 658)*

Explanation: Initializing a TCP connection for Telnet 3270.

COMM 659 COMM 695

COMM 659 *(or 659)*

Explanation: TCP connection has been cut off.

COMM 680 *(or 680)*

Explanation: The workstation is offline from the LAN during initialization.

COMM 681 *(or 681)*

Explanation: The LAN adapter failed to initialize correctly.

COMM 682 *(or 682)*

Explanation: The LAN adapter failed to open.

COMM 683 *(or 683)*

Explanation: The LAN adapter DHB size could not be determined.

COMM 684 *(or 684)*

Explanation: The SAP on the LAN adapter failed to open.

COMM 685 *(or 685)*

Explanation: The link station connection failed.

COMM 686 *(or 686)*

Explanation: The LAN gateway is not active.

COMM 687 *(or 687)*

Explanation: The session with the LAN gateway is currently not active.

COMM 688 *(or 688)*

Explanation: The workstation is disconnected from the LAN.

COMM 689 *(or 689)*

Explanation: A TRANSMIT or RECEIVE command from the LAN failed.

COMM 695 *(or 695)*

Explanation: The display station is offline from the control unit.

COMM Annn *(or ~Annn)*

Explanation: The error or completion code comes from the X.25 API. The digits nnn are X.25 API return and completion codes. They are listed *by message* (not by the code number that you see) and described in the *IBM X.25 Co-Processor Support Program: Programmer's Reference*. This list provides the messages for each code:

Code	Message
700	X25_OK
701	X25_NO_SUBSYSTEM
702	X25_ERROR
703	X25_DOS_ERROR
704	X25_SYS_ERROR
705	X25_ABEND
706	X25_TIME_OUT
707	X25_NO_VERB_COMPLETE
710	X25_ACTIVE
711	X25_INACTIVE
712	X25_TERMINATING_IMMEDIATE
713	X25_TERMINATING_DELAYED
714	X25_APP_ACTIVE
715	X25_APP_INACTIVE
716	X25_APP_TERMINATING
717	X25_APP_LIMIT_EXCEEDED
718	X25_INVALID_VERSION_ID
719	X25_INVALID_TASK_ID
720	X25_INVALID_VERB_ID
721	X25_INVALID_STATE
722	X25_ADAPTER_ACCESS_ERROR
723	X25_ADAPTER_ERROR
724	X25_NO_LINK_NAME
725	X25_INVALID_LINK_NAME
726	X25_INVALID_LINK_TYPE
727	X25_LINK_ALREADY_CONNECT
728	X25_LINK_ALREADY_DISCONNECT
729	X25_LINK_ALREADY_AUTOCONNECT
730	X25_LINK_CLOSED
731	X25_LINK_ERROR_LEVEL_1
732	X25_LINK_ERROR_LEVEL_2
733	X25_LINK_ERROR_LEVEL_3
734	X25_INVALID_PVC_NUMBER
735	X25_PVC_IN_USE
736	X25_PVC_FREED
737	X25_NO_CONNECTION_AVAILABLE
738	X25_NO_CONNECTION_ALLOCATED
739	X25_INVALID_CONNECTION_ID
740	X25_INVALID_CONNECTION_MODE
741	X25_NO_VC_AVAILABLE
742	X25_VC_FREED
743	X25_VC_FREE_ERROR
744	X25_VC_RESETTING
745	X25_VC_RESET
746	X25_CALL_CLEARED
747	X25_CALL_CLEARING
748	X25_CALL_ALREADY_ACCEPTED

749 X25_CALL_NOT_YET_ACCEPTED
750 X25_CALL_NOT_YET_RECEIVED
751 X25_SEM_CLEARING
752 X25_CONNECTION_OUTGOING
753 X25_CALLED_ADDRESS_NAME_ERROR
754 X25_CALLING_ADDRESS_NAME_ERROR
755 X25_CALLED_ADDRESS_VALUE_ERROR
756 X25_CALLING_ADDRESS_VALUE_ERROR
757 X25_CALLED_ADDRESS_LEN_ERROR
758 X25_CALLING_ADDRESS_LEN_ERROR
759 X25_INTERRUPT_DATA_LEN_ERROR
760 X25_USER_DATA_LEN_ERROR
761 X25_FACILITIES_LEN_ERROR
762 X25_FACILITIES_ERROR
763 X25_CLEAR_COLLISION
764 X25_RESET_COLLISION
765 X25_NO_RESET_TO_CONFIRM
766 X25_INTERRUPT_IN_PROGRESS
767 X25_NO_DATA
768 X25_NO_DATA_TO_ACK
769 X25_ADAPTER_ACK_SELECTED
770 X25_DBIT_NOT_SELECTED
771 X25_NO_SEMAPHORES_CLEARED
772 X25_APP_REQ_CLEAR_SEM
773 X25_DISCARD_APP_REQ_CLEAR_SEM
774 X25_DBIT_INDICATOR_ERROR
775 X25_MBIT_INDICATOR_ERROR
776 X25_QBIT_INDICATOR_ERROR
777 X25_SNA_INDICATOR_ERROR
778 X25_MBIT_AND_INCOMPLETE_ERROR
779 X25_BUFFER_TOO_SHORT
780 X25_INVALID_BUFFER_LEN
781 X25_TRACE_ACTIVE_ON_LINK
782 X25_INVALID_TRACE_NAME
783 X25_INVALID_TRACE_DEST_OPTION
784 X25_INVALID_TRACE_STATS_OPTION
785 X25_INVALID_CALL_DATA
786 X25_INVALID_CAUSE_CODE
787 X25_INVALID_PARAMETER
788 X25_INVALID_CONVERT_ADDR_OPTION
790 X25_INVALID_STATUS_OPTION
791 X25_INVALID_TERM_OPTION
792 X25_NO_DIRECTORY_MATCH
793 X25_TERM_ERROR
794 X25_EVENT_ALREADY_REQUESTED
795 X25_NO_MEMORY
796 X25_INVALID_BUFFER_POINTER

COMM Pccdd *(or ↘Z_ Pccdd)*

Explanation: This message is a *packet clear* communication reminder generated by X.25 as described in *IBM 3270 Information Display System, X.25 Operation*. The number cc is a cause code and dd is a diagnostic code.

COMM Qccdd *(or ¬z Qccdd)*

Explanation: This message is a *reset packet* communication reminder generated by X.25 as described in *IBM 3270 Information Display System, X.25 Operation*. The number cc is a cause code and dd is a diagnostic code.

MACH 201 *(or ¬ 201)*

Explanation: A parity error was detected.

MACH 207 *(or ¬ 207)*

Explanation: The display station failed to respond to a poll from the control unit.

MACH 209 *(or ¬ 209)*

Explanation: The communication failed between the control unit and the display station. Take a data trace by PCSMON and consult your system administrator.

MACH 240 *(or ¬ 240)*

Explanation: The display station is disconnected.

MACH 241 *(or ¬ 241)*

Explanation: The host system has ended communications with the display station.

MACH 601 *(or ¬ 601)*

Explanation: Missing attribute.

MACH 604 *(or ¬ 604)*

Explanation: Invalid translation table.

MACH 606 *(or ¬ 606)*

Explanation: Internal error.

MACH 620 *(or ¬ 620)*

Explanation: Unknown request.

MACH 631 *(or ¬ 631)*

Explanation: A message was received with Begin Command Chain set.

MACH 632 *(or ¬ 632)*

Explanation: A message was received without Begin Command Chain set.

MACH 633 MACH 690

MACH 633 *(or 633)*

Explanation: No more data is available.

MACH 634 *(or 634)*

Explanation: More data is available.

MACH 635 *(or 635)*

Explanation: A high-priority request was received.

MACH 636 *(or 636)*

Explanation: More structured fields are available.

MACH 640 *(or 640)*

Explanation: The message destination is not valid.

MACH 641 *(or 641)*

Explanation: Buffer space is exhausted.

MACH 642 *(or 642)*

Explanation: A message was received from an unknown origin.

MACH 650 *(or 650)*

Explanation: Unsupported function.

MACH 660 *(or 660)*

Explanation: Unknown SPI function code.

MACH 670 *(or 670)*

Explanation: The keystroke type received was not valid.

MACH 671 *(or 671)*

Explanation: The keystroke value received was not valid.

MACH 68n *(or 68n)*

Explanation: MACH 68n messages that occur have the same meaning as their COMM 68n counterparts. Refer to the COMM messages on pages 134 and 134.

MACH 690 *(or 690)*

Explanation: The coaxial cable is not connected to the communication adapter, or the control unit power is not on.

MACH 691 *(or ⌧ 691)*

Explanation: The communication adapter is defective or not installed.

MACH 692 *(or ⌧ 692)*

Explanation: The 3X74 control unit is not configured with distributed function terminal (DFT) support.

MACH 693 *(or ⌧ 693)*

Explanation: The control unit is not configured for SNA communications protocol.

MACH 694 *(or ⌧ 694)*

Explanation: The control unit is not configured for non-SNA communications protocol.

MACH 697 *(or ⌧ 697)*

Explanation: The control unit does not support the Slow Device and Extended AEDV Status function.

MACH 698 *(or ⌧ 698)*

Explanation: The OIA indicator array is full.

MACH 699 *(or ⌧ 699)*

Explanation: The OIA indicator is not valid.

PROG 705

Explanation: An SNA message was received out of sequence.

PROG 706

Explanation: An SNA message was received with incorrect chaining.

PROG 707

Explanation: An SNA message was received with incorrect bracketing.

PROG 708

Explanation: An SNA message was received before Data Traffic was started.

PROG 709

Explanation: An SNA message was received that violated half-duplex protocol.

PROG 711 PROG 724

PROG 711

Explanation: An SNA BIND command was received when the logical terminal was already bound to a different session.

PROG 713

Explanation: An SNA BIND command was received when the logical terminal was already bound to the same session.

PROG 714

Explanation: An SNA message was received before the session was bound.

PROG 715

Explanation: An SNA message was received before the session was activated.

PROG 716

Explanation: An SNA BIND command was received with an incomplete parameter list.

PROG 717

Explanation: An SNA BIND command that specified incorrect FM or TS profiles was received.

PROG 718

Explanation: An SNA BIND command that specified an incorrect primary protocol was received.

PROG 719

Explanation: An SNA BIND command that specified an incorrect secondary protocol was received.

PROG 720

Explanation: An SNA BIND command that specified an incorrect common protocol was received.

PROG 723

Explanation: An SNA BIND command that specified an incorrect LU type was received.

PROG 724

Explanation: An SNA BIND command that specified an incorrect screen size was received.

PROG 725

Explanation: An SNA BIND command that specified cryptography was received.

PROG 726

Explanation: An SNA inbound message was rejected.

PROG 727

Explanation: An outbound message was destroyed.

PROG 729

Explanation: A READ PARTITION command was received while the display station was in retry state.

PROG 731

Explanation: An SNA BIND command that specified excessive inbound RU size and spacing count was received.

PROG 732

Explanation: An SNA BIND command that specified excessive outbound RU size and spacing count was received.

PROG 735

Explanation: An exception was detected while compressing or decompressing RUs.

PROG 750

Explanation: An invalid 3270 command was received.

PROG 751

Explanation: A START FIELD EXTENDED, MODIFY FIELD, or SET ATTRIBUTE order that specified an incorrect character set was received.

PROG 752

Explanation: A SET BUFFER ADDRESS, REPEAT TO ADDRESS, or ERASE UNPROTECTED TO ADDRESS order that specified an incorrect address was received.

PROG 753 PROG 761

PROG 753

Explanation: One or more of the following conditions occurred:

A READ MODIFIED, READ MODIFIED ALL, or READ BUFFER command that also contained data was received.
A REPEAT TO ADDRESS or GRAPHIC ESCAPE order that specified an incorrect character set was received.
A START FIELD EXTENDED, MODIFY FIELD, or SET ATTRIBUTE order that specified an incorrect attribute value or character set was received.

PROG 754

Explanation: One of the following commands was received without required parameters:

SET BUFFER ADDRESS
REPEAT TO ADDRESS
ERASE UNPROTECTED TO ADDRESS
START FIELD
START FIELD EXTENDED
MODIFY FIELD
SET ATTRIBUTE
GRAPHIC ESCAPE.

PROG 755

Explanation: An incorrect DBCS character code was received.

PROG 756

Explanation: A WRITE STRUCTURED FIELD command was received with an incorrect structured field.

PROG 758

Explanation: A SET REPLY MODE command was received with an incorrect mode.

PROG 759

Explanation: A WRITE STRUCTURED FIELD command was received with an incorrect structured field length.

PROG 760

Explanation: A WRITE STRUCTURED FIELD command was received with reserved fields not zero.

PROG 761

Explanation: A WRITE STRUCTURED FIELD command was received with an incorrect partition identifier.

PROG 771

Explanation: A WRITE STRUCTURED FIELD command was received with an incorrect STRUCTURED FIELD command.

PROG 780

Explanation: Internal message was received with incorrect direction.

PROG 797

Explanation: SO was received, but SO and SI are not paired correctly.

PROG 798

Explanation: SO/SI or GRAPHIC ESCAPE was received in a DBCS field.

PROG 799

Explanation: One or more of the following conditions occurred:

An address points to the second byte of a DBCS character.
An incorrect character attribute is in a DBCS subfield.
An incorrect STOP address was received.
General DBCS error.

Appendix B. Configuration Information

This chapter describes the following attachment types and installation options.

Distributed Function Terminal Attachment 145
LAN Attachment through 802.2 Protocol 146
LAN Attachment through 3270 Emulation Program Version 3 Gateway 146
LAN Attachment through IPX/SPX (NetWare for SAA Gateway) 147
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3174 Peer Communication 148
Synchronous Data Link Control Attachment 149
Hayes AutoSync (SDLC) Attachment 150
Asynchronous Data Link Control Attachment 151
SNA-over-Asynchronous Attachment 152
X.25 Packet Switching Data Network 152

Distributed Function Terminal Attachment

DFT attachment is established with a coaxial connection to an IBM 3174 or 3274 Control Unit or an IBM 9370 workstation subsystems controller. Figure 11 depicts a workstation with a DFT connection to a host system.

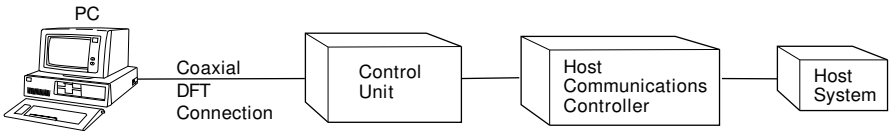

Figure 11. DFT Line Connection to Control Unit

PC/3270 supports control units, whether attached locally or remotely, or in SNA or non-SNA mode. In SNA networks, it supports LU2 and PU2 functions.

Be sure your control unit has the following:

Microcode Release 2 for the IBM 3174 Control Unit
Microcode Release 65.0 or later for the IBM 3274 Control Unit

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LAN Attachment through 802.2 Protocol

LAN attachment through an 802.2 protocol (LAN) is for a PC with a control unit type listed in the *Up and Running*. Figure 12 depicts a LAN configuration.

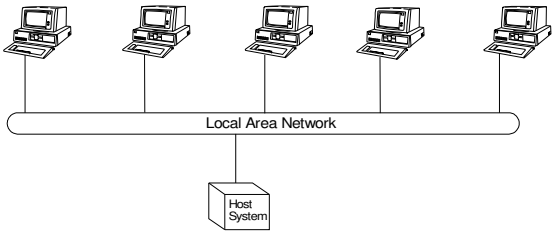
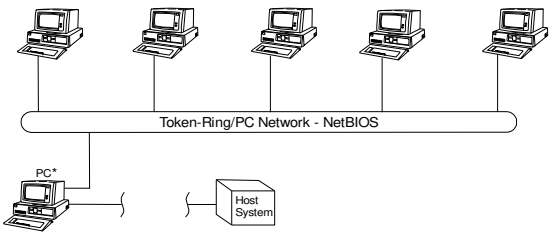


Figure 12. LAN Connection

The installation selection information (such as Destination address, Physical unit ID, Block ID, and PIU size) depend on your local LAN environment. Installation of the IBM Local Area Network Support Program is required.

LAN Attachment through 3270 Emulation Program Version 3 Gateway

Figure 13 depicts a LAN in which a PC gateway (identified with an asterisk) provides the connection between workstations on the LAN and a host system.



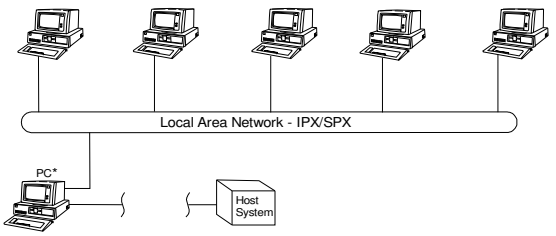
* PC gateway with IBM PC 3270 Emulation Program Version 3

Figure 13. PC LAN Connection

LAN Attachment through IPX/SPX (NetWare for SAA Gateway)

You can have 3270 sessions on the LAN IPX/SPX network through a NetWare for SAA Gateway, which runs on the NetWare server. For this attachment, you need a Token-Ring, an Ethernet, or a PC Network adapter.

Before you start a PC/3270 LAN via IPX/SPX connection, you must load **IPX.COM**, this includes the Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX) network interface software. If your workstation is on a Token-Ring Network with a source-routing bridge, load **ROUTE.COM**. Both **IPX.COM** and **ROUTE.COM** are included in Novell's network product.



* NetWare for SAA Gateway

Figure 14. LAN via IPX/SPX

LAN Attachment through TCP/IP (Telnet 3270)

You can have Telnet 3270 sessions through a LAN TCP/IP Network to a Telnet 3270 server. For this attachment, you need a Token-Ring, an Ethernet, or a PC Network adapter, and the IBM Transmission Control Protocol/Internet Protocol Program Version 2.1 for DOS or FTP Software Inc. PC/TCP V2.2 must also be installed in your PC.

Configuration Information

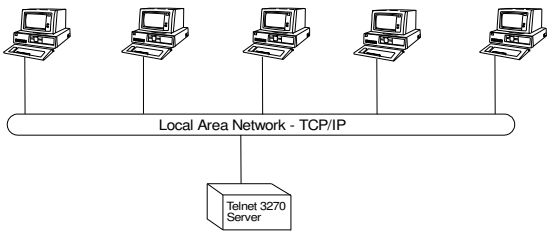


Figure 15. LAN via TCP/IP

3174 Peer Communication

Your PC, which is connected to the IBM 3174 control unit, can be used as a LAN workstation when it satisfies the following:

Your PC has the 3174 Workstation Peer Communication Support Program with PC/3270
The IBM 3174 has microcode level Configuration support B with RPQ8Q0718 or the microcode level Configuration support C.

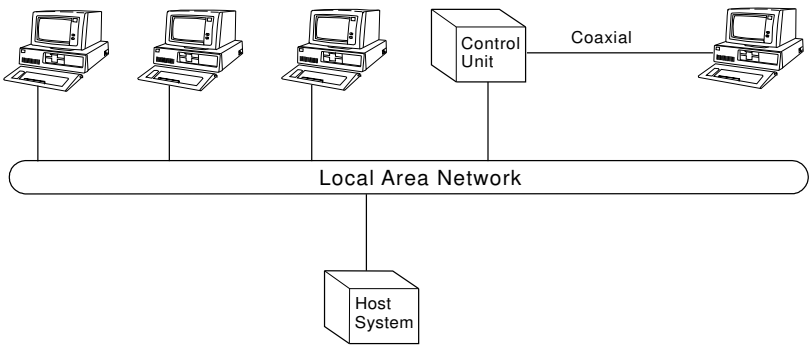


Figure 16. 3174 Peer Communication

The installation selection information (such as Destination address, Physical unit ID, Block ID, and PIU size) depend on your local LAN environment.

Synchronous Data Link Control Attachment

You can make an SDLC attachment on dedicated nonswitched (leased) or switched (dial-up) communication lines. These configurations are depicted in Figure 17 and Figure 18.

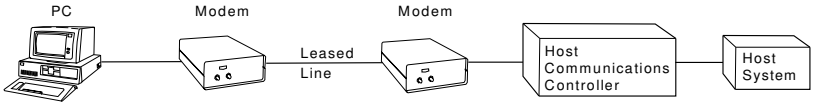


Figure 17. SDLC Leased-Line Connection

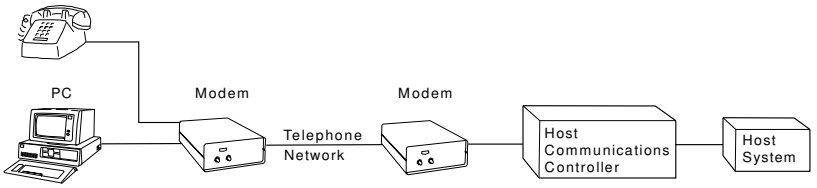


Figure 18. SDLC Switched Connection

Switched connections let you connect to different networks and hosts. For each connection, dial the telephone number of the related computer system. If the IBM SDLC adapter is located in an IBM PC, PC XT, or PS/2 Model 25 or 30 network station, PC/3270 can support line speeds up to 4800 bps, depending on the version of the adapter and the capability of the processor.

Note: If your SDLC communications fail at the selected line transmission rate, try a slower line speed.

PC/3270 can support line speeds up to 19200 bps in a non-EMS configuration.

For SDLC attachment, obtain an actual block ID (which can differ from the default) along with a PUID from your system administrator. The default **PIU size** of **265** is common for SDLC communications, but you might need a different value.

Unless you use a dedicated line attachment, select **Switched** for **Line type**. For a multidrop line, you might need to change the default station address and specify a continuous carrier link.

If your modem does not support half-speed communications (automatic fallback), then set **Half speed backup** to **No**.

Set **NRZI encoding** to **No** if NRZI encoding is not used on your network.

Hayes AutoSync (SDLC) Attachment

When you PC is connected to a Hayes AutoSync modem and an SDLC line is available, the host attachment through Hayes AutoSync is as follows:

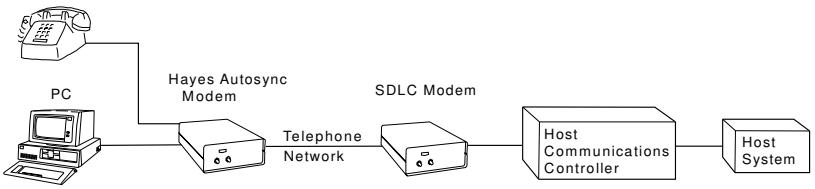


Figure 19. Hayes AutoSync (SDLC) Attachment

Hayes AutoSync is a communication mode in which the modem provides synchronous communication to the host while using an asynchronous interface on the PC. In this mode, the modem calls asynchronously at first, then automatically switches to synchronous mode when the connection is established. You do not need a Multi-Protocol or SDLC adapter on the PC, and you use a serial (COM) port. Hayes AutoSync thus provides a simple, cost effective way to communicate synchronously to the host over a telephone line.

For this connection, you need a modem that supports the Hayes AutoSync function and the PC must have a serial port that can be configured for 9600 or 19200 bps, 8bits, mark parity and one stop-bit.

Hayes AutoSync connection requires a 486-class PC, 33MHz CPU or better. The line speed used on the synchronous network must be up to 9600 bps.

For SDLC attachment, obtain an actual block ID (which can differ from the default) along with a PUID from your system administrator. The default **PIU size** of **265** is common for SDLC communications, but you might need a different value.

Set **NRZI encoding** to **No** if NRZI encoding is not used on your network.

Asynchronous Data Link Control Attachment

You can make an asynchronous attachment using a switched (dial-up) telephone line. Figure 20 depicts an asynchronous switched connection.

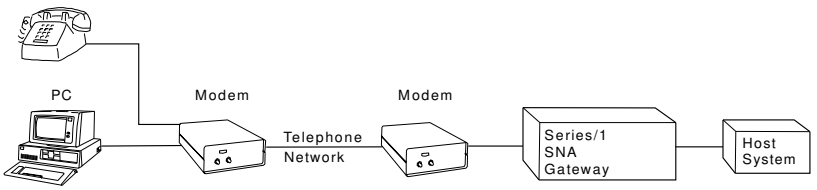


Figure 20. ASYNC Switched Connection

Switched connections let you connect different networks and host systems. For each connection, dial the telephone number of the related computer system.

PC/3270 supports line speeds from 300 to 9600 bps. Selecting a slower line speed might avoid communication problems.

Note: You only need to select **Communication port**, **Line speed in Bps** (bits per second), and **Bits per character and parity** settings, if you do not select the packet assembler/disassembler (PAD) option.

Your system administrator might give you **Block ID** and **Link station address** values that differ from the defaults.

For the **Automatic Dial Facility** option, you can select **NONE**, **DIRECT**, or **PAD**. The default value is **NONE**. **DIRECT** specifies dedicated line Series/1 SNA gateway communications. **PAD** specifies Series/1 SNA gateway access using public packet assembler/disassembler telephonic communications.

If you do not specify Series/1 SNA gateway communications, the PAD selections are not used.

SNA-over-Asynchronous Attachment

You can make an asynchronous attachment using a switched (dial-up) telephone line. For this attachment, you need an asynchronous adapter or a serial port in your PC; this must connect to an asynchronous modem.

This type of Asynchronous communication can be used only to connect to an SNA gateway that supports SNA-over-Asynchronous protocols. SNA-over-Async is also known as SDLC over Async.

If you want to use PC/3270 to connect to an IBM Series/1 SNA gateway instead, select **Asynchronous Data Link Control (ASYNCH) for IIN** attachment.

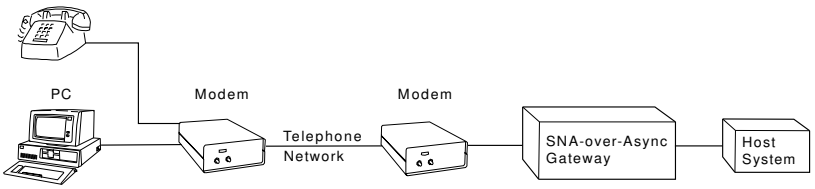


Figure 21. SNA-over-Asynchronous Attachment

X.25 Packet Switching Data Network

PC/3270 for DOS mode provides X.25 support for Personal System/2 workstations having a Micro Channel architecture, using an X.21 bis modem, and an internally mounted IBM X.25 Interface Co-Processor/2 adapter. PC/3270 requires software to support X.25: the IBM Realtime Interface Co-Processor Support Package Version 1.01 or later, and the IBM X.25 Co-Processor Support Program. See also the *IBM X.25 Co-Processor Support Program: User's Guide* and the *IBM X.25 Co-Processor/2: Installation Instructions*.

PC/3270 supports the ISA-bus X.25 Interface Co-Processor. The following programs are required to provide the interface between the adapter and PC/3270:

Realtime Interface Co-Processor DOS Support Version 1.03
IBM X.25 Co-Processor Support Program Version 1.02

This means that you can now have an ISA-bus X.25 workstation or gateway; previously, you could use only a Micro Channel PC.

Configuration Information

PC/3270 uses API routines provided by the IBM X25 Co-Processor Support Program to control the X.25 attachment, which links a network station running PC/3270 to the PSDN through an X.21 bis modem.

Figure 22 depicts a workstation connected to a host using the CCITT X.25 recommendation network communications. The X.25 attachment can communicate with SNA network stations and hosts using the X.25 interface.

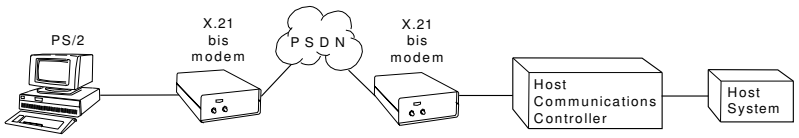


Figure 22. X.25 Connection to Host through X.25 Packet Switching Data Network

The defaults are derived from the installation of the X25 program, and are valid for the network station.

The X.25 attachment supports up to eight sessions for one or two host connections, assigning multiple logical channels to a single physical circuit.

The CCITT X.25 level is 80 or 84 according to the CCITT X.25 recommendation that is supported by your network.

If no trace name is given for the IBM X.25 Co-Processor Support Program, X.25 packet tracing and frame tracing is not performed.

The link profile name is defined by the IBM X.25 Co-Processor Support Program.

If you specify a permanent virtual circuit (PVC) number at the **PVC logical channel number** prompt, you do not need to specify **Destination-station name** or **Own-station name**. If the **PVC logical channel number** is not given, provide at least your **Destination-station name**. This is the *call nickname* given by the IBM X.25 Co-Processor Support Program.

The **CCITT X.25 level** is either 80 or 84, depending on whether the network conforms to the recommendation of the CCITT X.25 meeting in Geneva in 1980 or to the revised recommendation resulting from the CCITT X.25 conferences of Malaga and Torremolinos in 1984.

If you provide a value for the **PVC logical channel number**, any value you enter for **Destination-station name** or **Own-station name** is ignored.

Appendix C. Considerations for PC/3270 Installation and Use

Before proceeding with this book, review the README information found on the Personal Communications/3270 Windows Mode - Diskette 1 (installation), or double-click **Readme - Please!** icon to view the **README.TXT** file after the installation.

The information in the README files supplements and supersedes information found in the PC/3270 publications.

This chapter provides the information, considerations, and restrictions for installing and using PC/3270.

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Host Session Window Operations

Switching Fonts

If you are accustomed to a traditional Display Station such as the IBM InfoWindow 3472, you may not like the PC/3270 font. If this is the case, try an alternative font by changing the font files as follows:

1. Rename PCSANSI.FON and PCSAPL.FON to BASANSI.FON and BASAPL.FON respectively.
2. Copy ALTANSI.FON and ALTAPL.FON to PCSANSI.FON and PCSAPL.FON respectively.

   Note: If these files have not been installed, you can install the m by clicking the *System Setup* icon in the PC/3270 program- manager window and choosing **Options - Add/Remove Components**.

Note: This is not applicable to users who installed PC/3270 from 5.25" diskettes.

Releasing Insertion Mode with the Attention Key

To release insertion mode after execution of the Attention key, add the following parameter to the [Keyboard] section of the workstation profile (.WS):

```
[Keyboard]
ResetInsertByAttn=Y                <- Added.
```

Scroll-Bar

While you select **Font** from the **Appearance** pull-down menu in the host session window and select **Fixed Size** from the *Select Display Font* dialog box, if you specify **With Scroll-Bar** in the *Window Setup* dialog box, the entire operator information area may not appear on the screen because the session window size is restricted to not be larger than the screen size.

PC/3270 Session Size Control

PC/3270 This version processes byte 24 of the host BIND image correctly and according to the SNA architecture. This also is the same way that OS/2 processes the BIND image. Byte 24 is the last two bytes of

PSERVIC=X' 28 3 ' (3 in this case)

in the logmode.

If Byte 24 is X'03', the default screen size is 24 x 80 and the alternate is what the *user* configured with PC/3270.

If Byte 24 is X'00' or X'02', the default and alternate screen sizes are 24 x 80.

If Byte 24 is X'7E' or X'7F', bytes 20–23 in the BIND control the default and alternate screen sizes.

If you have X'03' in the BIND image, you can customize whatever screen size you want, and the host will query PC/3270 and use the alternate screen size.

PC/3270 Version 1 did not do any of this. It acted as if the host was sending X'03' no matter what. This means that the screen sizes in the bind image were ignored, creating some major problems with customer's applications. PC/3270 Version 3.0 changed this to work the same way that OS/2 works.

If you want to be able to configure the screen size at the workstation, you should fix your BIND image. But a lot of users cannot get their system administrator to make the change. In this case they can add the -s option to the PCSSNA command line in their **.BAT** or **.CNF** file, for example:

C:\PC327 \PCSSNA B=32 -S %CMGR.QUIET%

Considerations

The following table shows the details of the BIND image processing for this version:

	Byte in BIND by Host ==>					Result(Screen size)	
	24	2	21	22	23	Default	Alternate
	==	==	==	==	==	=======	=========
a)	--	--	--	--	==>	24 x 8	24 x 8
b)	2	--	--	--	==>	24 x 8	24 x 8
c)	3	--	--	--	==>	24 x 8	R x C
d)	7E	Rd	Cd	--	==>	Rd x Cd	Rd x Cd
e)	7F	Rd	Cd	Ra	Ca ==>	Rd x Cd	Ra x Ca

Legend: RxC: Screen Size defined by PC/327 3. configuration
(R,C) = (24,8) , (32,8) , (43,8) or (27,132)

Rd: Rows in the default screen size mode
Cd: Columns in the default screen size mode
(Rd,Cd) = (24,8) , (32,8) , (43,8) or (27,132)
Rd Cd <= R C

Ra: Rows in the alternate screen size mode
Ca: Columns in the alternate screen size mode
(Ra,Ca) = (24,8) , (32,8) , (43,8) or (27,132)
Ra Ca <= R C

PC/3270 supports Query Replies. Make sure that the Query Reply of Implicit Partition returns the final screen size upon receipt of the BIND command.

PC/3270 Version 1.0 treated the five cases (a through e) in the same manner as if the host sent a BIND as in example c:

The alternate screen size was not set as the host specified when receiving the value X'00', X'02', X'7E', and X'7F' of the 24th byte of BIND.

The alternate screen size was set to the configuration value incorrectly.

Customizing a Display Translation Table

PC/3270 displays the host EBCDIC character using PC (ANSI) graphic symbol so that the character defined by S/390 EBCDIC host code page is displayed correctly by using the same graphic symbol defined by ANSI. However, you may need your own original translation because your host or PC application is not designed to use the standard translation.

You can use your original translation table if you refer the following procedure as an example. But you must keep in mind that the data integrity caused by the user-defined table is your responsibility.

The following procedure is the example to re-map left and right brackets.

1. Terminate all PC/3270 sessions if they are running.
2. Modify the PC/3270 workstation profile (.WS).

   ```
   [Translation]
   IBMDefaultView=N
   DefaultView=C:\PCOMWIN\PRIVATE\BRACKET.XLT
   ```

3. Create the Display Translation Table file (**.XLT**). For this example, the following **C:\PCOMWIN\PRIVATE\BRACKET.XLT** should be created.

   ```
   [Profile]
   id=XLT
   Description=User-defined Display Translation Table

   [Option]
   Replace=Y

   [SB Xlate]
   ; EBCDIC=ANSI
   ; The next line displays EBCDOIC X'AD' as an ANSI X'5B' (a left bracket)
   AD=5B
   ; The next line displays EBCDOIC X'BD' as an ANSI X'5D' (a right bracket)
   BD=5D
   ```

4. Click PC/3270 icon corresponding to the modified workstation profile.

Attachment Considerations

Coaxial Cable Attachment

Polling Feature

Some ISA-bus PCs disable interrupt level 2 (IRQ 9) and reserve it for their own use. IRQ 9 (which is a redirected IRQ 2) is the only interrupt level that can be used by the IBM 3278/79 emulation adapter, so when you try to use PC/3270 for coaxial cable attachment with this type machine, you will never succeed in connecting to a host system.

If this happens, try adding the **Poll=Y** parameter to the [CSDFT], [CNDFT] or [CUT] section of your WorkStation profile (.WS) as follows:

Considerations

SNA/DFT attachment

```
[CSDFT]
Poll=Y          <-- add
```

Non-SNA/DFT attachment

```
[CNDFT]
Poll=Y          <-- add
```

CUT attachment

```
[CUT]
Poll=Y          <-- add
```

Running PC/3270 on a PS/VP with a Coaxial Cable Attachment

The PS/VP system unit uses IRQ 9 for some old AT applications that use video retrace; IRQ 9 conflicts with the IBM 3278/79 emulation adapter. In order to use the 3278/79 emulation adapter, you must remove a jumper (the function of which is "Video Interrupt (IRQ9) enable"), from the system board. The jumper varies according to the model of PS/VP, but here are some examples:

```
PS/VP 6381 /Si 425SX and 433SX    : Jumper J23
PS/VP 6381 /Si 433DX and 466DX2 : Jumper J14
```

Ask your IBM dealer for information about other models.

Alternatively, you can use the PC/3270 Coax Polling feature described above.

Functions Disabled at CUT Attachment

When the workstation is configured by CUT attachment, the following functions cannot be used.

File transfer
API (DDE,EHLLAPI,SRPI) function
Host graphic function
Edit functions, except for "copy"
Host print function

Controller Language at CUT Attachment

Only American English and Austrian/German are supported as the controller language. The controller language can be retrieved by controller customization question number 121.

PCMCIA Configuration for a DFT or CUT attachment

Using PCMCIA: If your PC has an IBM 3270 Emulation Credit Card Adapter (3270 CCA) installed, you can use it in the same way as the IBM 3278/79 Emulation or 3270 Connection Adapter, but you should pay some attention to the hardware and to the PC/3270 configuration.

To use the 3270 CCA, you must run PCSMCIA.BAT before you start Windows. This is because the Point or Card-Services Enabler must be loaded so that it configures the adapter hardware before you start Windows.

You cannot use multiple 3270 CCAs, nor can you use a 3270 CCA at the same time as a 3278/79 Emulation or 3270 Connection Adapter.

PCSMCIA.BAT and PCSCCA.EXE: If you choose **Yes** for PCMCIA when you configure a coax session, the configuration program will inform you that PCSMCIA.BAT will be created or updated. If you choose **OK** for that dialog, PCSMCIA.BAT will be created, in your PC/3270 directory (or updated if it already exists; its purpose is to call PCSCCA.EXE, a program which loads an Enabler for the card.)

PCSCCA.EXE will find out whether your PC has the Card-Services interface installed. If so, it will load the Card Services enabler, CS3270.EXE; if not, it will load a Point Enabler. Three Point Enablers are provided and are described below; the Point Enabler that will be configured by default is PNT3270.

If CS3270.EXE or PNT3270.EXE is used, you have only to configure the parameters for a DFT or CUT connection and choose **Yes** for PCMCIA. If either of the other enablers is used, you must edit the command in PCSMCIA.BAT so that the correct enabler is loaded.

The command will look something like this:

```
C:\PCSWIN\PCSCCA.EXE a=  b=ce s=1 PE=PNT
```

For some Toshiba and Sharp computers, you should change the value (PNT) of the last parameter to TOSH or SHRP.

Enabler Software: Four different enablers are provided with PC/3270; their names and versions are:

CS3270.EXE Version 2.10 (Card Services Enabler)
PNT3270.EXE Version 2.10 (for Intel PCSMCIA-slot controller)
SHRP3270.EXE Version 1.20 (for some Sharp PCs)
TOSH3270.EXE Version 1.20 (for some Toshiba PCs)

CS3270.EXE is an enabler that uses the Card Services interface. The others are point enablers that communicate directly with the PCMCIA-interface chip.

Considerations

Once CS3270 has run, it stays in system memory and handles 3270 CCA status changes, such as removal and insertion. CS3270 needs approximately 4KB of memory and can be loaded in high-address memory.

Once PNT3270.EXE, SHRP3270.EXE, or TOSH3270.EXE has run and has configured hardware successfully, it is removed from system memory.

As soon as the enabler has configured the hardware successfully, the 3270 CCA can be used in the same way as the IBM 3278/79 Emulation Adapter or IBM 3270 Connection.

An enabler assigns system resources to the 3270 CCA as follows:

Shared-RAM range	CE000H – CFFFFH	(changeable)
Shared-RAM size	8K bytes	(fixed)
I/O-port range	2D0H – 2DFH	(fixed) *1
I/O-port size	16 bytes	(fixed)
Interrupt level	IRQ 9	(fixed) *2

Notes:

1. *1: CS3270.EXE and PNT3270.EXE can change this range. (6D0H-6DFH, AD0H-ADFH, ED0H-EDFH)
2. *2: IRQ 9 is redirected to IRQ 2.

Which enabler you should use depends on several factors: how much memory you can afford; what interface your PC provides; what interface your applications can use; and how much flexibility you want.

Some computers do not have the Card Services interface and therefore cannot use CS3270.EXE, so you are forced to use a point enabler; the Sharp 6781 and the Toshiba T3300SL are examples of such computers.

The PNT, SHRP, and TOSH enablers (which are point enablers) do not need the Socket Services or Card Services interfaces, and they remove themselves from memory when they have loaded, so they do not consume any memory permanently.

The CS3270 Card Services enabler needs the Socket Services and Card Services interfaces and remains in memory; these three drivers need 34KB of memory, though they can often be loaded in high-address memory.

However, Card Services provides some significant advantages:

You can remove and insert cards without switching off the PC.

You can put a card into any slot; CS3270 will find and configure it. If you use the point enablers, you must specify the slot number, which means that you really have to use the same slot each time.

Card Services can manage the use of system resources, thus avoiding conflicts between clients. PNT, SHRP, and TOSH cannot prevent such conflicts; the enabler that is loaded last will take over the resources it needs, even if they are being used by another card.

Card Services Interface: If you want to use the Card Services interface, the following software must be loaded before CS3270.EXE is executed.

Socket Services software (IBMDSSxx.SYS), which conforms to PCMCIA Socket Services release 2.00.

xx depends on your PC type.

Card Services software (IBMDOSCS.SYS), which conforms to PCMCIA Card Services release 2.00.

Note: Socket Services and Card Services software are shipped with the computer.

This is an example of a CONFIG.SYS file using IBM DOS 5.02 in the IBM ThinkPad 720/720C.

```
BREAK=ON
BUFFERS=2
FILES=3
LASTDRIVE=Z
FCBS=16,8
 SHELL=C:\DOS\COMMAND.COM /P /E:512
STACKS=9,256
DEVICE=C:\DOS\SETVER.EXE
DEVICE=C:\DOS\HIMEM.SYS
DOS=HIGH
DEVICE=C:\DOS\POWER.EXE
 DEVICE=C:\IBMDSS 2.SYS                <--- Socket Services
 DEVICE=C:\IBMDOSCS.SYS                  <--- Card Services
DEVICE=C:\DICRMU 2.SYS
DEVICE=C:\$ICPMDOS.SYS
```

With this configuration, PCSMCIA.BAT would load the Card Services enabler, CS3270.EXE.

Using a Memory Manager with the 3270 CCA: The Card Services interface itself needs 4KB of memory as a buffer; this can be anywhere in the range C000 to DFFF. The Card Services device-driver will find a suitable address.

The 3270 CCA needs 8KB of memory, which can start at any 8KB boundary in the same range as the Card Services driver.

Card Services and the adapter therefore need 12KB. If you are using a memory manager, you must exclude a single block of at least this size from use by the memory manager itself; for example, if you use EMM386, its statement in CONFIG.SYS might look like this (assuming no expanded memory and the use of the default address, CE00, for the 3270 CCA): DEVICE=C:\DOS\EMM386.EXE NOEMS X=CD -CFFF

Using Xircom** Pocket 3270 Adapter**

The following restrictions are imposed on the use of the Xircom pocket 3270 adapter:

Only enhanced mode
When using the Xircom pocket 3270 adapter with Windows, you must use the Windows low-level driver (P3DFTVDx.386) supplied by Xircom. This driver requires a 386- or 486-based machine, running Windows in enhanced mode.

SNA DFT attachment
SNA DFT attachment and CUT attachment are not supported.

Parameters necessary for workstation profile
Edit the profile (.WS) and add the following parameters to the **[CSDFT]** section:

```
[CSDFT]
Poll=Y                          <- Added.
RTMDisable=Y                     <- Added.
```

When the connected control unit is not customized to enable use of the RTM (response time monitor), the **RTMDisable=Y** parameter need not be added.

For details, refer to the *Xircom Pocket 3270 Adapter User's Guide*.

Using the 3270 Credit Card Adapter in a ThinkPad 750 Port Replicator

If you use a 3270 Credit Card Adapter in one of the slots of the ThinkPad 750 Port Replicator Model I, and if PCMCIA Card Services is not installed, you must specify the I/O-port address (3E2) of the PCMCIA controller in the Port Replicator to PCSCCA.EXE by means of the **PCIC=** optional parameter. Edit PCSMCIA.BAT and add **PCIC= 3E2** to the PCSCCA line as follows:

```
C:\PCSWIN\PCSCCA A=  B=CE S=1 PCIC= 3E2
```

The upper and lower slots of the port replicator are recognized as 1 and 2 respectively; in the example, therefore, the 3270 card would be in the upper slot. If Card Services is installed, the **PCIC** parameter is ignored because Card Services can automatically detect the I/O-port address.

Note: The PCSCCA line is added to PCSMCIA.BAT if you select **Yes** for PCMCIA when you configure a coax session. If Card Services is not installed, PCSCCA will cause a point enabler, PNT3270, to be loaded.

LAN-802.2 Attachment

The following describes the preinstallation considerations for installing PC/3270 for use on a LAN or a gateway. For more detailed information, refer to the *IBM Local Area Network Technical Reference*.

Using a PCMCIA Token-ring or Ethernet Card

PC/3270 supports the IBM Token-ring and Ethernet Credit Card Adapters in the same way as it does the full-size adapters. You must install the IBM LAN Support Program V1.3 to provide the interface to the cards and then configure PC/3270 in the usual way.

Using an Ethernet Adapter

This section describes the considerations for using PC/3270 on an Ethernet Local Area Network.

Defining the PIU Size: The maximum PIU size allowed for PC/3270 on Ethernet is 1490; if it is set higher than this, you will get message MACH682 in the operator information area and the attempt to connect to the gateway will fail.

Supported Configurations: Both network station and gateway configurations are supported on a network that uses the NDIS interface.

OS/2 Extended Edition Attachment

OS/2 EE Version 1.0 or later can be used as a downstream workstation to a PC/3270 gateway. The RU size specified in its LAN DLC profile should be 9 bytes smaller than the PIU size specified for the OS/2 workstation in the PC/3270 gateway's network station profile.

Sharing the LAN Adapter with Other Applications

When you start PC/3270, the emulator opens the LAN adapters that will be used if they are not already open. When the program is stopped, however, the emulator does not close the adapter when another application is using the adapter. This requires that the PC be restarted when the PC/3270 configuration is changed so that the adapter parameters are reset.

Considerations

If another application is sharing the LAN adapter with PC/3270, open the adapter with parameters that provide resources for both. For example, the DOS LAN Requester and PC/3270 can share the same LAN adapter.

Note: Load resident applications such as the DOS LAN Requester or PC LAN Program before PC/3270, if you might later need to remove PC/3270 from memory.

Since an application only has information about the adapter resources that it requires, a method is needed for opening the adapter with cumulative resources for all LAN applications sharing that adapter.

One method that achieves this is to have the NetBIOS device driver of the LAN Support Program, **DXMT MOD.SYS**, open the adapter when the computer is started and the driver is loaded into memory. The NetBIOS device driver provides a set of optional parameters to configure the driver for certain LAN applications. Information on using the parameters of the NetBIOS device driver is included on the LAN Support Program diskette in the *LAN Support Program User's Guide* or in the *IBM Local Area Network Technical Reference*.

When the DOS LAN Requester/PC LAN Program and PC/3270 share the same LAN adapter, the ES= (EXTRA.SAPS=) and EST= (EXTRA.STATIONS=) parameters must be specified on the same line as the **DXMT MOD.SYS** entry in the **CONFIG.SYS** file. These two parameters define minimum adapter resources required for PC/3270 to load successfully. The ES= and EST= parameters specify additional SAPs and link stations, respectively, which are requested by the NetBIOS device driver when it opens the adapter. These additional SAPs and link stations are not used by the NetBIOS interface driver and are therefore available for PC/3270 use.

Other NetBIOS parameters can be optionally specified for either the DOS LAN Requester/PC LAN Program resource requirements or PC/3270 resource requirements. For example, it is recommended that the transmit buffer size be set to 2048 (DHB.SIZE=2048) in order to optimize PC/3270 performance in a LAN environment. However, setting the transmit buffer size to that value can cause the *adapter open* from NetBIOS to fail, depending on the amount of space required for adapter receive buffers.

When the ES= and EST= parameters are specified for the **DXMT MOD.SYS** entry in the **CONFIG.SYS** file, the NetBIOS device driver opens the LAN adapter with the requested resources by default.

Another method to assure that the cumulative resources for all LAN applications sharing the same LAN adapter are provided, is to specify the O=N (OPEN.ON.LOAD=N) parameter in addition to the ES= and EST= parameters. This method prevents the NetBIOS device driver from opening the adapter at load time. However, when the NetBIOS application (the IBM PC LAN Program, for example) loads and opens the adapter, the NetBIOS device driver then allocates the requested resources according to how the ES= and EST= parameters are set.

Considerations

NetBIOS Device Driver Parameters: The following are rules for assigning values to the NETBIOS ES= and EST= device driver parameters to support PC/3270.

PC/3270 configured as either a network station or a gateway requires one SAP, therefore ES= should be set to 1 or greater.

For the PC/3270 network station, the value of EST= should be equal to the number of 802.2 host links configured for this LAN adapter.

For the PC/3270 gateway, the value of EST= should be equal to the number of downstream 802.2 network station links plus the number of upstream 802.2 host links configured for the assigned LAN adapter. Because the PC/3270 gateway currently supports a single host link, the value for the EST= parameter for a given LAN adapter is the number of downstream 802.2 network station links plus 1 when the host link is 802.2. If the host link is not 802.2, the value assigned to EST= adapter should be the number of downstream 802.2 network station links.

The following examples show correct **CONFIG.SYS** file parameters for the NetBIOS line for various PC/3270 configurations. It is assumed that each LAN adapter is being shared with a NetBIOS application and that the NetBIOS device driver will open the adapter.

Note: You should not normally install the NetBIOS device driver (**DXMT MOD.SYS**) in a gateway unless the gateway PC will be running a NetBIOS application (for example, DOS LAN Requester/PC LAN, concurrently).

Example	Description
One adapter, one 802.2 host link	This example shows the PC/3270 network station configured with one LAN adapter and a single 802.2 host link. The 802.2 host link equates to the connections between this network station and a host. It does not equate to the number of LU sessions running on that link. **DXMA MOD.SYS** is the interrupt arbitrator that is required for all installations. **DXMC MOD.SYS** is the device driver that supports the 802.2 interface for IBM Token-Ring Network adapters. **DEVICE=c:\path\DXMA MOD.SYS** **DEVICE=c:\path\DXMC MOD.SYS** **DEVICE=c:\path\DXMT MOD.SYS ES=1 EST=1**
One adapter, three 802.2 host links	This example shows the PC/3270 network station configured with one LAN adapter and three 802.2 host links. The 802.2 host links equate to the connections between the network station and the hosts. They do not equate to the number of sessions (LUs) running on any one of the host links. **DEVICE=c:\path\DXMA MOD.SYS** **DEVICE=c:\path\DXMC MOD.SYS** **DEVICE=c:\path\DXMT MOD.SYS ES=1 EST=3**
One adapter, one 802.2 host and 32 downstream links	This example shows the PC/3270 gateway configured with one LAN adapter, 32 802.2 network station links, and one 802.2 host link. The maximum number of network stations attaching to this LAN adapter (adapter 0) is specified from the Downstream-Connection options panel during the gateway configuration. **DEVICE=c:\path\DXMA MOD.SYS** **DEVICE=c:\path\DXMC MOD.SYS** **DEVICE=c:\path\DXMT MOD.SYS ES=1 EST=33**

Considerations

Example	Description
One adapter, one SDLC host link, and 32 downstream links	This example shows the PC/3270 gateway configured with one LAN adapter, 32 802.2 network station links, and one SDLC host link. The maximum number of network stations attaching to this LAN adapter (adapter 0) is specified on the Downstream-Connection options panel during the gateway configuration. **Note:** Because the host link is not 802.2, an additional link station is not required. **DEVICE=c:\path\DXMA MOD.SYS** **DEVICE=c:\path\DXMC MOD.SYS** **DEVICE=c:\path\DXMT MOD.SYS ES=1 EST=32**
Two adapters with one 802.2 host and distributed downstream links	This example shows the PC/3270 gateway configured with two LAN adapters. The primary LAN adapter has 32 802.2 network station links and one 802.2 host link. The alternate LAN adapter has 64 802.2 network station links. The maximum number of network stations attaching to each LAN adapter (adapter 0 and adapter 1) is specified on the Downstream-Connection options panel during the gateway configuration. **Note:** Specify one extra SAP for each LAN adapter. **DEVICE=c:\path\DXMA MOD.SYS** **DEVICE=c:\path\DXMC MOD.SYS** **DEVICE=c:\path\DXMT MOD.SYS ES=1 EST=33 / ES=1 EST=64**

Connecting to More Than One Gateway

If you want to have concurrent sessions to more than one Token-ring gateway, you must increase the number of 802.2 link stations that are available; the default is 1. To do this, you must increase the Link-Station Count in the configuration for the session (WorkStation) that will start first. If you will not always start the same session first, you should increase this parameter in the configurations for all your sessions so that you will always have enough resources available.

To change the Link-Station Count, click **Communication** from the menu-bar in the workstation window; then select **Configure - Configure - Configure Link - Advanced**.

If your LAN Support Program configuration includes DXMT0MOD.SYS, make sure that the value of the EST parameter is high enough (1 for each gateway).

LAN via IPX/SPX (Netware for SAA) Attachment

You can have 3270 sessions on the LAN IPX/SPX network through a NetWare for SAA Gateway, which run on the NetWare server. For this attachment, you need a Token-Ring, an Ethernet,q or a PC Network adapter.

DOS IPX/SPX Protocol Driver

Before you start a PC/3270 LAN via IPX/SPX connection, you must load IPX.COM, this includes the Internetwork Packet Exchange/Sequenced Packet Exhcange (IPX/SPX) network interface software. If you are using a DOS workstation, the IPX.OBJ must be at NetWare Version 3.1 or later. If you are using a DOS ODI workstation, both LSL.COM and IPXODI.COM must be at NetWare for SAA Version 1.20 or later. If you use the wrong versions of the protocol drivers, PC/3270 might not be able to start communication.

If your workstation is on a Token-Ring network with source-routing bridge, load ROUTE.COM. Both IPX.COM and ROUTE.COM are included in Novell's network product.

When running the PC/3270 LAN via IPX/SPX connection, you do not need to load the NetWare shell (NETX, for example). But you can load it if you want to use the server to share files or printers.

You must set up your Windows environment for the Novell network and you must install NWIPXSPX.DLL in your Windows directory (this is provided by Novell.) For more information, refer to the "Setting up Windows for LAN-via-NetWare-for-SAA Attachment" of online help.

Restrictions

The following functions are not available with this connectivity.

- Self-defining dependent LUs (SDDLUs)
- SNA session-level compression and decompression

Only the 386 Enhanced Mode of Windows is supported for this connection.

Typical Load Sequence

Here is a typical load sequence for a LAN via IPX/SPX connection.

1. Load IPX.COM or ODI drivers.
2. Load the NetWare shell (NETX, for example) if you want to use the server to share files or printers.
3. Start PC/3270.

TCP/IP Connection

Supported TCP/IP Stack Programs

In addition to IBM TCP/IP for DOS V2.1, some other TCP/IP stack programs are newly supported with PC/3270 V3.1 CSD1 for Windows. They are as follows:

FTP Software, Inc. PC/TCP Network Software for DOS V2.3
NetManage, Inc. Chameleon NEWT TCP/IP for Windows V3.1 (with the restriction that the Chameleon NFS cannot be used)
Novell, Inc. LAN WorkPlace for DOS V4.1 respective manufacturers.

In particular, IBM TCP/IP Version 2.1 for DOS requires an IBM or fully compatible personal computer with a 286, 386 or 486 microprocessor with at least 2MB memory.

At the Telnet 3270 server in a host system to which you want to connect, IBM TCP/IP for VM or IBM TCP/IP for MVS must be running.

FTP Software - PC/TCP V2.2

The following modules are provided to communicate with PC/TCP Ver 2.2:

PCSSCIF1.EXE PC/TCP system-call interface-caller
PCSTNSC1.EXE Telnet 3270 system-call interface-handler for PC/TCP

Having configured a startup BAT file, edit it to replace **PCSSCIF** and **PCSTNSC** with **PCSSCIF1** and **PCSTNSC1** respectively (just change the 0 to 1).

Restrictions

The following functions are not available with this connectivity.

- Self-defining dependent LUs (SDDLUs)
- SNA session-level compression and decompression
- LU type 1/3 host directed printing

PC/3270 TCP/IP connection does not coexist with any TCP server applications such as FTPD and LPD.

The maximum packet size must be less that 8000 bytes for the file transfer.

Host-Addressable Printing

Host-addressable printing is not supported with the Telnet 3270 attachment, so you cannot select **Printer** as the session type on the *Customize Communication* &dg..

Screen Size

Only the following screen sizes are supported:

24 x 80
32 x 80
43 x 80
27 x 132

Port Number of the Telnet 3270 Server

When you use PC/3270 for DOS mode, the port number of a Telnet 3270 server is set to the well-known port 23. If you change the port number, add the following line after the parameter for Terminal Type (ID=n TT=IBM-3278-x-E) to the TCP/IP connection parameter file (.TCP file), which is generated during configuration.

ID=n PT=pp

Where *n* is the client ID number and *pp* is the port number of a Telnet 3270 server.

When you use PC/3270 for Windows mode, the port number of a Telnet 3270 server is set to the well-known port 23. If you change the port number, add the following line to the [Telnet3270] section in the workstation profile (.WS):

HostPortNumber=pp

Where *pp* is the port number of a Telnet 3270 server.

Terminal Type to Be Negotiated

When you use PC/3270 for DOS mode, the terminal type to be negotiated is set to IBM-3278-2-E, IBM-3278-3-E, IBM-3278-4-E, or IBM3278-5-E according to the screen size that is specified during configuration. If you need to specify IBM-3279-2-E or IBM-3279-3-E, modify the TCP/IP connection parameter file (.TCP), which is generated during configuration (just change the 8 to 9).

When you use PC/3270 for Windows mode, the terminal type to be negotiated is set to IBM-3278-2-E, IBM-3278-3-E, IBM-3278-4-E, or IBM3278-5-E according to the screen size that is specified on the Customize Communication - 3270 Host panel. If you need to specify IBM-3279-2-E or IBM-3279-3-E, add the following line to the [Telnet3270] section in the workstation profile (.WS): **TerminalType=3279**

Typical Configuration File

Here are the configuration files for a typical installation; the IBM Token-Ring adapter was used:

CONFIG.SYS

```
DEVICE=\DOS\ANSI.SYS
DEVICE=\TCPDOS\BIN\PROTMAN.DOS  /I:\TCPDOS\ETC
DEVICE=\TCPDOS\BIN\DOSTCP.SYS
DEVICE=\TCPDOS\BIN\IBMTOK.DOS
```

AUTOEXEC.BAT

```
C:\TCPDOS\BIN\NETBIND
SET  ETC=\TCPDOS\ETC
```

PROTOCOL.INI

```
 ; --- Protocol Manager Definition ---
[PROTOMAN_MOD]
   DriveName=PROTOMAN$
 ; --- Protocol Driver Definition ---
 ;IBM TCP/IP V2.1 for DOS
[TCPIP_V21]
   DriveName=DOSNDIS$
 ; --- Bindings Statement ---
   Bindings=IBMTOK,,,
;  --------------------------
 ;IBM LAN Support Program V1.3
[DXME _MOD]
   DriverName=DXME $
   Bindings=IBMTOK
 ; --- IBM Token RIng Adapter Definition ---
[IBMTOK]
   DriverName=IBMTOK$
```

SDLC Attachment

Windows 386-Enhanced Mode

For SDLC attachment, when you start Windows in enhanced mode, do not use a device driver or TSR program using IRQ3 or IRQ4 together with a DOS box.

The SDLC attachment uses interrupt level 3 (IRQ3) and interrupt level 4 (IRQ4) to control the hardware. If you use Windows in enhanced mode, the virtual machine manager controls the interrupt level as GLOBAL or LOCAL, depending on the state of interrupt controller IMR (interrupt mask register) at Windows startup.

When a device driver or TSR program that uses either IRQ3 or IRQ4 starts before Windows, and you subsequently open a DOS box after starting the PC/3270, the PC/3270 may stop because it cannot detect the interrupt level.

When you must use a device driver or TSR program that uses or IRQ3 and IRQ4, together with a DOS box, execute PCSSDLC.EXE from the DOS command prompt before starting Windows, then install the SDLC protocol handler as a TSR.

Saving Memory

When you perform two SDLC attachments using two adapter cards, PCSSDLC.EXE sets the default so that two instances (DATA and STACK) can be provided for the SDLC protocol machine to avoid confusion between those adapter cards.

When you always use SDLC attachment with only one adapter card, follow the procedure below. You can reduce base memory (up to 640 kilobytes) usage by approximately 1,250 bytes.

When you install the PCSSDLC.EXE module as a TSR program before starting Windows, transfer the next argument to PCSSDLC.EXE.
When you use PCSWIN.BAT, change module PCSTSR.BAT as follows:

```
>PCSSDLC.EXE    /n=1                (/N=1 is also possible.)
```

When you do not install PCSSDLC.EXE before starting Windows in enhanced mode, add the following parameter to the [SDLC] section of the workstation profile (.WS) â:

```
[SDLC]
NumOfInstances=1                    <-  Added
```

Line Speed

At SDLC attachment, a line speed of up to 19200 bps is supported. However, the actual line speed will vary with the adapter version and machine performance. If SDLC attachment fails at the specified line speed, reduce the line speed.

Performance Consideration

With SDLC attachment, when you use multiple sessions in a high-speed and high-load configuration, or if you open a DOS box under these conditions, the connection to the host might fail. In this case, you should specify host or PC/3270 timeout values such that the host's timeout value is greater than that of PC/3270.

Considerations

Changing the host timeout value

Modify the following NCP parameters:

REPLYTO
The maximum duration in seconds that the host waits for a reply from the terminal. The default is 1 second.

RETRIES=(m,t,n)
The numbers of attempts to be made to recover from errors occurring during transmission over the link. Repetitive retries are called a retry sequence. The maximum number of retries, *m*, can be from 0 to 128. NCP pause, *t*, is the time between the retry sequences, which can be from 1 to 255 seconds. The maximum number of retry sequences, *n*, can be from 1 to 127. For example:

```
REPLYTO=1, RETRIES=(3,4,5)
(( 1(seconds) x 3(times) + 4(seconds)) x 5(times)
= 35 (seconds)
```

Note: In this example, the host will wait for 35 seconds for the terminal to reply.

For more details, ask your system personnel.

Changing the Personal Communications setting Change the "Timeout" value in the [SDLC] section of your WorkStation profile (.WS) as follows:

```
[SDLC]
  :
TimeOut=15     <<-- change
```

The value is in seconds and can be from 1 to 3 . The default is 3 .

Interrupt Conflict between SDLC Adapter and COM2

The IBM Multi-Protocol Adapter and the AT-bus SDLC Adapter use interrupt level 3 (IRQ3) and cannot be changed. COM2 also uses interrupt level 3 (IRQ3) by default. In this case, you cannot use PC/3270's SDLC connection and a Windows an application that uses COM2 (for example, TERMINAL.EXE) at the same time, because of an IRQ3 conflict.

ASYNC (IIN), SNA-over-Async, and AutoSync Attachment

ASYNC (IIN) supports only a single adapter and you cannot use other connections at the same time.

Setting the Communication Port

At ASYNC attachment, only the communication port is specified as the default. If you change the basic input/output port address or interrupt level (IRQ), the port will not be recognized correctly. You cannot, therefore, establish the attachment.

Sharing the Interrupt Level

At ASYNC attachment, interrupt levels 3 (IRQ3) and 4 (IRQ4) are used for hardware control. If this unit shares those interrupt levels with another unit, communication might fail.

Line Speed

At ASYNC attachment, rates up to 9600 bps are supported as the line speed. The maximum usable line speed depends on the speed of the processor or communication port, however. When the ASYNC attachment is established at the specified line speed, if communication stops or becomes exceedingly slow, reduce the line speed.

Note: At ASYNC attachment, the system receives high-speed communication data using the FIFO buffer. If you are using a model, such as the IBM PS/2 model 30-286, that does not have the FIFO function for the communication port, reduce the line speed. If your PC does not have FIFO capability, the *line speed* list-box in the Home3270 configuration dialog box can be set upto 2400 bps (not include 4800 and 9600 bps).

While using Windows V3.1, if any of the above problems occur, make the following change (/F option) to the PCSTSR.BAT file:

```
>PCSASYNC.EXE /F
```

Note: The /F option must not be used with Windows 3.0.

Increasing the Line Speed in 286 Standard Mode

For machines that use the 80286 processor, at ASYNC attachment, the line speed can be changed in 286 standard mode by following the procedure below.

Reduce the number of MS-DOS device drivers and TSR programs.
Add the following parameter to the [standard] section in the SYSTEM.INI file:

```
[standard]
FasterModeSwitch=1              <- Added.
```

Do not load DOS 5.0 into upper memory.

For details of the procedure, refer to Windows README.WRI or SYSINI.WRI.

Modem Configuration Considerations

The Series/1 gateway has the following restrictions:

Error correction is not supported.

V.25, V.32bis, V.42, V.42bis functions will **not** work. These are sometimes your modem's defaults; if so, you must turn them off.

Hardware and software flow control must be disabled.

V.32 is required for 9600 bps transmission.

Device Conflict

If you open a DOS box during communication by the ASYNC attachment, a conflict may occur between the communication port device and COMMAND.COM, and communication may stop. In this case, add the following parameters to the [386Enh] section of the SYSTEM.INI file:

```
[386Enh]
COM1AutoAssign=-1               <- Added.
COM2AutoAssign=-1               <- Added.
```

With these parameters specified, Windows indicates to which application the port control is to be transferred when it detects a communication port device confliction. Then, control must not be transferred to COMMAND.COM.
For details, refer to Windows SYSINI2.TXT.

Home3270 Attachment

Home3270 supports only a single adapter and you cannot use other connections at the same time.

Line Speed

At home 3270 attachment, a line speed of up to 9,600 bps is supported. However, characters may be lost on a high-speed lines, depending on the processor speed.

While using Windows V3.0, if an unexpected character appears on the screen, some lines shift to the left on the screen, or file transfer frequently fails, reduce the line speed.
While using Windows V3.1, if any of the above problems occur, make the following change (/F option) to the PCSTSR.BAT file:

```
>PCSAEA.COM /F
```

Note: The /F option must not be used with Windows 3.0.

Home3270 attachment supports only those models with FIFO mode. If you attempt to perform communication by home 3270 attachment using a model that does not support FIFO mode, entered characters may be deleted. In this case, reduce the line speed to 600 bps or less. Communication can be performed as necessary. If your PC does not have FIFO capability, the *line speed* list-box in the Home3270 configuration dialog box can be set upto 2400 bps (not include 4800 and 9600 bps).

Unsupported Character Sequences

The character sequence below is valid for home 3270 attachment. However, it executes no function.

ESC P 1 (Block cursor command)
ESC P 0 (Underline cursor command)
DLE DC2 (Printer start command)
DLE DC4 (Printer end command)

How to Perform Communication Check 50x

The home3270 requires both DSR (Data Set Ready) and CD (Carrier Detect) to determine the state of the attachment with the host system.
If DSR is not recognized, communication check 501 appears in the operator information area.
When DSR is recognized, if CD is not recognized, communication check 504 appears in the operator information area.

When you select ROLMphone with DCM in the home 3270 configuration, communication check 504 does not appear.

High-Speed Modem Support

If your PC has FIFO capability, PC/3270 supports 9600 bps as the maximum line speed. However, you can set a higher line-speed when you configure the Automatic Dial Facility if you wish, though you may have some problems. If you want to set a higher line-speed, you should add the following statement to the PCSWIN.INI file:

```
[ADU]
HighSpeedModem=Yes
```

This will allow you to set a maximum line-speed of 19200 bps when you configure the Automatic Dial Facility.

Note: The ability to make use of so high a line-speed depends on the performance of your PC.

Attachment via AS/400

AS/400 System Setup

The PC/3270 can connect to a host computer via one or more AS/400s by using the passthrough function (usable with OS/400 version 2.2.0 or later) supplied by AS/400. To use this function, set the following communication configuration descriptions in the AS/400 system to on (Vary On):

Line description
Control unit description
Printer description

To set these communication configuration descriptions, contact your system manager.

Error Messages from AS/400

When this system is connected to the host system via the AS/400, the following message may appear on the screen.

AS/4 CPI5xxx

The following statuses are assumed as the reasons why this message is displayed:

Line error between AS/400 and host system
Communication configuration description error in AS/400 system
The communication configuration description in the AS/400 system is set off (Vary Off).

When this message is displayed, detailed error information is saved to the AS/400 system operator message queue. Refer to the error message that corresponds to the number displayed on the screen, then correct the error cause.

SNA Considerations

SDDLU

PC/3270 Version 3 or later supports the Self-Defining Dependent Logical Units (SDDLU) function of ACF/VTAM Version 3 Release 4.1 (MVS) or Version 3 Release 4 (VM). SDDLU provides the ability to dynamically create dependent LUs on predefined PUs and to reconfigure dependent LUs without interruption to any other user on the network or intervention by system programming or operations staff.

Considerations

PC/3270 SDDLU is supported for all connections except DFT (coaxial connection).

PC/3270 Version 3 or later network stations and gateways support SDDLU by:

1. Accepting a format-1 ACTPU (Activate PU), which signals that VTAM requires a Network Management Vector Transport (NMVT) containing the product set ID (PSID) and LOCADDR of the LU.
2. A PC/3270 Version 3 or later network station will use LOCADDRs 02 to 09, in that sequence, by default. However, if you rearrange the LU addresses in the Advanced Options for Network Stations panel, it will use the addresses that you specify. For example, if you specify that session c is to use LU address 0A, it will be connected to LU address 0A in the gateway or in VTAM (not to its default address, 04).
3. Sending an unsolicited NMVT to VTAM when an LU comes online.

Note: If you select the SDDLU option in a gateway configuration, all the downstream network stations must have SDDLU capability. This means that previous versions of PC/3270 must be upgraded to Version 3 and that many other emulation programs cannot be used as network stations.

PSID Definitions: PC/3270 defines the default PSID for each LU type. Generally, the PSID contains such things as the machine type and the model number. The following table describes the machine type and model number definitions for each LU type supported by PC/3270.

Machine Type	Model Number	LU Type	Screen/Buffer Size
3270	002	Display Model 2 screen	24 rows by 80 columns
3270	003	Display Model 3 screen	32 rows by 80 columns
3270	004	Display Model 4 screen	43 rows by 80 columns
3270	005	Display Model 5 screen	27 rows by 132 columns
3270	DS2*	Printer 3270 data stream	24 rows by 80 columns
3270	DS3*	Printer 3270 data stream	32 rows by 80 columns
3270	DS4*	Printer 3270 data stream	43 rows by 80 columns
3270	DS5*	Printer 3270 data stream	27 rows by 132 columns
3270	00A**	Display	48 rows by 80 columns
3270	00B**	Display	62 rows by 160 columns
3270	00C**	Display	24 rows by 132 columns

* PC/3270 assumes that 3270 data stream is the default printer-session type. If you use the SNA Character String (SCS) data stream, you must use a different designation for the PSID, such as 3270SCS. You must define this yourself, as shown in the example below.

** This PSID applies only to network stations in Windows mode.

Assigning User-Defined PSIDs: You can replace the default PSID values with your own definitions, or define new PSIDs, by preparing a PSID definition file or by changing the Windows workstation profile; whatever PSIDs you use, you must define them to VTAM.

Add a statement such as the one below to the [LU] definition in the WorkStation profile. This example supersedes the default PSID with LUA0001.

```
PSID = LUA   1
```

Edit Function

Edit Function Restrictions at CUT Attachment

When you use the CUT attachment, you can use only the Copy and CopyAppend functions of the edit functions supplied by the menu bar in the host session window.

Edit Function Restrictions at Home 3270 Attachment

When this system is connected to the host system by home 3270 attachment, the following edit functions supplied by the host session window are restricted.

Undo function

You cannot execute the Undo function after using the Cut, Paste, PasteNext, or Clear functions because these functions modify display areas in the protocol converter.

Cut and Clear functions

When an area to be cut or cleared contains a field attribute character or protected field, or each line in that area ends at the end of an unprotected field, the following is performed:

Characters in an unprotected field outside the area to be cut or cleared may also be cleared.
An alarm may sound.
The cursor may not appear at the initial position.

When you execute the Cut or Clear function, specify only the minimum area required (for example, some words or one field in one line), then confirm that the frame exists in an unprotected field.

Considerations

Paste and PasteNext functions

When the area to be pasted contains a field attribute character or protected field, or the end of the paste area on each line is positioned at the end of an unprotected field, the following is performed:

The character to be pasted may not be written to the expected position.
An alarm may sound.
The cursor may not appear at the initial position.

When you use the paste function, paste the shortest character string possible (for example, a character string, but excluding CR/LF), then confirm that the area to be pasted is in an unprotected field.

File Transfer Function on DOS Box

Host File Name and Reserved Words

You should not use the following words as VM file names or file types, as MVS data-set names or as CICS file names because they are reserved for use as option commands. However, if it is essential for you to use them for files, you must add a \ (backslash), as a separate word, immediately after the file name and so on, even if you do not specify any options.

ASCII, APPEND, TIME, CLEAR, NOCLEAR, SILENT, QUIET, PROGRESS, JISCII, SO, NOSO, BLANK, USER

Changing the Packet Size When Import/Export Is Idle

When import/export is idle, select **Setup** from the *Transfer* pull-down menu. When you change the packet size on the *Miscellaneous Settings* dialog box, end import/export, then rerun it.

WAIT option for multiple file transfer

If multiple file transfers do not succeed, insert the following statement into the [Transfer] section of your .WS file:

```
[Transfer]
WAIT=1
```

This parameter will cause a 1000 msec (1 sec) delay between file transfers. If this does not help, you may need to increase the value further.

NOTRUNC and BLANK Options for Host File Transfer Program

If you want to add trailing blanks (spaces) up to the logical record length for each record of a downloading text file, you can use the following options in the *Additional Options* edit field of the *Transfer-Type Definition* dialog-box.

NOTRUNC : for VM/CMS (PTF# UR35492)
NOTRUNC : for MVS/TSO (PTF# UR34797)
BLANK : for CICS

Graphic Functions

Graphic Protocol

PC/3270 allows you to use host-graphics applications such as GDDM and others. Two protocols are supported, known as ***Advanced*** and ***Native***.

Advanced Protocol: You should select the Advanced protocol when you have GDDM Version 2 Release 3 or higher and are using any of the following operating system:

MVS
VSE
VM/SP
VM/XA SP

Note, however, that the Advanced protocol is not supported by the CICS pseudo-conversational mode with versions of GDDM earlier than Version 3, and not by IMS/VS at all. But it is supported by the CICS pseudo-conversational mode with GDDM Version 3 Release 1 or later.

The Advanced protocol mode is equivalent to that used by OS/2 Link and by PC/3270 Version 3.0 and 3.1, so it supports the same subsystems; note,however, that no download of code from the host system is required for PC/3270 because all the OS/2 Link graphics modules are integrated into the program.

Native Protocol: You should select the Native as the protocol when you intend to use the older version of GDDM or other, non-GDDM, host-graphics applications, such as those originally intended to use 3270 non-programmable terminals like the 3179G, 3192G or 3472G.

Note: A 3174 controller requires a terminal to respond within a certain period; if it does not, a Machine Check 207 message will appear. If you are using a coax attachment for graphics in Native mode, this may happen for various reasons, such as the complexity of the graphics drawing-orders or the speed of your PC. In this case, you should change to Advanced mode.

How to Handle Errors Caused by Insufficient Memory

Graphic execution module PCSGRP.DLL uses a large amount of global memory for graphic drawing or printing. When the PC has insufficient installed memory, results may not be obtained correctly. For example, an area may not be clearly shaded.

In this case, increase the amount of installed PC memory by at least one megabyte. For host graphic printing, add one more megabyte.
Memory may have to be further extended depending on the host graphic application and printer driver used.

Drawing Buffer Size

The drawing buffer size varies depending on the contents set for Redraw of a graphic function.

To set **Redraw**, select **Display Setup** from the *Appearance* pull-down menu in the workstation window. On the continuously displayed *Display Setup* dialog box, select **Graphic** from *Category*.

Selecting **Host** from the optional items of **Redraw** requires no buffer.

If you select **Retained**, the graphic execution module stores all redrawing data to a buffer. Such a buffer is called a retained buffer. The buffer size varies depending on the complexity of the graphic data from an application program.

Example:

Simple table ... 10K to 20K bytes
Complicated graphic image... 200K to 300K bytes

When you select **Bitmap** to set **Redraw**, the buffer size will be the same as the sum of the retained buffer size and compatible bit map size.
The following is an example:
(Height) x (Width) x (Number of planes) x (Bits/Pixel) / 8 bytes

Example:
When you select a 7x12 font for a VGA 16-color display model 2 (24x80), the bit map size is as follows:
Bit map size = (7x80) x (12x24) x 1 x 4 / 8 = 80K bytes

When you select a 12x20 font for an IBM PS/55 high-resolution 256-color display model 2, the bit map size is as follows:
Bit map size = (12x80) x (20x24) x 1 x 8 / 8 = 460K bytes

Using Bit Maps for Drawing

The graphic execution module uses a bit map compatible with the display unit to draw an area instruction in overpaint mode. An image instruction requires one plane bit map.

(Buffer for area) = (Area width) x (Area height) x (Number of planes) x (Bits/Pixel) / 8

(Image buffer) = (Image width) x (Image height) / 8

Print Buffer Size

The Retained buffer must be used for printing. The Retained buffer is the same size as that used for redrawing. This is also applied when you specified **Bit Map** for **Redraw** on the *Display Setup* dialog box.

If graphic printing is called in Bit Map mode, the graphic printing module generates a bit map compatible with the connected printer, draws an image on the bit map, and transfers the bit image to the printer.
This operation is generally performed quickly. When memory is frequently swapped, however, the process will slow down in proportion to the number of swap operations. If a large bit map is not allocated, the graphic printing module prints a graphic image normally using only the Retained buffer.

Example: Proprinter (240x144 DPI) character size:
Bit map size = (240x8) x (144x11) x 1 x 1 / 8 = 380K bytes

Example: EPSON (ESC/P) (360x180 DPI color) character size:
Bit map size = (360x8.5) x (180x11) x 3 x 1 / 8 = 2.3M bytes

Note: With some printers, different printing results may be obtained in bit map mode and non bit map mode. If the desired results are not obtained, change the current bit map mode. For example, specify non bit map mode to print in bit map mode.

Edit-Copy Buffer

An editing operation causes the graphic execution module to copy a bit map and DIBitmap to the clipboard. The bit map is compatible with the display; DIBitmap is a 4-bit/pixel bit map.

Printer Fonts

The printer driver can handle two font sets, the device font and GDI font. The device font is a Mincho 6cpi hardware font built into the printer.
The GDI fonts are System (without brackets) or other software fonts for Windows.

When you select a font set for graphic printing from the *Printer Control*dialog box, we recommend use of the GDI fonts for the following reasons.

In bit map mode, a GDI font can be used for printing. However, the device font cannot be used because an image cannot be drawn on a memory bit map when using the device font.
In bit map mode, the device font cannot be used for printing when OR and exclusive OR attributes are mixed.

Plotter

Because a plotter does not support a raster, the following restrictions are imposed on drawing. A plotter should be used for figures and tables that use mainly lines.

No shading is supported.
Some shading patterns cannot be distinguished.
Image order drawing requires much time and the final printout is of poor quality.
The OR and exclusive OR are not correctly reflected.

Hole in Screen Caused by Clearing a Graphic Character

When a character overlaps a graphic image, the graphic image is cleared at the position where the character is to be displayed. When you enter a null character or space having the transparent attribute at the position where a graphic image is displayed, the graphic image in that character cell is not cleared.

If you select **Host** or **Retained** to set **Redraw** on the *Display Setup* dialog box, when characters in a graphic image are cleared, a hole appears in the graphic area. This is because these two modes do not have a bit map image and partial redrawing cannot be performed on the screen.

If you select **Bitmap** mode as *Redraw Graphics*, you can find no hole on the graphic region by the application that overrides any alphanumeric characters (as well as NULL and SPACE) on the graphic image.

Considerations

To restore the screen, perform either of the following:

Press the PA3 key to have the application program redraw the screen.
Minimize and restore the graphic image retained in Retained mode, then redraw it or select Bit Map mode.

Note: When you change the setting of **Redraw** in the **Display Setup** dialog box, the set contents are valid from the next drawing.

Miscellaneous Restrictions for Graphic Function

If Advanced protocol is selected, graphic functions cannot be used in the IMS/VS, and CICS pseudo-conversational mode with versions of GDDM earlier than Version 3.

Print Processing

Using a Printer in Non-SNA Coax Attachment

For the Non-SNA coax attachment, PC/3270 regards the print job within 30 seconds after the previous one as a continuous job with the previous one. PC/3270 determines the job end artificially by the time-out value because it is impossible to determine the job end automatically by the protocol of the non-SNA attachment.

You can change the standard time-out value for adapting to your environment. Specify the following parameter in the [CNDFT] section of the workstation profile (.WS):

[CNDFT]
PrtTimeOut=nn

Note: nn is a decimal value of the timeout in seconds.

Time-out Functions for SNA Host Addressable Print

Concatenation of Multiple Print Jobs to One Print Job: When a new print job comes from the host before expiring the timer specified by the workstation profile, the print job is concatenated to the previous one, and they are regarded as one print job. You can change the timer value by specifying the following parameter in the [printers] section of the workstation profile (.WS):

[printers]
ConcatinateTime=nn

Note: nn is as follows, and its unit is a second:

0:	No concatenation of print jobs
1 – 32767:	Concatenation of print jobs by this time-out value

When the non-SNA attachment is used, the timer should not be specified on the workstation profile.

Termination of a Print Job: When an end of a print job (SNA End of Bracket) does not come from the host until the timer specified by the workstation profile is expired, the print job is automatically terminated. You can change the timer value by specifying the following parameter in the [printers] section of the workstation profile (.WS):

[printers]
TerminateTime=nn

Note: nn is as follows, and its unit is a second:

0:	No automatic termination of a print job
1 – 32767:	Automatic termination of a print job by this time-out value

When the non-SNA attachment is used, the timer should not be specified on the workstation profile.

SCS TRN Command (LU1)

You can change the operation of the SCS TRN command by adding the following specification to the [printers] section of the workstation profile (.WS):

ATRN=Y Transfers data of the SCS TRN command to the printer driver without conversion. In the cases below, however, this parameter is assumed to be ATRN=N.

The printer driver does not support PASSTHROUGH.
The printer driver supports the BANDING function.
BANDING=Y is specified for the [printers] section of the workstation profile (.WS).

Considerations

When you use a printer driver for which PASSTHROUGH function is incomplete, sense code X'1003' is returned to the host system for the SCS TRN command.

ATRN=N Converts data of the SCS TRN command and transfers the result to the printer device driver. You can then specify the following parameters for the [printers] section of the workstation profile (.WS).

3270TRN=Y Converts host codes 40H to FFH to PC codes.

3270TRH=N Does not convert host codes 40H to FFH.

When ATRN=Y and ATRN=N are specified, host codes 00H to 3FH are converted to hyphens (-) or characters specified with the SCS SGEA command. The default value is as follows:

ATRN=Y
327 TRN=N

SCS SPD/SLD Command (LU1)

When the selected font can not be applied to CPI/LPI, this command temporarily switches it to a valid font.

Ignoring Blank Pages

When you cannot print a blank page correctly, check the following:

Some printers ignore a blank page if so specified with the **Printer Setup** option (or setting the printers DIP switches). Check whether the printer is set to enable this option.

Some printer drivers ignore a blank page if so set with the **Printer Driver Setup** option. Check whether this option is supported by the printer driver.

Printing APL Characters

When the fixed pitch GDI font cannot be used with the specified printer driver, no APL characters are printed.

Printing with GDI Font

Some printer drivers do not support the fixed pitch GDI font.

Printing Reverse-Display Character with GDI Font

Some printer drivers that do not support the reverse-display character printing function print reverse-display characters as spaces. To avoid this, add the **REVERSE=N** line to the [printers] section of the workstation profile (.WS).

CPI/LPI of Device Font

When the printer driver cannot print the device font for the specified CPI/LPI, data may be printed by another CPI/LPI.

Printing Reverse-Display Characters with Device Font

Most printer drivers do not support reverse-display character printing with the device font.

Simultaneous Printing Request

Because some printer drivers cannot correctly process a request for two or more print operations, an unrecoverable application error may occur in the print execution module.

PCSERR999 Error Messages

Message "PCSERR999 - This is an internal error of the personal communications" may appear when there is insufficient memory. Because the print job will otherwise remain in the print manager, delete the print job.

Printable Area

Characters may not be printed over the entire paper depending on the printer driver used. When using a printer driver that allows you to set the margins, specify the minimum margins to maximize the printable area.

SVF Control Code

If the maximum print line (MPL) is shorter than the paper size in the SVF control code, when the printing position reaches MPL, a page feed is performed.

Notes on Using a Printer Session

When you perform printing without using the Windows print manager, and the printer is temporarily disabled for some reason (for example, printing is impossible, a paper-out occurs, or the power is not turned on), the message dialog box appears on the Windows screen. The host system is not notified.

If you select **Cancel** on the dialog box, the PC/3270 sends the **Cancel Printing** command to the host system and printing is canceled.

PDT Mode

Printing using the PDT file is restricted as follows:

A graphic image is printed through the Windows printer driver specified in "Printer Setup", regardless of the PDT mode.
No APL character can be printed.
The Postscript printer is not supported. (There is no PDF file for the Postscript printer.)

Using PC/3270 in OS/2 V2.1 WIN-OS/2

When you use the PC/3270 in the OS/2 V2.1 WIN-OS/2, establish the LAN environment. The other attachments are restricted as follows:

At COAX (3270 adapter) attachment, if this system is used together with another OS/2 application program and DOS/Windows application program, machine check 207 is reported and the line may be disconnected. In this case, specify the following parameters:

OS/2 parameter
Set OS/2 IDLE_SENSITIVITY = 1
Set OS/2 IDLE_SECONDS = 6

3174 customize parameter
Q126 DIGIT 2 = 1
Q125 DIGIT 4 = 1

Note that host printing (LU1/3) may not be fully supported.

For SDLC attachment and home 3270 attachment in which the line speed is high, OS/2 Windows is not supported.

If necessary, refer to the OS/2 V2.1 presentation letter. It describes the compatibility items supported by Windows application programs. The restrictions described are also apply to the PC/3270.

Avoiding Machine Check 207

When you use the coaxial cable attachment, patch the microcode of the 3174 control unit. In this way, you can prevent an error that would be reported by machine check 207. The following shows the correspondence between 3174 control unit microcode levels and patch IDs:

Microcode Level	Patch ID
S0503	PCA53D1
S0504	PCA53D2
A0503	PCA53D3
A0504	PCA53D4
B0200	PCA53D5
B0401	PCA53D6
B0402	PCA53D8
C0101	PCA53D7

Also specify the following 3174 customization parameter:

Q126 DIGIT 2 = 1
Q125 DIGIT 4 = 1

For an explanation of patching, contact your system administrator.

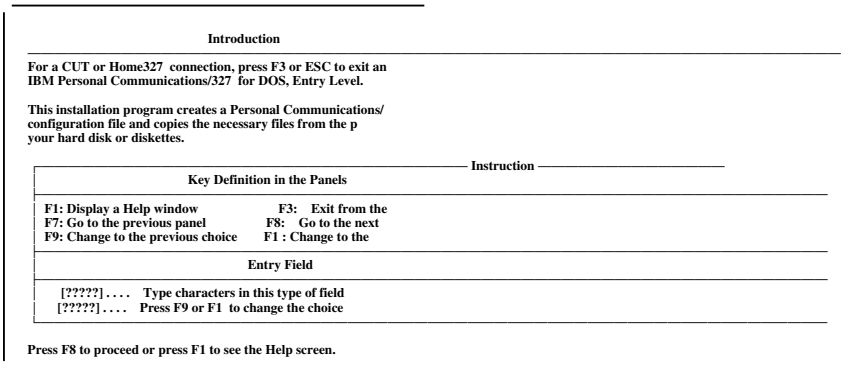
Considerations and restrictions on use of the PC/3270, and supplementary information other than the items described in this appendix are stored on the installation diskette as a file. To access this information, refer to the **README.TXT** file that is saved in the directory to which the PC/3270 is installed, or double-click the **Readme - Please!** icon or **How to Configure Session** icon displayed in the Personal Communications Program Group.

Appendix D. Gateway Installation

1 Insert the backup copy of the *Full-Function DOS Diskette 1 (Installation)* into drive A.

2 Type **A:** and press Enter, then type **INSTALL** and press Enter. The IBM Logo panel is displayed for a few seconds.

3 The introduction panel appears after the logo panel.



Help

Pressing F1 displays a help panel and provides more details of the installation program operations.

General Instructions

In all the panels, change the field entries as necessary and press F8 to proceed.

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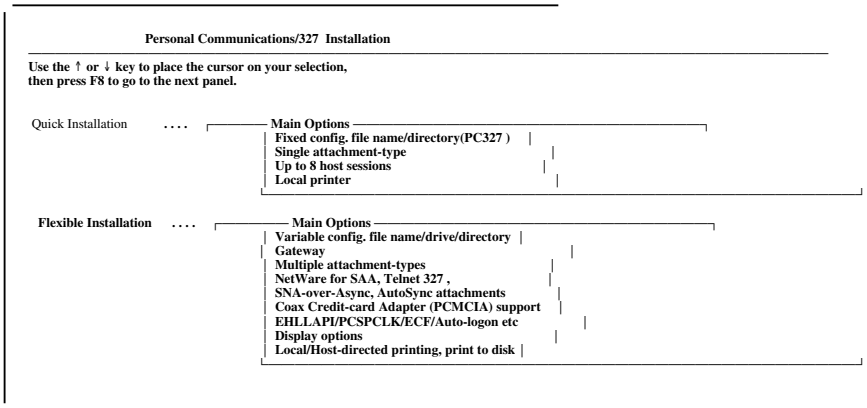
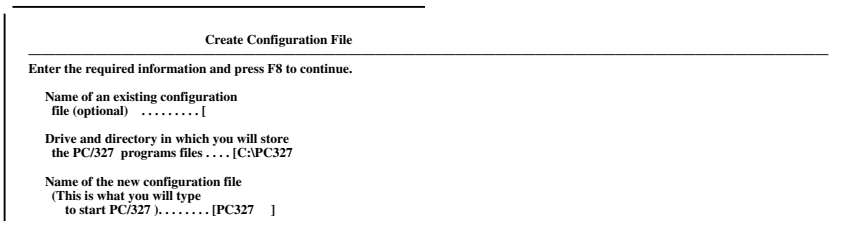
Gateway Installation

1 Personal Communications/3270 Installation



Move the cursor to **Flexible Installation** and press F8; the following panel appears.

2 Create Configuration File



3 Change the field entries as necessary.

Name of an existing configuration file
If you are reinstalling or are using a configuration file that was provided by someone else, enter the name of the existing configuration file. Otherwise leave the field blank.

Drive and directory in which you will store the PC/3270 programs files
Change if necessary. The default shows that the configuration file you create will be stored in:

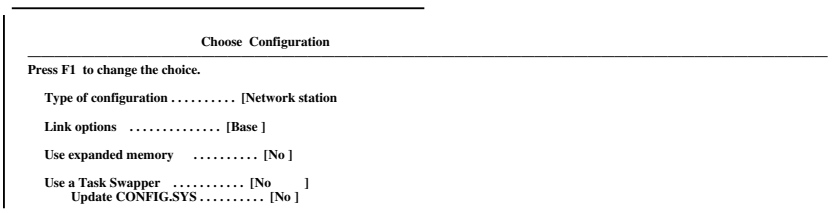
Drive: C
Subdirectory: PC3270

This default can differ if you are using an existing configuration file.

Note: If you have already installed PC/3270 Windows mode in your PC, make sure that you specify a different directory.

Name of the new configuration file
Enter the name of the configuration file that you are going to create. This file name is used as the start command for PC/3270 after installation.

4 Choose Configuration



a Select **Gateway** for **Type of configuration** by pressing F10.

b Leave **Base** for **Link options** unchanged.

c Select **Yes** for **Use expanded memory** if you intend to use Expanded Memory for PC/3270. Refer to the *Reference for DOS (Full-Function Mode)*, if you need more information.

Otherwise select **No**.

Note: If you are configuring only for a gateway, but not for the gateway with local sessions, this selection does not affect the run-time conventional memory usage.

d Leave **No** for **Use a Task Swapper**; the gateway configuration does not support it.

The following figure shows the sequence of the gateway configuration panels that are displayed during the installation operations.

Gateway Installation

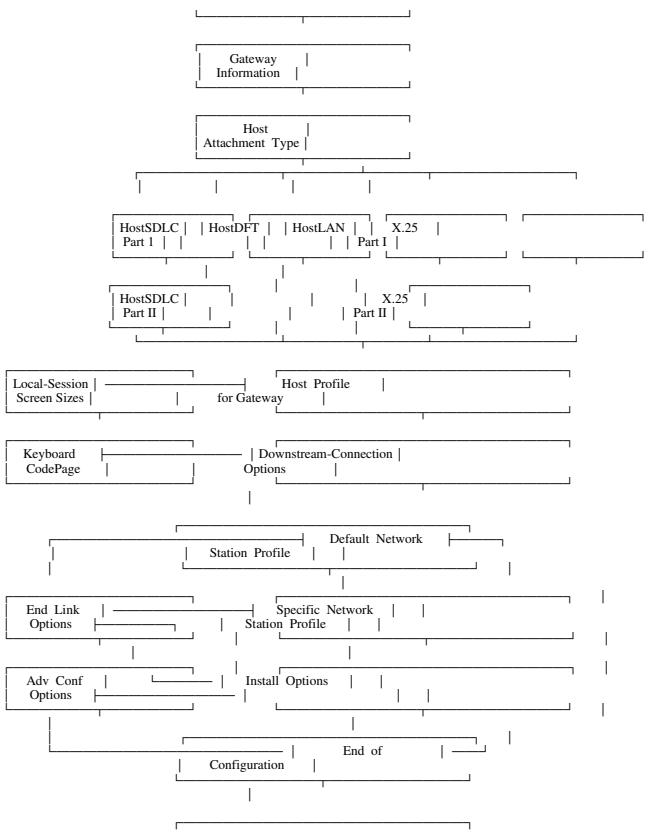
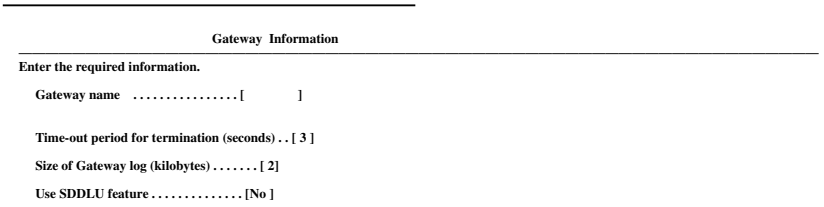


Figure 23. Gateway Panel Sequence

5 Gateway Information

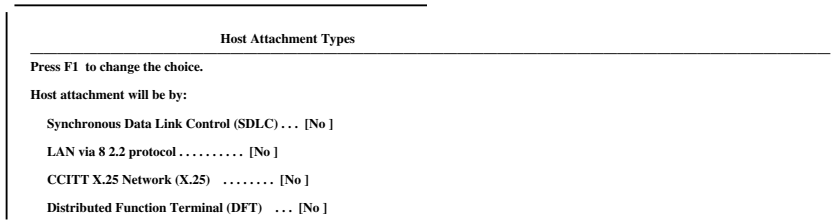


6 The following table describes the options.

Option	Description
Gateway name	This option identifies the gateway to the IBM NetView00 program as a control point on the network. The name can be up to 8 alphanumeric characters. You can type either uppercase or lowercase characters; however, they are displayed on the screen as uppercase characters.
Time-out period	This option refers to the amount of time from when an immediate termination begins to when the gateway shuts down. This option does not affect terminate after Unbind. The **Time-out period** ranges from to **999** seconds (approximately 16.5 minutes).
Size of gateway log	This option lets you specify the amount of storage that will be used for the gateway link log. In the gateway link log, the gateway records information that is displayed in the operator information area (OIA) of a workstation. The log is a wraparound buffer. You can type a value between and **64** for the number of kilobytes of storage to be used. If you specify , messages are not saved and are displayed only when the Gateway Status Utility is running. The default value for this parameter is **2**KB.
SDDLU feature	This option is used to indicate whether you intend to use the Self-Defining Dependent Logical Units (SDDLU) feature for ACF/VTAM00 Version 3 Release 4.1.

Gateway Installation

7 Host Attachment Types



This panel lets you select any one of four options for the host attachment.

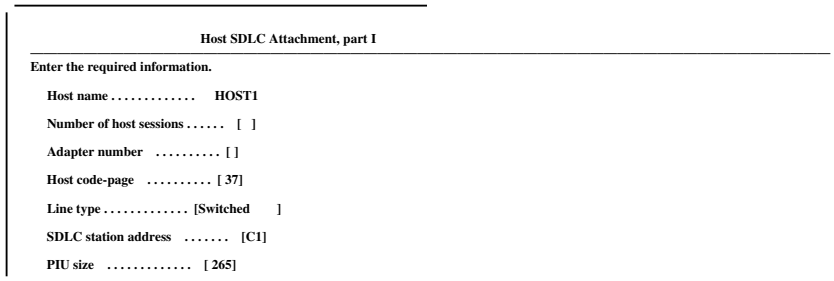
Select the host attachment you want; only one is allowed.

Select **No** for the other options.

Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Host SDLC Attachment, part I	Step 8
Host DFT Attachment	Step 10 on page 205
Host LAN Attachment through 802.2 Protocol	Step 11 on page 205
Host X.25 Attachment, part I	Step 12 on page 207

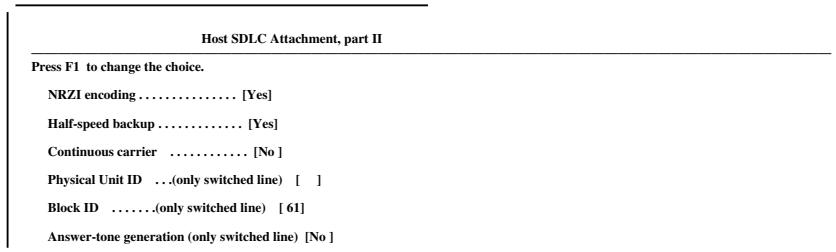
8 Host SDLC Attachment, part I



The following table describes the options.

Option	Description
Host name	This option defines the communications link with the host system. It cannot be changed. It is used throughout the installation procedures to identify the host connection.
Number of host sessions	This option specifies the number of host sessions that the gateway will distribute to the LAN. This option ranges from **1** to **253**. The default value for this option is .
Adapter number	This option is the SDLC adapter number that the gateway will use. Note that the gateway supports only one host attachment. You can select values of or **1**; the default value is .
Host code-page	This option identifies the code page that is used by the host system to which the gateway connects. **Note:** Code-page selections of downstream network stations are not affected.
Line type	This option indicates whether the connection to the host system is through: A switched line, over which communication to the host is established by dialing a number or A nonswitched line, which provides a permanent connection to the host; this is also known as a leased line.
SDLC station address	This entry specifies the SNA address of the physical unit (PU) for this workstation; it must match the PU ADDR definition for a nonswitched connection in the Network Control Program (NCP). Valid input is a hexadecimal number between X'00' and X'FF'; the default value is **X'C1'**. Although this option might not be required for a switched connection, it is recommended that you use the default value.
PIU size	This option is the size of the link-level transmission unit that is used during communications between the gateway and the host system. The value ranges from **265** to **2 57**. The default value is **265**.

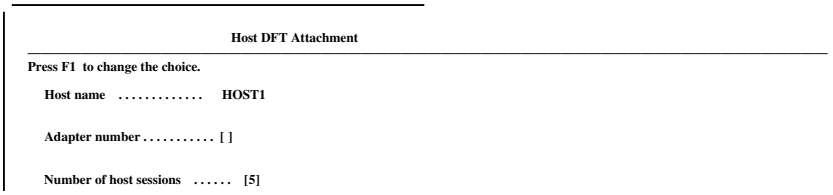
9 Host SDLC Attachment, part II



Option	Description
NRZI encoding	This option indicates whether Non-Return to Zero Inverted (NRZI) encoding is to be used for this connection. This selection must match the NRZI= statement on the PU definition in the NCP generation.
Half-speed backup	This option indicates whether you want your modem to change to half speed in the event that communication at full speed is unsatisfactory. This is valid only if half-speed backup is supported by your modem. Select **Yes** if half-speed backup is required and your modem allows it.
Continuous carrier	This option indicates whether you want to use the continuous carrier capability of your modem (assuming that the modem has this capability). This is also known as *constant request to send*. Continuous carrier will usually enhance the performance of communication. It can be used on both switched and nonswitched connections. This function must be supported by the modems at both ends of the link; select **No** if you do not know that this is the case.
Physical Unit ID	This option identifies this specific device in an SNA network. It is mandatory for a switched connection but is not used for a nonswitched connection. If it is used, this value is concatenated with the block ID and sent to the host during link activation; the combined value serves to identify the device requesting the link. This value must match the IDNUM definition in VTAM. Valid input is a hexadecimal number between and **FFFFF**.
Block ID	This option denotes the device or product type in an SNA network. It is mandatory for a switched connection but is not used for a nonswitched connection. If it is used, this value is concatenated with the physical unit ID and sent to the host during link activation; the combined value constitutes the XID and serves to identify the device requesting the link. This value must match the IDBLK definition in VTAM. Valid input is a hexadecimal number between and **FFF**. The default value is **61**. You can change this if you want to use a host PU that has already been defined and that has a different block ID.
Answer-tone generation	This option indicates whether PC/3270 should generate an answer tone in response to an incoming call or whether this should be left to the modem. This option is valid for a switched connection only. Select **Yes** if PC/3270 is to generate an answer tone; select **No** if the modem will do so.

Go to step 14 on page 209.

10 Host DFT Attachment



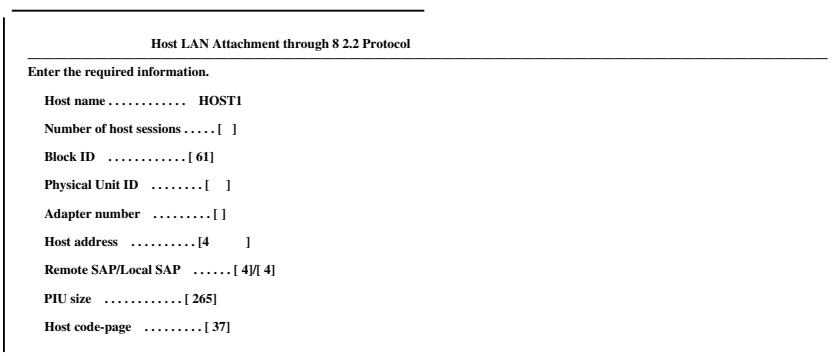
Note: The gateway supports only SNA for DFT attachment.

The following table describes the options.

Option	Description
Host name	This option defines a communications link with the host system and cannot be changed. It is used throughout the rest of the configuration procedures to identify this host connection.
Adapter number	This option is the number of the DFT adapter that the gateway will use. Note that the gateway supports only one host attachment. You can select values from to **3**. The default value is .
Number of host sessions	This option specifies the number of host sessions the gateway will distribute to the LAN. This option ranges from **1** to **5**. The default value for this option is **5**.

Go to step 14 on page 209.

11 Host LAN Attachment through 802.2 Protocol



This panel allows you to configure options for the 802.2 connection to the host system. This connection can use the same adapter, LAN, or either, as the downstream network stations. Downstream communications options are

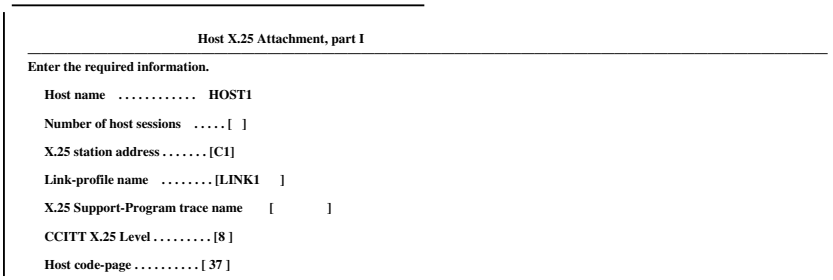
configured in the Downstream-Connection Options, Default Network-Station Profile, and Network-Station Profile Panels.

The following table describes the options.

Option	Description
Host name	This option defines a communications link with the host system. It cannot be changed. It is used throughout the rest of the configuration procedures to identify this host connection.
Number of host sessions	This option specifies the number of host sessions the gateway will distribute to the LAN. This option ranges from **1** to **253**. The default value for this option is .
Block ID	This option identifies the product type. It is combined with the **Physical Unit ID** to identify the gateway to the host system. The **Line type** must match the block ID configured on the host system; the value can range from to **FFF**. The default value is **61**.
Physical Unit ID	This option is used with the **Block ID** to identify the gateway to the host system. The **Physical Unit ID** must match the PUID configured on the host system when it was configured for the gateway; it is a 5-digit hexadecimal number. The default value is .
Adapter number	This option is the number of the LAN adapter that the gateway will use for the host attachment. Note that the gateway supports only one host attachment. You can select values of or **1**. The default value is .
Host address	This option corresponds to the LAN address used by the host controller. Your system administrator should supply this number. This option is a hexadecimal value between and **7FFFFFFFFFFF**. The default value is **4** .
Remote SAP	This option defines the service access point (SAP). SAP is configured at the controller that provides connectivity to the host system. All current controllers use a SAP of **4**, which is the default value for this option. This option is a hexadecimal value that ranges from **4** through **EC** in multiples of four.
Local SAP	This entry specifies the SAP for the workstation; it must match the SAP number that is configured for this workstation in the gateway. This option is a hexadecimal value that ranges from **4** through **EC** in multiples of four.
PIU size	This option is the size of the link-level transmission unit that is used during communications between the gateway and the host system. The **PIU** size ranges from **265** to **2 42**. The default value is **265**.
Host code-page	This option identifies the code page that is used by the host system to which the gateway connects. **Note:** Code-page selections of downstream network stations are not affected.

Go to step 14 on page 209.

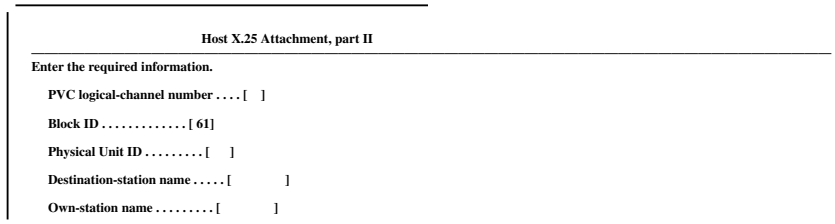
12 Host X.25 Attachment, part I



The following table describes the options.

Option	Description
Host name	This parameter defines a communications link with the host system. It cannot be changed. It is used throughout the rest of the configuration procedures to identify this host connection.
Number of host sessions	This option specifies the number of host sessions the gateway will distribute to the LAN. This option ranges from **1** to **253**. The default value for this option is .
X.25 station address	This entry identifies the station on the packet-switching data network. The entry is derived from the IBM X.25 Co-Processor Support Program. The entry must match the X.25 station address for the target system.
Link-profile name	This option is defined by the IBM X.25 Co-Processor Support Program. This entry must match the link-profile name for the target system.
X.25 Support-Program trace name	This option specifies the name of the file to be used by the IBM X.25 Co-Processor Support Program to trace X.25 packets/frames. If a trace name is not specified, tracing is not performed.
CCITT X.25 Level	This option is the CCITT X.25 recommendation level that is used on the packet-switching data network to which the station connects. You can select **8** or **84**.
Host code-page	This option identifies the code page that is used by the host system to which the gateway connects. **Note:** Code-page selections of downstream network stations are not affected.

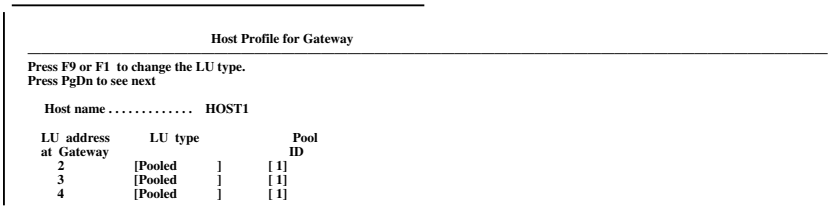
13 Host X.25 Attachment, part II



The following table describes the options.

Option	Description
Block ID	This option identifies the product type. It is combined with the **Physical Unit ID** to identify the gateway to the host system. The **Block ID** must match the block ID configured on the host system; the value can range from to FFF. The default value is **61**.
Physical Unit ID	This option is used with the **Block ID** to identify the gateway to the host system. The **Physical Unit ID** must match the PUID configured for the gateway on the host system; it is a 5-digit hexadecimal number. The default value is .
PVC logical-channel number, Destination-station name, Own-station name	If you specify a value for the **PVC logical channel number**, you do not need to specify a **Destination-station name** or **Own- station name**. If you do not specify a PVC logical-channel number, you must provide at least a **Destination-station name**; this is a call nickname defined by the IBM X.25 Co-Processor Support Program.

14 Host Profile for Gateway



Note: If you selected the SDDLU feature in step 5 on page 201, Pool ID will not appear.

When the host system is configured, LUs are allocated to the gateway. This panel defines these LUs to the gateway.

The following table describes the options.

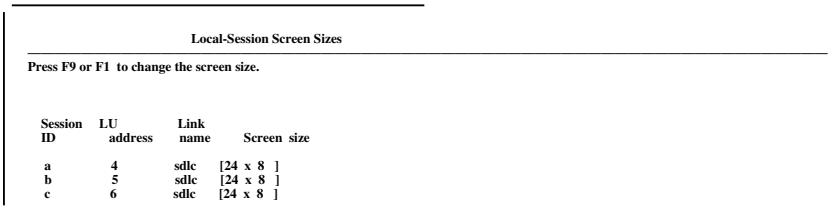
Option	Description
Host name	This option defines a communications link with the host system. It cannot be changed. It is used throughout the rest of the configuration procedures to identify this host connection.
LU address at gateway	The first column of this panel displays the addresses defined at the host system (and therefore for the upstream link at the gateway) for all the LUs that this gateway will distribute. The addresses in this column range from **X' 2'** to the number defined in the Attachment panel, and they cannot be changed. If you specified more than 10 host sessions, there will be additional Host Profile screens; you can scroll up or down through these screens by pressing PgUp or PgDn. If you selected **SNA DFT**, the column heading is **Gateway LT number** and can contain up to five **LT numbers**. The **LT numbers** start at **1** and end with the number you specified for the **Number of host sessions** option in the Host DFT Attachment panel.

Option	Description
LU type	The second column of this panel, **LU type**, specifies the classification into which the gateway LU falls. You can scroll these values to one of the following: **Pooled:** Pooled LUs are logical units that share host sessions in a common pool. LUs are assigned to a pool by specifying an LU type of ***pooled*** and assigning a pool number to the LU. There is no restriction on which LUs can belong to a pool or on the size of a pool. It is recommended that all of the LUs in a pool be as similar as possible. For example, it is unwise to assign LUs for display station sessions to a pool that contains printer sessions, because there is no way of knowing if a network station is assigned a display station LU or a printer LU. Pools are useful for saving resources. For instance, if you have 20 terminals but only have a maximum of 15 sessions logged on at any one time, you can create a pool with 15 sessions and have all 20 network stations use that pool. This method frees five sessions if each terminal previously had a dedicated host LU. **Preallocated:** Preallocated LUs are assigned to the specific network stations during configuration using the Network Station Profile panel. These LUs are available only to the specified network station. Preallocated LUs are useful for host applications that require specific equipment (such as a printer). **Unused:** Unused LUs are not allocated to any network station. **Local:** The gateway can have up to 8 of its own screen or printer sessions; they are called local LUs and are not available to network stations. **Note:** Heavy use of local LUs degrades the performance of each local LU and all network station LUs that are downstream from a gateway.
Pool ID	The third column lists the **Pool ID** to which an LU is assigned. The **Pool ID** is left blank and is ignored if the LU type is not set to **Pooled**. If the LU type is **Pooled**, the **Pool ID** can be set to any value between **1** and **2**. The default value is **1**. **Note:** If you selected the SDDLU feature in step 5 on page 201, this option will not appear.
Page select	This option allows you to move quickly to a particular profile page. To select a page, enter the page number, and press F2.

Depending on the panel that appears, go to the appropriate step as follows:

Panel Title	Go To
Downstream-Connection Options	Step 17 on page 212
Local-Session Screen Sizes	Step 15 on page 211

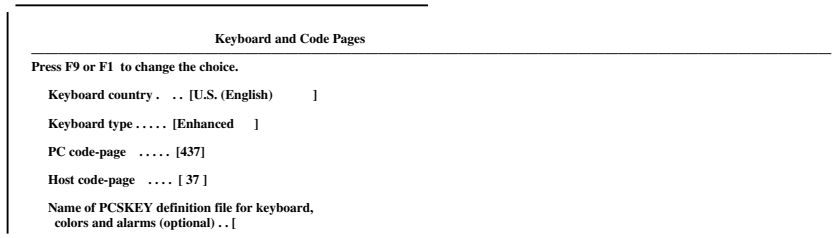
15 Local-Session Screen Sizes



The following table describes the options.

Option	Description
Session ID	There is one ID for each of the gateway's own sessions. Up to eight identifiers with values from **a** through **h** can be displayed. These IDs cannot be modified.
LU address	The LU address is for the gateway's own sessions.
Link name	This option identifies the name that is assigned to the logical unit. The values in this column cannot be modified and will be one of the following: **sdft** Attachment is SNA DFT **sdlc** Attachment is SDLC **lan**n Attachment is LAN through the 802.2 protocol **x25**n Attachment is a CCITT X.25 recommendation PSDN
Screen size	You can scroll the values in the **Screen size** column to any of the following: **24 x 8** **32 x 8** **43 x 8** **27 x 132**

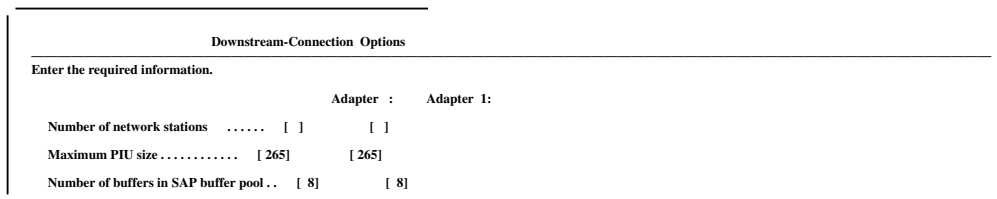
16 Keyboard and Code Pages



The following table describes the options.

Option	Description	
Keyboard country	This option defaults to the current DOS country code. The field can be scrolled forward or backward through an alphabetic list of supported countries. (If no country is specified in DOS, the **Country** option defaults to **US**.)	
Keyboard type	**Host-Connected**	Host-connected keyboard
	AT	PC AT keyboard
	XT	PC, PC XT, and PC Portable keyboard
	Space Saving	Space-Saving keyboard (applicable to the U.S. only)
	Enhanced	Enhanced keyboard
PC code-page	This option defaults to the currently active code page.	
Host code-page	This option defaults to the code-page appropriate to the country specified in the first field.	
Name of definition file	This option allows you to specify a keyboard definition file that is used to redefine keyboard layout, colors, and alarms.	

17 Downstream-Connection Options



This panel is used to configure the maximum number of network stations that can be connected to the gateway at the same time. Since the gateway supports two downstream adapters, this value is broken down into the maximum number that can be attached to the gateway through each adapter. The true maximum is the sum of these values.

Note: Please refer to the *Reference for DOS (Full-Function Mode)* for information concerning the effect of the following parameters on adapter resources.

The following table describes the options.

Option	Description
Number of network stations	This option defines the maximum number of network stations that are allowed to connect to the gateway through each of two adapters. This value can be from to **253**. If only one adapter is used, the value for the other adapter should be .
Maximum PIU size	This option is the greatest size of the link-level transmission unit that is used during communications between the gateway and the network stations. The **Maximum PIU size** ranges from **265** to **2 42**. The default value is **265**.
Number of buffers in SAP buffer pool	This option defines the number of buffers that are reserved to hold received frames. This option should be changed only if performance is being degraded by a shortage of buffer space. Please refer to the *Reference for DOS (Full-Function Mode)*. The value can be from **8** to **999** for each LAN adapter in the gateway. The default for each buffer is **8**. Note that these buffers use PC memory.

18 Default Network-Station Profile

```
                    Default Network-Station Profile
Press F1  to change the choice.

   Allow network stations to connect
     using this default profile   ....   [Yes]

   PIU size ..............   [ 265]

  LU  address
  at  network        Session                Pool
  station            type                   ID

      2              [Pooled]               [ 1]
      3              [Unused]               [   ]
```

Note: If you selected the SDDLU feature in step 5 on page 201, Pool ID will not appear.

This panel is used to define the resources that will be allocated to a network station that is attempting to connect, but that has a PUID that is not known to the gateway.

If the host profile is changed so that it is inconsistent with one or more network station profiles, the inconsistent network station profiles are displayed when you press F6 to file them.

The following table describes the options.

Option	Description
Allow network stations to connect	This option can be scrolled from **Yes** to **No**. If you select **Yes** for this option, the characteristics of a default network station can be specified.

Option	Description
PIU size	This option defaults to the larger PIU size that you specified on the Downstream-Connection Options panel. The range is from **265** to **2 42**.
LU address at network station	This column identifies the LU addresses at the workstation. The values in this column cannot be changed.
Session type	This option is used to indicate whether an LU is allocated to the network station; it can be scrolled between **Pooled** and **Unused**. Specify **Pooled** to indicate that a session will be allocated.
Pool ID	The third column lists the **Pool ID** to which an LU is assigned. It is valid only for pooled sessions. It can be set to a value from 01 to 20. The **Pool ID** option defaults to **1** for LU 02 and to blank for LUs 03 through 09. **Note:** If you selected the SDDLU feature in step 5 on page 201, this option will not appear.

If you want to file the configuration without defining specific network stations, do the following:

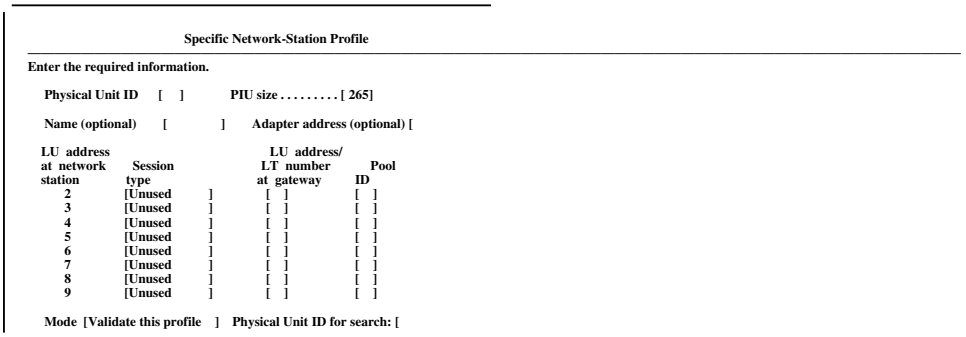
If you have specified one or more *local* sessions:

a. Press F6.
b. The End of Link Options panel is displayed and you can select Advanced Configuration Options.
c. Go to step 5 on page 60.

Otherwise:

a. Press F6.
b. Go to step 10 on page 67.

19 Specific Network-Station Profile



```
                    Specific Network-Station Profile
Enter the required information.

  Physical Unit ID    [    ]        PIU size . . . . . [ 265]

  Name (optional)     [          ]   Adapter address (optional) [

 LU address                          LU address/
 at network     Session              LT number        Pool
 station        type                 at gateway       ID
    2           [Unused      ]       [    ]           [    ]
    3           [Unused      ]       [    ]           [    ]
    4           [Unused      ]       [    ]           [    ]
    5           [Unused      ]       [    ]           [    ]
    6           [Unused      ]       [    ]           [    ]
    7           [Unused      ]       [    ]           [    ]
    8           [Unused      ]       [    ]           [    ]
    9           [Unused      ]       [    ]           [    ]

  Mode  [Validate this profile   ]   Physical Unit ID for search: [
```

Note: If you selected the SDDLU feature in step 5 on page 201, Pool ID will not appear.

This panel allows you to configure the resources to be allocated to specific network stations; each station must have a unique PUID.

The information specified in the Specific Network Station Profile and in the other profiles must be consistent with the information specified in the Host Profile for Gateway. For example, if a network station profile specifies a *preallocated* session type and an LU address of 45, LU address 45 must be included in the Host Profile for Gateway and must have a *preallocated* session type. The following table describes the options.

Option	Description
Physical Unit ID (PUID)	A network station sends its physical unit ID (PUID) to the gateway when it requests a connection; the PUID identifies the network station to the gateway. Only one specific network station profile is allowed for a given PUID. The value must be 5 digits in length.
PIU size	This option defaults to the larger PIU size that you selected on the 802.2 Downstream Options panel. The range is from **265** to **2 42**.
Network station name	This is optional but can consists of 8 alphanumeric characters. If a name is not provided, the characters **PU**, followed by the PUID, are used in alerts sent by this station.
Adapter address	This option specifies the address of the LAN adapter from which this PUID must be received to allow it to connect to the gateway. The adapter address is a hexadecimal value, the range is from 0 to 7FFFFFFFFFFF.
Session type	This option is used to indicate if a **Gateway LU** is allocated to the network station and at which network station LU address. It can be scrolled between **Pooled, Preallocated**, and **Unused**.
LU address/LT number at gateway	This is used only when the **Session type** option is set to **Preallocated**. The range of this option is from **2** to one more than the number of host sessions specified in the host attachment panel for the attachment type you have selected.

Option	Description
Pool ID	If the session type is **Pooled**, the **Pool ID** option is used and can be set to any value between **1** and **2** . **Note:** If you selected the SDDLU feature in step 5 on page 201, this option will not appear.
Mode	This option allows you to create or edit network station profiles. To select and activate the desired mode, press F2. The following modes are available: **Validate this profile**: Select this mode to check the currently displayed profile. If no error is found, the following message is displayed: **Current profile is valid** If an error is found, the appropriate error message is displayed. **Specific-profile search**: Select this mode to display a previously-defined network station profile. Enter the PUID for the profile you want to display in the **Physical Unit ID for search** field and press F2. **Find first profile**: Select this mode to display the profile with the lowest PUID number. **Find last profile**: Select this mode to display the profile with the highest PUID number. **Create new profile**: Select this mode to display a blank profile. **Copy to new profile**: Select this mode to copy information from the currently displayed profile to a new blank profile panel. All information is copied except the PUID, which must be entered on the new panel. **Delete this profile**: Select this mode to delete the currently displayed profile. To ensure that you do not delete a profile accidentally, the following message is displayed when you press F2: **Change mode or press F2 to delete** Press F2 again to delete the profile. **Go to default profile**: Select this mode to move directly to the Default Network Station Profile.

When you press F2, PC/3270 checks the current panel. If there are errors on the panel, you must correct the errors before entering any mode.

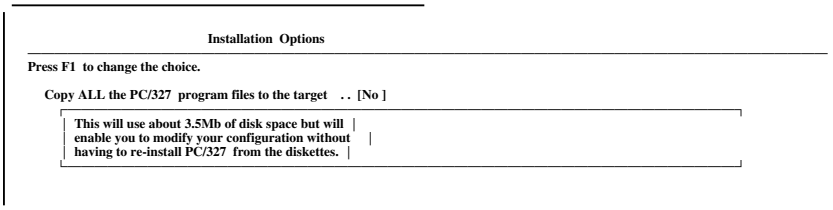
Notes:

a. If you selected **Local** for **LU type** in step 14 on page 209, the **End of Link Options** panel will apear. Then you can change the **Advanced Configuration Options**. Please refer to step 4 on page 59.

b. Pressing F7 displays the previous network station profile.

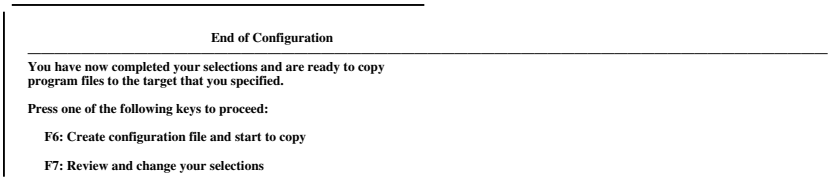
Press F6 to file the configuration.

20 Installation Options



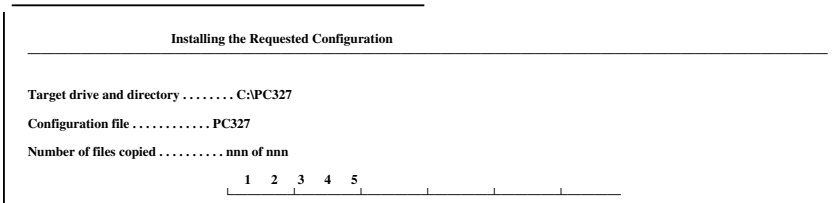
Note: If you selected **Local** for **LU type** in step 14 on page 209, you can see the **PC/3270 starts automatically after power on** option in this panel.

21 End of Configuration



Press F6 to create a configuration file according to your selections or press F7 to review and change your selections.

22 Installing Your Configuration



Note: Several templates showing the keyboard functions of PC/3270 are supplied; choose the one appropriate to the layout of your keyboard. There is no template for the host-connected keyboard.

a Make sure that the LAN Support Program is installed and is configured correctly to support your configuration (refer to the *LAN Support Program User's Guide*).

Gateway Installation

b A PC/3270 gateway does not use the NetBIOS interface. Unless you need this for any other application, do not install **DXMT MOD.SYS**.

c Reboot the PC and start PC/3270 by entering the name of the configuration batch file.

Appendix E. Exchanging Files with OfficeVision/MVS

OfficeVision/MVS is a menu-driven office-systems communication program that runs under the IBM Customer Information Control System (CICS) application program. A PC/3270 utility called TRANSFER is used to transfer files that are in Final-Form-Text (FFT) format between a PC and OfficeVision/MVS; the process is commonly known as IMPORT/EXPORT.

Setting Up the TRANSFER Program

To set up the **TRANSFER** program to send documents through OfficeVision/MVS:

1. Jump to the host session in which you will be performing your file transfers, session b for example.
2. If you are not already logged on, log on to your host.
3. Select the OfficeVision file transfer menu.
4. Jump to your PC session.
5. Enter the TRANSFER command; for example:

   transfer b

   This command gets you ready to transfer files between your PC session and the host session named b.
6. When TRANSFER has completed its setup with your host session and is waiting for a file transfer to be started from the host computer, you will see this message:

   INDXF 1 File transfer waiting for work. Press End to quit.

   and the host session will appear automatically.

   Now you are ready to use the OfficeVision/MVS application program to transfer files. Refer to your OfficeVision/MVS documentation for specific information.

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What You See When TRANSFER Is Running

OfficeVision/MVS displays status and error messages in your PC session, so you cannot do other work in your PC session until you end the transfer program.

After you start file transfer from your host session, the PC will switch to the DOS session so that you can watch the progress of your file transfer.

When file transfer begins, you will see this message:

INDXF 2 File transfer started for:
xxxxxxxx.xxx (the name of the file you are transferring)

You can allow the file transfer to proceed or, if you want to cancel it, press Ctrl+Break. If you cancel the transfer, you will see this message:

INDXF 36 Current file transfer canceled by user

Otherwise, you will see a progressive status message telling you how much information has been transferred:

INDXF 3 xxxxxxxx Data and xxxxxxxx Profile characters transferred
so far

When the file transfer is complete, you will see this message:

INDXF 4 File transfer complete

At this point, you can either start another file transfer from your host session or press End to quit the transfer program.

Receiving Documents at Your Workstation from OfficeVision/MVS

When OfficeVision/MVS sends you a final-form-text document, it also sends you a *header* file, which has the extension **.IDP**, meaning *Interchange Document Profile*; this file contains descriptive information about the document. For example, if you receive a document called **AWARDS.FFT**, you will also receive a file named **AWARDS.IDP**.

Do not erase the **.IDP** file; if you want to send the document back to OfficeVision, the file must be available to accompany the document.

Note: If you rename the document, you must also rename its **.IDP** file. If you do not, you will not be able to send the document back to OfficeVision.

Sending Documents That You Create to OfficeVision/MVS

If you want to send to OfficeVision/MVS an FFT document that you created, you must also create an IDP file so that it is available to accompany the document; you must use the **INDIDP** program to do this.

For example, if you created a document named **GRAPH.FFT** and want to send it to OfficeVision/MVS, follow this procedure:

1. Jump to your PC session.
2. At the DOS prompt, enter:

   indidp graph.fft

   The name of your file will be included automatically when the IDP File Utility prompts appear, as shown below; you will also see a prompt for *author name*:

```
Final Form Text IDP File Utility


Creating IDP file for:
GRAPH.FFT
Press Enter after typing the information.
Press Ctrl+Break to Quit.

Author Name (Optional):

_____
```

At this time, you can

Type your name and press Enter.

Press Enter to proceed without typing your name.

Press Ctrl+Break to end the procedure without creating the IDP file.

If you enter your name, a *subject* prompt will appear, as illustrated:

```
Final Form Text IDP File Utility


Creating IDP file for:
GRAPH.FFT
Press Enter after typing the information.
Press Ctrl+Break to Quit.

Author Name (Optional):
MERRY LAMB_______________


Subject (Optional):



_________________________
```

At this time, you can

Type a subject and press Enter.

Press Enter to create the IDP file.

Press Ctrl+Break to end the procedure without creating the IDP file.

3. Pressing Enter causes the utility to create the IDP file and you will see this message when the procedure is complete:

```
Final Form Text IDP File Utility


Creating IDP file for:
GRAPH.FFT
Press Enter after typing the information.
Press Ctrl+Break to Quit.

Author Name (Optional):
MERRY LAMB_______________


Subject (Optional):
YEAR END SALES FIGURES___
INDID  1 File creation is complete.
```

If the IDP utility is unable to create the IDP file, for example, if the document **GRAPH.FFT** already has an IDP file, you will receive a message.

4. Once the IDP file has been created, start the TRANSFER process as described earlier.

If You Have Difficulty

If you have any problems when using the transfer program, you will not lose your original files; when transfer begins, the program creates two temporary files. For example, if you were trying to send a document called **HOLIDAYS.FFT**:

1. **HOLIDAYS.FFT** would be in your DOS directory as **$TEMP.DOC**
2. **HOLIDAYS.IDP** would be in your DOS directory as **$TEMP.IDP**.

All messages are interpreted in the *Reference for DOS (Full-Function Mode)*; those for the transfer program have the prefix INDXF and those for the IDP utility have the prefix INDIDP.

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