User's Guide

Communications Family

IBM

**Personal
Computer
Software**

IBM PC 3270 Emulation Program Version 2.00

User's Guide

IBM

**Personal
Computer
Software**

First Edition (March 1986)

Changes are made periodically to the information herein; these changes will be incorporated in new editions of this publication.

This publication contains examples of data and reports used in daily business operations. All names of individuals, companies, brands, and products used in these examples and reports are fictitious, and any similarity to the names, addresses, or products used by an actual business enterprise is entirely coincidental.

The following paragraph applies only to the United States and Puerto Rico: International Business Machines Corporation provides this manual "as is," without any warranty of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. IBM may make improvements and/or changes in the products and/or program(s) described in this manual at any time and without notice.

Publications are not stocked at the address below. Requests for copies of this product and for technical information about the system should be made to your authorized IBM Personal Computer dealer.

A product comment form is provided at the back of this publication. If the form has been removed, address comments to: IBM Corporation, Personal Computer, P.O. Box 1328-C Boca Raton, Florida 33432. IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligations whatever.

About This Book

For purposes of brevity and simplicity, the title of this product is shortened throughout this book to either the *IBM PC 3270 Emulation Program* when referring to this or other product publications, or, when referring to product functions, features, and other capabilities, to simply *IBM PC 3270 Emulation.*

Purpose of Your "IBM PC 3270 Emulation Program, Version 2 User's Guide"

The primary goal of your *IBM PC 3270 Emulation Program, Version 2 User's Guide* is to provide a level of guidance and assistance that specifically addresses your individual needs. Your User's Guide is designed to provide:

- Guidance to users to ensure effective use of the items in your IBM PC 3270 Emulation Program package.

- Directions for preparing your IBM PC and IBM PC 3270 Emulation Program diskette to meet your work needs.

- Assistance in learning and applying basic IBM PC 3270 Emulation concepts and procedures.

- Guidance to understand and correctly respond to problem situations and messages.

- Procedures for using other IBM PC programs with your IBM PC 3270 Emulation Program, and assistance in determining the degree of compatibility of those applications with this program.

Intended Audience

Your IBM PC 3270 Emulation User's Guide is designed for the following users:

- Both beginning and experienced professional users, including both clerical and programming personnel, with job-related needs for the capabilities of IBM PC 3270 Emulation Program (see Appendix E, "Technical Product Description and List of Compatible IBM PC DOS Application Programs" for a discussion of product capabilities).

- Commercial users of IBM 3270-type terminals.

- Other professionals who are primarily interested in improving personal productivity.

Information and detailed explanations are provided to help you understand and properly use the following:

- Different parts of the IBM PC 3270 Emulation Library
- The basic concepts associated with this product
- Your keyboard functions
- Your specific network configuration and capabilities
- The primary set of IBM PC 3270 Emulation tasks
- All types of prompts and messages
- Functions associated with compatible IBM PC Programs
- The nature and capabilities of communications systems hardware supported by this product.

What You Should Know

This book is written for both the first-time user and the experienced user of the IBM PC 3270 Emulation Program, IBM 3270 Display Stations or IBM PCs configured to act like or emulate such a display station. No previous experience using an IBM 3270-type display station or IBM PC that is connected to a mainframe host computer and/or is part of a network is necessary.

However, such experience can be helpful. Specifically, experience and familiarity with the following is recommended:

1. IBM PCs, IBM PC DOS Version 2.1 through 3.2, and the IBM PC Local Area Network and IBM TopView 1.1 programs.

2. Host computer applications used via a host-attached IBM PC or IBM 3270-type display stations or terminals.

First-time users should develop some understanding of the concepts and capabilities of networking and emulation in order to appreciate fully IBM PC 3270 Emulation's potential uses. Chapters 1 and 2 of this book are designed to provide such assistance.

Content Summary

Your IBM PC 3270 Emulation User's Guide
contains the following chapters and appendixes:

- Chapter 1. How To Begin
- Chapter 2. Introduction to the World of IBM
  PC 3270 Emulation
- Chapter 3. Installing and Loading IBM PC
  3270 Emulation
- Chapter 4. Menus and Customization
- Chapter 5. Keys, Keyboards, and Keyboard
  Remapping
- Chapter 6. Primary IBM PC 3270 Emulation
  Tasks
- Chapter 7. Using Other Applications With
  IBM PC 3270 Emulation
- Chapter 8. What Went Wrong?
- Appendix A. Message Descriptions: Causes
  and Responses
- Appendix B. IBM PC 3270 Emulation
  Keyboard Extensions
- Appendix C. IBM PC 3270 Emulation
  Keyboard Remapping
- Appendix D. Customization Worksheets
- Appendix E. Technical Product Description
  and List of Compatible IBM PC DOS
  Application Programs.

The User's Guide "Contents" list that begins on
the following page details the specific contents of
each chapter and appendix.

Related user objectives and intended audiences
for all of this information, as well as for the rest
of your IBM PC 3270 Emulation library, are
detailed in "Using Your Training and Other
Reference Materials" on page 1-6.

Contents

Chapter 1. How To Begin

Notes:

Introduction and Welcome!
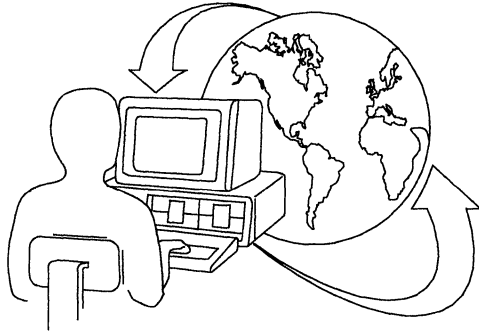
Welcome to the world of IBM PC 3270
Emulation. There are many ways that your IBM
PC 3270 Emulation package can help you do your
work more simply and effectively. The contents
of your package are illustrated below and
explained beginning on page 1-5.

Quick Reference Card

Keyboards Card

Diskette

User's Guide

Book Jacket
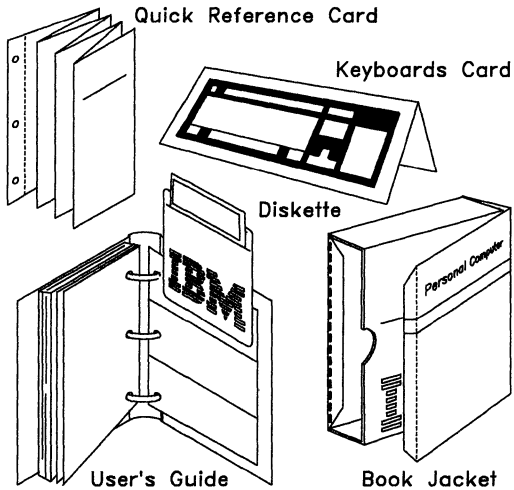
IBM PC 3270 Emulation Package

About This Chapter

The purpose of this chapter is to get you started by explaining how to use your IBM PC 3270 Emulation package to meet your training and work needs.

All users should start by reading this chapter to determine which part of the IBM PC 3270 Emulation library to turn to next based upon your level of experience and training and your objectives. This chapter:

- Introduces the contents of your IBM PC 3270 Emulation Package, and describes the training and other reference materials that make up the IBM PC 3270 Emulation library; and

- Describes several potential objectives that users of this program are likely to have, along with directions where to turn in the the IBM PC 3270 Emulation library to find the information needed to meet those objectives.

The basic concepts and capabilities associated with your IBM PC 3270 Emulation Program are discussed in Chapter 2, "Introduction to the World of IBM PC 3270 Emulation."

The IBM PC 3270 Emulation Package

Your IBM PC 3270 Emulation package contains the following items:

* Your training and other reference materials *(the IBM 3270 Emulation library):*

    - The *IBM PC 3270 Emulation Program, Version 2 User's Guide* you are now reading.

    - The *IBM PC 3270 Emulation Program, Version 2 Quick Reference Card.*

    - The *IBM PC 3270 Emulation Program, Version 2 Keyboards Card.*

* Your *IBM PC 3270 Emulation Program, Version 2 Diskette.*

Another book described in this chapter, the *IBM PC 3270 Emulation Program, Version 2 Application Programming Interface (API) and Host Reference*, can be ordered separately from your IBM Sales Representative.

Using Your Training and Other Reference Materials

The IBM PC 3270 Emulation library is designed to provide the minimum amount of operating information necessary to complete all tasks. This User's Guide is described in "About This Book" on page iii of this guide.

The purposes and intended users for the other training and reference materials that make up your IBM PC 3270 Emulation library are described below, and are broken down by user objective and recommended audience in "Library Explanation: User Objective and Recommended Audience" on page 1-8.

- **IBM PC 3270 Emulation Program Quick Reference Card**

  Your *IBM PC 3270 Emulation Program Quick Reference Card* gives a concise presentation of the steps necessary to perform basic IBM PC 3270 Emulation tasks, including initiating a 3270 Session, without an in-depth discussion of the reasons why and when you need to perform these tasks.

- **IBM PC 3270 Emulation Program Keyboards Card**

  Your *IBM PC 3270 Emulation Program Keyboards Card* is designed to help minimize any confusion and inconvenience associated with learning the functions of the IBM PC 3270 Emulation keys. Your IBM PC 3270 Emulation Program has been designed to work with any of the three illustrated IBM keyboards. For further information, see "Using Your Keyboards Card" on page 5-3.

Your Training and Other Reference Materials (Continued)

The following book is also available for users needing the IBM PC 3270 Emulation Application Programming Interface (API) or host computer information:

- IBM PC 3270 Emulation Program Application Programming Interface (API) and Host Reference

  The *IBM PC 3270 Emulation Program Application Programming Interface (API) and Host Reference* provides programmers, communication system designers, and host computer personnel information needed to use the IBM PC 3270 Emulation API, along with segments of a sample API program, and host-related programming information.

How To Use Your Library

First-time IBM PC 3270 Emulation users, or those wishing to refresh their understanding or skills, should begin by reading Chapters 1 through 5 of this book.

If you need to customize your IBM PC 3270 Emulation Program diskette, your network coordinator must provide completed Customization Worksheets with the customizing options for each menu listed on it. Procedures for customizing your IBM PC are provided in "Customizing the Profile" on page 4-71.

More experienced users of an IBM PC 3270 terminal, or of an IBM PC with an IBM PC 3270 Emulation Program already installed and customized, can turn directly to Chapter 6, "Primary IBM PC 3270 Emulation Tasks" on page 6-1, or refer to your *Quick Reference* card.

How To Use Your Library (Continued)

Host programming personnel and those wishing
to use the Application Programming Interface
(API) should refer directly to the *Application
Programming Interface (API) and Host Reference.*

More specific descriptions of the elements in the
IBM PC 3270 Emulation library are presented
beginning on the following page. Use this
information to determine what part of the IBM
PC 3270 Emulation library to turn to next based
upon your work needs and level of experience
and training.

Library Explanation: User Objective and Recommended Audience

This information is presented with the emphasis
on user needs and objectives. These objectives
are stated in **bold** type, followed by directions on
where to turn in the library to meet those
objectives, and the recommended audience of
that library segment.

For example, if your objective is to:

*   **Learn about the IBM PC 3270 Emulation
    package and library.**

    Turn to: User's Guide: Chapter 1

    Recommended for: All users.

Similar direction for using the rest of the IBM
PC 3270 Emulation library is presented
beginning on the following page.

Library Explanation (Continued)

If your objective is to:

- **Learn basic product concepts and capabilities.**

    Turn to: User's Guide: Chapter 2

    Recommended for: Beginners/refreshers.

- **Learn how to install and set up your program diskette.**

    Turn to: User's Guide: Chapter 3

    Recommended for: Beginners/refreshers.

- **Become familiar with program menus and "customize" your program diskette so that it functions as intended for your configuration and helps meet your work needs.**

    Turn to: User's Guide: Chapter 4

    Recommended for: Beginners/refreshers.

- **Learn the program's definitions that apply to your keyboard, and get an overview of methods for changing the definitions of keys (keyboard remapping).**

    Turn to: User's Guide: Chapter 5

    Recommended for: Beginners/refreshers.

Library Explanation (Continued)

If your objective is to:

- **Learn and perform basic program tasks; these include initiating a 3270 Session, transferring files, and printing documents.**

  Turn to: User's Guide: Chapter 6

  Recommended for: All users. (only after your program has been properly installed and customized).

- **Use other IBM PC software product(s) with IBM PC 3270 Emulation, or attempt to determine the compatibility of such products for the purpose of potentially using another application; or review new compatible IBM Systems Software.**

  Turn to: User's Guide: Chapter 7

  Recommended for: Trained/Experienced.

- **Determine the nature of and solve an operating problem, and develop skills to help avoid problems in the future.**

  Turn to: User's Guide: Chapter 8

  Recommended for: All users.

Library Explanation (Continued)

If your objective is to:

- **Respond properly to messages that may appear during a 3270 Session.**

    Turn to: User's Guide: Appendix A

    Recommended for: All users.

- **Determine the 3270 keyboard extensions (additional definitions for keys) supported by this program.**

    Turn to: User's Guide: Appendix B

    Recommended for: Network Coordinator(s) and All users.

- **Learn the two methods of keyboard remapping (3270 Keyboard Remap and Global Remap) that are available when you are using this program.**

    Turn to: User's Guide: Appendix C

    Recommended for: Trained/Experienced.

- **Determine the information needed to configure your workstation properly.**

    Turn to: User's Guide: Appendix D

    Recommended for: Trained/Experienced.

Library Explanation (Continued)

If your objective is to:

- Review technical product highlights, or check the list of IBM PC DOS application programs that are compatible with this program.

  Turn to: User's Guide: Appendix E

  Recommended for: Trained/Experienced.

- Review related publications.

  Turn to: User's Guide: Bibliography

  Recommended for: All users.

- Quickly refer to the steps for a 3270 task (after completing your training and gaining some product experience).

  Turn to: Quick Reference Card

  Recommended for: Trained/Experienced.

- Determine the 3270 definition for a key(s) on your keyboard.

  Turn to: Keyboards Card

  Recommended for: All users.

Library Explanation (Continued)

If your objective is to:

● **Learn and use the 3270 Application Programming Interface (API).**

> *Turn to:* Application Programming Interface (API) and Host Reference: Chapters 1 through 2, and Appendix A

> *Recommended for:* Programmers or other users with programming experience and API needs.

● **Use host computer information.**

> *Turn to:* Application Programming Interface (API) and Host Reference: Chapters 3 through 9

> *Recommended for:* Host programmers or other users with programming experience.

Customer Responsibilities

Purchasers of the IBM PC 3270 Emulation Program package have the following responsibilities as users of this product:

● Producing back-up copies of the original IBM PC 3270 Emulation Program diskette

● Properly installing, loading, and using this product.

Ready To Begin

Congratulations! Now you are ready to begin.
Just turn to the appropriate part of the library
that can help you complete your training or
work-related tasks.

If you're not sure where to turn to, re-read this
chapter, or refer to the table of contents or to the
list of this book's chapters and appendixes
provided in the "Content Summary" on page vi
of the preface.

Good luck and enjoy the world of IBM PC 3270
Emulation.

Chapter 2. Introduction to the World of IBM PC 3270 Emulation

Notes:

About This Chapter

This chapter discusses what it means to attach an IBM PC to a host computer and explains how this is done using your IBM PC 3270 Emulation Program.

This chapter also illustrates what it means to become part of a computer network, how you become part of such a network, and what you can do with IBM PC 3270 Emulation after joining a network.

Specific topics discussed include:

- IBM PC 3270 Emulation capabilities including accessing the resources of a host computer and sharing resources on a computer network.

- Possible configurations and related software and hardware requirements.

- Network and networking definitions.

- Using the IBM PC Local Area Network Program or IBM Token-Ring Network NETBIOS Program.

IBM PC 3270 Emulation Concepts and Capabilities

Connections to Your IBM PC

Your IBM PC can have many things connected
to it. For example, a display unit, a keyboard,
and usually a PC printer are physically
connected to an IBM PC.
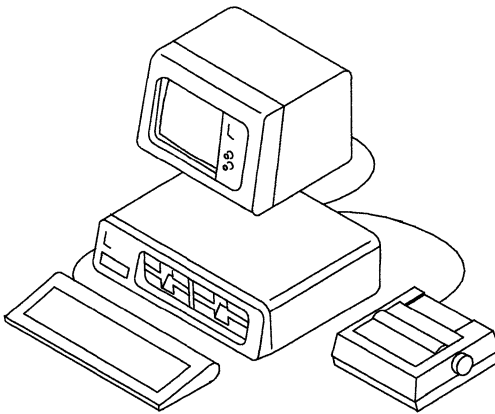
Connections to Other Computers

Your computer can in turn be connected to other
computers, and establish a *communications link*
with those computers, thereby becoming part of a
computer network.

Concepts and Capabilities
(Continued)

What Is a Computer Network?
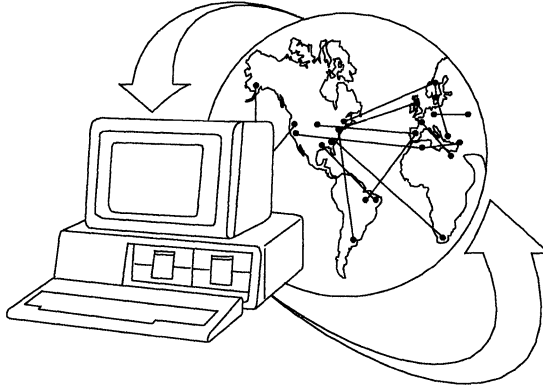
A *computer network* is a group of computers that
are connected so that they can communicate
together. Your IBM PC 3270 Emulation Program
lets you use your computer on a network and
communicate with other computers or with the
host computer.

IBM PC 3270 Emulation Networking Options

Being a part of a computer network means that you can do more with your IBM PC. After adding the hardware and software needed to join a network to your IBM PC, you have many options for using the network:

• You can work with other computers, or you can work alone. For example, you can choose not to use the network at any time if you want to use your IBM PC for other tasks.

• Or you can use the resources of other computers on your network, and share your IBM PC's resources with them.

• As few as two computers can make a network, and more computers can be added to your network as necessary.

You decide how to use the network.

Types of Computer Networks

Host Computer Networks
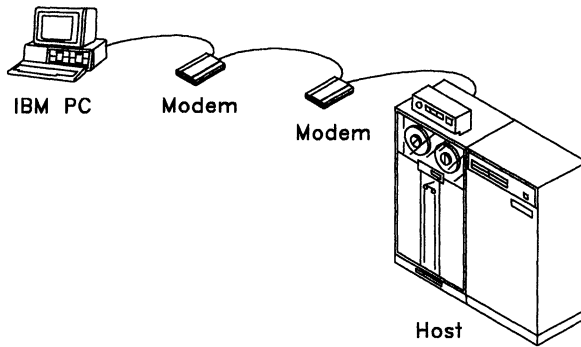
By using the IBM PC 3270 Emulation Program along with the associated hardware, you can establish a communications link with a **host computer**. The host computer, sometimes referred to as a *host processor*, or *mainframe*, usually provides services such as computation, data base access, and advanced programming functions.

Types of Computer Networks (Continued)

You can communicate with the host computer, which means that you can access and use the functions of the host computer. Your IBM PC can:

- Establish a 3270 session with the host computer.

- Request access to a host computer file.

- Download a host file.

- Put changes in a host file.

- Upload and store a changed file.

- Send files and messages to the host.

When you establish a communications link between your IBM PC and a host computer, you can communicate with other computers that are connected to the host in the same way and share resources such as those listed above.

Your IBM PC, the host computer, and the other computers you can talk to are part of a *host computer network*. The host computer is the primary and controlling computer of such a network.

Types of Computer Networks (Continued)

Local Area Network (LAN)

If your IBM PC is connected directly to other IBM PCs by way of the required software and hardware (see "Connecting Your IBM PC to a LAN" on page 2-17), your IBM PC is part of a *local area network*, or **LAN**.

PC Software Resources
(For Example:
Word or Data Processing)

Access to Host
Resources for Other PC's

PC
Printer
Resources

Host
Computer
Resources
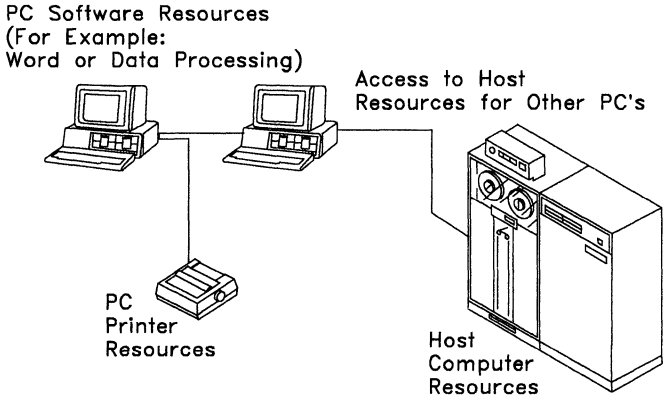
Local Area Network (Continued)

When an IBM PC with IBM PC 3270 Emulation is added to a local area network, or a **LAN**, up to 32 PCs can share *host* computer resources, as well as the resources of individual IBM PCs, by way of the computer network.

Specifically, when you join a LAN and use IBM PC 3270 Emulation in conjunction with with the IBM PC Local Area Network Program 1.1, other IBM PCs that have these programs loaded and are part of the LAN can:

- Share individual IBM PC resources such as printers.

- Access files of other IBM PCs when those PCs are turned on (several people can work with the same file at different times).

- Send files and messages among the network users.

- Continue to share host computer resources such as those listed on the previous page with computers on the same host computer network.

Network Definitions

If you have another computer connected to your computer, you have a network. A computer network that has PCs directly connected to other PCs is often referred to as a *local area network*, or **LAN**.

Being part of a LAN means that your IBM PC is part of a group of computers that can work together. The ways of joining your IBM PC to a LAN are described in "Connecting Your IBM PC to a LAN" on page 2-17.

Computers that work together, sharing resources over a LAN, are **networking**.

Configuration refers to the arrangement of a computer network as defined by the nature, number, and characteristics of the computers and other machines attached to the network. Your IBM PC must be **configured**, or **customized**, to ensure that it interacts properly as determined by your network configuration.

This *customization* procedure is described in "Customizing the Profile" on page 4-71. IBM PC 3270 Emulation configuration options are discussed in this chapter, beginning in "Possible Configurations Using IBM PC 3270 Emulation" on page 2-20.

Emulation means that your machine has the ability to act like another machine. When your IBM PC is imitating, or **emulating**, another machine using IBM PC 3270 Emulation, it can complete certain tasks it is not normally capable of performing.

A summary of the machines that IBM PC 3270 Emulation is capable of emulating is presented in "Supported Workstation Configurations" on page E-9.

Who You Should Know

In addition to the recommended product prerequisites described in "Prerequisites" on page E-11, users of IBM PC 3270 Emulation should identify all **host personnel** and **network coordinators** including designers, implementers, and those responsible for maintaining and updating information and communication systems.

In this book, *network coordinator* refers to the person or persons who:

1. Install or supervise the installation of the following in your IBM PC:

   • The IBM PC Network Adapter or Token-Ring PC Adapter

   - and -

   • The SDLC Adapter or IBM 3278/79 Emulation Adapter,

2. Design and/or set up the IBM PC Network or Token-Ring Network,

   - and -

3. Maintain or change the network.

Host personnel refers to the people at the host computer site responsible for maintaining the connection to the host computer network.

How a Network Works

Computers on a network are connected together
through adapters and cables. In the same way
that your telephone is connected to other
telephones through the telephone lines...
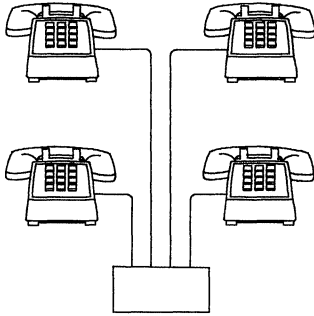
...your computer can be connected to other
computers and become part of a network.
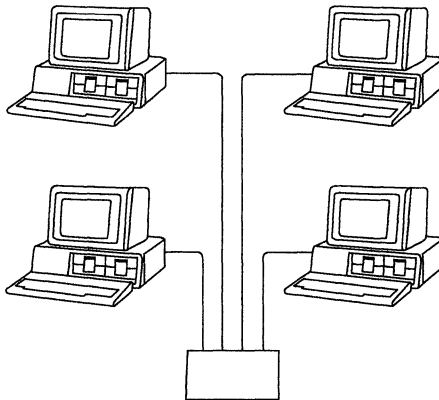
Connecting Your IBM PC to a Host Computer Network

In addition to the IBM PC 3270 Emulation Program, you need other equipment, called **communications hardware**, to establish and maintain a connection to a host computer.

The specific communications hardware you need is determined by the nature of your connection to the host and the way that your IBM PC is configured (both hardware and software requirements for each possible configuration are presented in "Possible Configurations Using IBM PC 3270 Emulation" on page 2-20).

Types of hardware that you may need include a modem, telephone cables, coaxial cables, and an **IBM 3278/79 Emulation Adapter or SDLC Adapter**.

Using the IBM 3278/79 Emulation Adapter

The *IBM 3278/79 Emulation Adapter* card is installed in an IBM PC to **connect the PC to a control unit**.
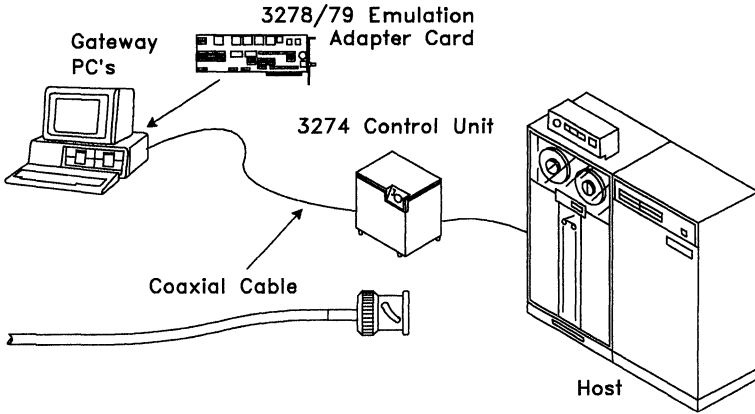
A *coaxial cable* is required to connect the IBM PC containing the adapter to the control unit. The control unit in turn is connected to a host computer. This type of attachment is diagrammed above.

Connecting Your IBM PC to a Host Computer Network (Continued)

Using the SDLC Adapter

The *SDLC Adapter* card is used to **connect an IBM PC directly to a host computer** by way of *modems* and *telephone lines*, as illustrated in the diagram below. Modems are machines that act as translators of information between different types of communications hardware.
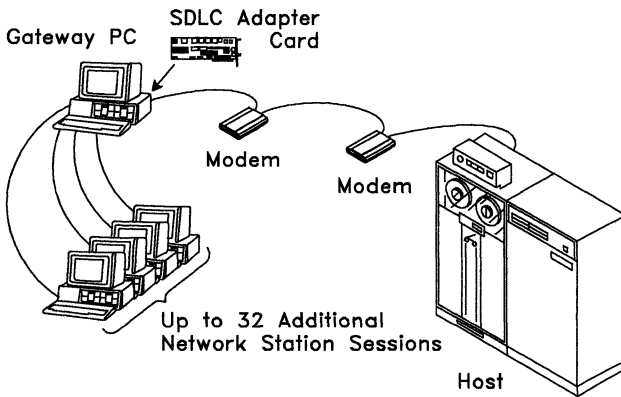
There are two different ways to attach to the host computer using the SDLC Adapter: the physical communication line can be either *dedicated* or *switched*.

Switched line users must dial a number to access and establish a link with the host computer. Dedicated line users establish a link with the host computer when the Communicate Task has been loaded.

Connecting Your IBM PC to a LAN

By now you can see that a computer network can make your work easier *and* your equipment more flexible.

You can become part of a LAN by installing either the IBM PC Network Adapter **or** the IBM Token-Ring Network PC Adapter, along with the associated IBM Token-Ring software described below, in your IBM PC.

Using the IBM Token-Ring Network NETBIOS Program and Adapter

The IBM Token-Ring Network PC Adapter and the IBM Token-Ring Network NETBIOS Program allow you to participate on a LAN. Like the IBM PC Network Adapter, the Token-Ring products provide PCs that have already become part of a LAN the capacity to share resources with a host computer as well as over a LAN.

Some preliminary user considerations associated with the IBM PC Token-Ring Network NETBIOS Program and the IBM Token-Ring Network PC Adapter, including related software and hardware requirements, are provided below.

Using IBM Token-Ring (Continued)

General Prerequisites: You need IBM PC
DOS 3.2 to use the IBM Token-Ring Network.
You should also check to be sure that your IBM
PC has the following:

- A minimum of one 320KB or higher diskette
  drive.

- Both the IBM Token-Ring Network PC
  Adapter and IBM Token-Ring Network
  NETBIOS Program.

Before you use the IBM Token-Ring Network,
you need to know how to use IBM PC DOS. If
you don't know how to use IBM PC DOS, and
you want to use the IBM PC Token-Ring
Network alone or with IBM PC 3270 Emulation
Program, first consult an *IBM PC DOS Version
3.2 User's Guide.*

If you are using the IBM Token-Ring Network
PC Adapter, load the IBM Token-Ring Network
NETBIOS Program before you load IBM PC 3270
Emulation.

Using the IBM PC Local Area Network (LAN) Program 1.1

Once you've become part of a LAN, you can use a new program, the *IBM PC Local Area Network (LAN) Program,* along with your IBM PC 3270 Emulation Program to enhance your IBM PC's capabilities.

An in-depth discussion of the IBM PC 3270 Emulation Program's compatibility with the IBM PC LAN 1.1 Program is presented in "IBM PC Local Area Network 1.1 (LAN) Program" on page 7-27. Some preliminary user considerations associated with the IBM PC LAN 1.1 Program, including related software and hardware requirements, are provided below.

General Prerequisites: You need IBM PC DOS 3.1 or 3.2 to use the IBM PC Local Area Network Program. You should also check to be sure that your IBM PC has the following:

• A minimum of one double-sided diskette drive.

• The IBM PC Network Adapter or IBM Token-Ring Network PC Adapter and associated software.

Before you use the IBM PC Local Area Network Program, you need to know how to use IBM PC DOS. If you don't know how to use IBM PC DOS, and you want to use IBM PC Local Area Network alone or with IBM PC 3270 Emulation Program, first consult an *IBM PC DOS User's Guide*, versions 3.1 or 3.2.

Possible Configurations Using IBM PC 3270 Emulation

Your IBM PC has one of four configurations when it uses IBM PC 3270 Emulation:

• Standalone

• Network Station

• Gateway

• Gateway with Network Station.

Each of these configurations is explained and illustrated on the following pages, along with a description of software and hardware requirements. These descriptions, along with associated memory requirements for each configuration, are summarized in "Hardware and Software Requirements" on page 3-4.

Hardware requirements associated with the IBM 3278/79 Emulation Adapter or SDLC Adapter are listed in "Connecting Your IBM PC to a Host Computer Network" on page 2-14.

To determine the IBM PC 3270 Emulation capabilities of each configuration, including an explanation of the units being emulated, see "Supported Workstation Configurations" on page E-9.

Standalone Configuration

When you use IBM PC 3270 Emulation and configure your IBM PC to function as a **Standalone** terminal, you connect your IBM PC directly to a host computer, allowing you access to host computer resources such as data or word processing applications.

The Standalone PC *does not* access a host computer by way of a connection to another IBM PC, referred to as a *communications gateway*. The Standalone communicates directly to the host computer.

However, as a Standalone workstation, you can communicate with other computers that are connected to the host computer over the host computer network.
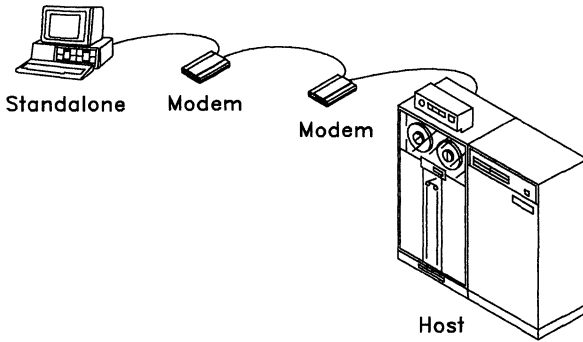
A Standalone IBM PC that is attached to a host computer using an SDLC Adapter is illustrated above. (IBM PCs that are attached by way of an IBM 3278/79 Emulation Adapter do not use modems, but do need coaxial cables.)

Standalone Configuration (Continued)

Software and hardware requirements for the IBM PC 3270 Emulation Standalone configuration include:

- Software

  - an IBM PC DOS Version 2.1 through 3.2.

- Hardware

  - SDLC Adapter or IBM 3278/79 Emulation Adapter and associated hardware.

Network Station Configuration

When configured as a **Network Station**, your IBM PC:

- Communicates or gains access to a host computer through another IBM PC that is configured to serve as a *Gateway*, or connection, to the host computer (see "Gateway Configuration" on page 2-24).

- Is part of a LAN that lets IBM PCs with the IBM PC LAN 1.1 program loaded share the resources of their PCs with other operators that are part of the network.

Gateway   Modem

Modem

Network
Station

Host
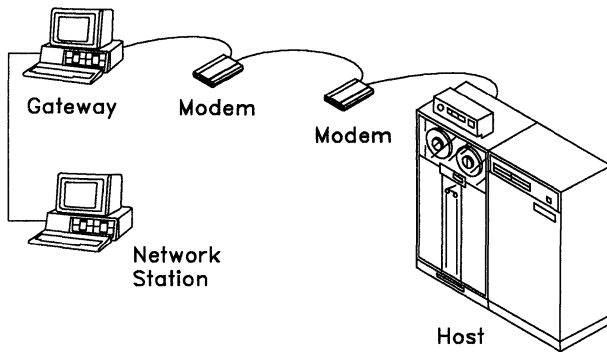
Network Station configuration software and hardware requirements include:

- Software

  - an IBM PC DOS Version 2.1 through 3.2.
  - IBM Token-Ring Network NETBIOS Program, when using the IBM Token-Ring Network PC Adapter.

- Hardware

  - IBM Token-Ring Network PC Adapter or IBM PC Network Adapter.

Gateway Configuration

When your IBM PC is configured to function as
a **Gateway**, it can provide host computer access
and resources to as many as five IBM PCs
(Network Stations) when it is attached to the
host computer, or *host-attached*, using the IBM
3278/79 Emulation Adapter Card, or up to 32
Network Stations when it is host-attached using
the SDLC Adapter Card (illustrated below).
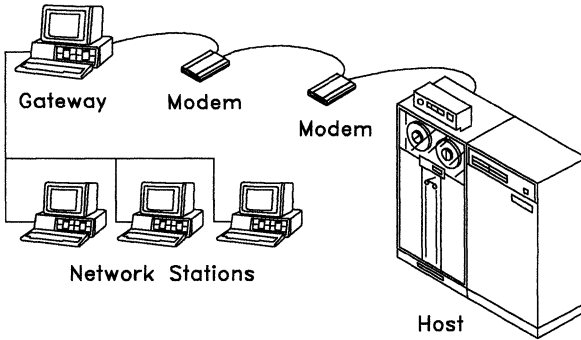
Because it serves as a communications link
between the Network Stations and a host
computer, a Gateway is sometimes referred to as
a *communications server*. Software and hardware
requirements include:

- Software

    - an IBM PC DOS Version 2.1 through 3.2.
    - IBM Token-Ring Network NETBIOS
      Program, when using the IBM Token-Ring
      Network PC Adapter.

- Hardware

    - SDLC Adapter or IBM 3278/79 Emulation
      Adapter and associated hardware.
    - IBM Token-Ring Network PC Adapter or
      IBM PC Network Adapter.

Gateway with Network Station Configuration

The **Gateway with Network Station** configuration lets an IBM PC perform both the communications server functions of a Gateway for IBM PCs attached to it **and** the workstation functions of a Network Station.

In other words, the user of a Gateway with Network Station can do individual Network Station tasks on the same IBM PC that is serving as a Gateway to the host computer for other PCs. An example of this type of configuration is illustrated below.

Gateway with Network Station

Modem

Modem

Network Stations

Host
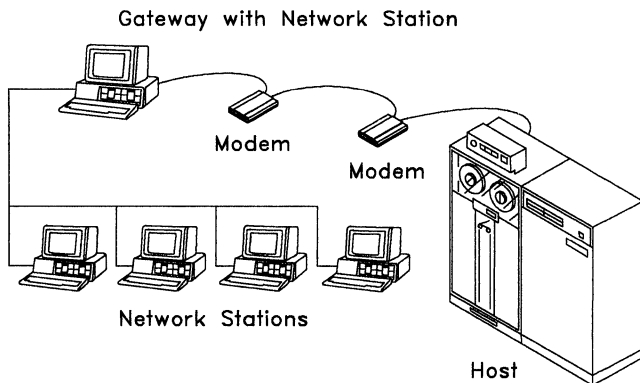
Software and hardware requirements for this configuration include:

- Software
  - An IBM PC DOS Version 2.1 through 3.2.
  - IBM Token-Ring Network NETBIOS Program, when using the IBM Token-Ring Network PC Adapter

- Hardware
  - SDLC Adapter or IBM 3278/79 Emulation Adapter and associated hardware.
  - IBM Token-Ring Network PC Adapter or IBM PC Network Adapter.

Chapter Summary

A summary of this chapter's key points and
highlights is listed below:

• IBM PC 3270 Emulation lets you
  communicate with a host computer, which
  means that you can access and use the
  functions of the host computer.

• By adding an IBM PC with IBM PC 3270
  Emulation loaded on it to a network, up to 32
  PCs can share host computer resources, as
  well as the resources of individual IBM PCs,
  by way of the computer network.

• A network is a group of computers that are
  connected for the purposes of communicating
  and sharing resources with other computers
  and with a host computer.

• Your IBM PC can become part of and work
  with other computers on a local area network
  (LAN) when you use IBM PC 3270 Emulation
  with the IBM PC Network Adapter or IBM
  Token-Ring Network PC Adapter.

• Your IBM PC can be configured as a
  Standalone, Network Station, Gateway, or
  Gateway with Network Station.

• Hardware needed to attach to a host
  computer includes either the IBM 3278/79
  Emulation Adapter, which is installed in an
  IBM PC to connect it to a control unit, or the
  SDLC Adapter which is used to connect an
  IBM PC directly to a host computer over
  telephone lines by way of a modem.

Chapter Summary (Continued)

- The Gateway and Gateway with Network Station configurations each require the IBM PC Network Adapter or the IBM Token-Ring Network PC Adapter and associated software, as well as the appropriate communications adapter.

- The Network Station needs the IBM PC Network Adapter or the IBM Token-Ring Network PC Adapter and associated software.

- IBM PC 3270 Emulation is compatible with the IBM PC Local Area Network Program. Detailed compatibility information is provided in "IBM PC Local Area Network 1.1 (LAN) Program" on page 7-27.

Notes:

Chapter 3.   Installing and Loading IBM PC 3270 Emulation

Notes:

About This Chapter

This chapter details the processes for installing
and loading IBM PC 3270 Emulation. The topics
discussed include:

• Preliminary set-up considerations and
procedures

• Related IBM PC hardware and software
requirements

• Steps for installing your IBM PC 3270
Emulation Program diskette or for preparing
the diskette for use, depending on whether
you have a fixed-disk or two-drive system

• Steps for loading, or starting, your IBM PC
3270 Emulation Program diskette.

Preliminary Procedures

To ensure that your IBM PC 3270 Emulation
Program diskette is properly loaded to run
effectively as intended, consideration and proper
application of the following factors is necessary:

• Required PC software
• Required host software
• Required PC hardware
• Minimum memory amounts
• Proper interrupt level settings.

Each of these factors are discussed in detail in
this section.

Hardware and Software Requirements

The IBM PC 3270 Emulation Program can be loaded in the following IBM PC families:

- IBM PC
- IBM PC XT
- IBM PC AT
- IBM Portable PC.

The IBM Portable PC can be configured to be used as a Gateway or Gateway with Network Station only if the 3278/79 Emulation Adapter (P/N 8665789) is used.

IBM PC 3270 Emulation will not fit on a single-density disk; therefore, single-density disk drive configurations are not supported. IBM PC 3270 Emulation also will not treat a single physical drive (one diskette drive, no fixed disk, and no Local Area Network) as two logical drives.

You can use a single drive configuration like the one described above only if all programs and data can fit on one disk.

Refer to "Displays and Display Adapter Cards Supported" on page E-13 and "Printers Supported" on page E-14 for additional requirements on supported hardware.

Hardware and Software Requirements (Continued)

The table below lists the hardware and software requirements for all four configurations.

PC Configured As:	SDLC Adapter or 3278/79 Adapter	IBM PC DOS 2.1, 3.0, 3.1 or 3.2	IBM Token-Ring and NETBOIS Program or PC Network Adapter
Standalone	X	X	
Gateway	X	X	X
Gateway with Network Station	X	X	X
Network Station		X	X

Notes:

1. Use the SDLC Adapter P/N 1502090 for line speeds up to 4.8K bps, or the SDLC Adapter P/N 1501205 for line speeds up to 19.2K bps and for the IBM PC AT, which is the PC required to run at 19.2k bps. Both SDLC Adapters require one full-sized slot.
2. Minimum IBM PC DOS requirements are: Version 2.1 for the PC, Portable PC, and the PC XT, and Version 3.0 for the PC AT.
3. The Distributed Function Terminal (DFT) Control Unit Attachment requires the IBM 3278/79 Emulation Adapter, P/N 1602507 or 8665789.
4. IBM PC DOS 3.2 is required for using the IBM Token-Ring Network.

Memory Requirements

The list below presents approximate memory requirements in bytes for IBM PC 3270 Emulation tasks. These figures do not include IBM PC DOS, IBM TopView 1.1, or IBM Token-Ring Network NETBIOS Program.

- Communicate
  - Network Station - 153,000
  - Standalone - 158,000
  - Gateway - 180,000
  - Gateway with Network Station - 209,000
- File Transfer - 17,400
- DIR key function - 5,500
- Print support - 10,300
- Alternate Tasks support - 9,000
- API support - 6,200
- Keyboard Remap support - 2,000
- DFT support - 4,100.
- PSCAPI.COM (support program for API use or for File Transfer while in the Alternate Field or an IBM TopView window) - 400

Notes:

1. To use Alternate Tasks, you need more memory than just that required for Alternate Tasks support. You also need enough memory to load the IBM PC DOS Command Processor of the version of IBM PC DOS you are using.

2. The IBM Token-Ring Network NETBIOS Program requires an additional 51K of memory.

3. If "Alternate Tasks" is set to "Yes" in the Communication Profile Tasks menu (see "Communication Profile Tasks" on page 4-7) and IBM TopView 1.1 is not loaded, the remaining memory after IBM PC 3270 Emulation is loaded is allocated to the alternate program.

4. The DIR key function is available in the following cases:

- When doing any **non**-Communicate Tasks.

- When doing Communicate Tasks **provided your IBM PC has sufficient memory**.

Host Software Requirements

Following is a list of requirements for the host software:

- For SDLC/SNA attach, define the Gateway and Network Station configurations as a PU.T2 with attached LU.T1, LU.T2, and LU.T3 workstations.

- For DFT attach, define the Primary and Secondary Logical sessions for the port on the 3274 Control Unit to which IBM PC 3270 Emulation will attach.

- Network Management Vector Transport (NMVT), a Communications Network Management (CNM) feature, is not supported. Any NMVT request is rejected as a non-supported function.

- Apply the following PTFs:

  - For ACF/VTAM Version 2 Release 1 for MVS, PTF UZ90213 and PTF UZ73742
  - For ACF/VTAM Version 2 Release 2 for MVS, PTF UZ73733
  - For ACF/VTAM Version 1 Release 3 for MVS, PTF UZ76406.

Interrupt Levels

Use the following interrupt levels:

SDLC Adapter Card	3 and 4
PC Network Adapter	2 or 3
IBM Token-Ring Network PC Adapter	2 or 3
IBM 3278/79 Emulation Adapter	2

Notes:

1. If any other interrupt levels are used, or if any other hardware uses the interrupt levels listed above, unpredictable results or interrupt conflicts are likely to occur.
2. Configurations requiring the SDLC Adapter and an IBM PC Network or IBM Token-Ring Network PC Adapter can have only one Network card present and jumpered to use level 2.
3. On the Network Station, if two IBM PC Network or IBM Token-Ring Network PC Adapters exist, IBM PC 3270 Emulation uses the first adapter (adapter 0).
4. If you are using the IBM 3278/79 Emulation Adapter and either the PC Network Adapter or Token-Ring Network PC Adapter, the Network adapter must be set to use interrupt level 3.
5. You should refer to the hardware documentation for the IBM PC Network Adapter and IBM Token-Ring Network PC Adapter for instructions to set the interrupt levels for these adapters.

Installing Your IBM PC 3270 Emulation Program Diskette

Before you can use the IBM PC 3270 Emulation Program, you should copy the program onto another diskette or onto the fixed disk using the SETUP program.

The SETUP program provided on your IBM PC 3270 Emulation Program diskette guides you through the steps to copy the IBM PC 3270 Emulation program and the necessary IBM PC DOS files. This procedure is referred to as "Preparing IBM PC 3270 Emulation for a Two-drive System," or "Copying IBM PC 3270 Emulation onto a Fixed-Disk System," depending on which type of PC you have.

The SETUP Program copies all of the files on the IBM PC 3270 Emulation Program diskette, and it creates a new file, PSC.BAT, on the back-up diskette or on the fixed disk under the root directory or a specified subdirectory. PSC.BAT is the batch file which invokes commands to start, or load, IBM PC 3270 Emulation.

> **Note:** When you specify a subdirectory, a path command is inserted into the batch file PSC.BAT which SETUP creates. PSC.BAT is then copied into the root and subdirectory of the specified drive.

In order to safeguard the original diskette, always use the copied diskette or the copy of the programs on your fixed disk for your work. Keep the original IBM PC 3270 Emulation program diskette in a safe place.

Installing Your Program Diskette (Continued)

Use one of the procedures provided in this section to copy and prepare your IBM PC 3270 Emulation program diskette for use. If you have an IBM PC AT, refer to "Using the IBM PC AT" on page 3-16.

Notes:

1. It is not possible to create a back-up diskette on a system containing a hard disk, because the program checks if a hard disk exists before deciding where to copy the back-up. On a fixed-disk system the program will automatically be copied to the hard disk.

2. This SETUP program supports virtual or fixed disks C-Z.

3. MODE.COM is assumed to be in the root directory of the first fixed disk. You can edit the PATH command in the PSC.BAT file to locate the MODE.COM file if you do not load IBM PC DOS in the root directory of your first fixed disk.

Preparing the IBM PC 3270 Emulation Program for a Two-Drive System

This procedure automatically copies ·a back-up diskette for program use. With two-drive systems, you should have a blank, 360KB, dual-sided, double-density diskette available. The diskette can be formatted or unformatted; the SETUP program will format the diskette. This back-up diskette cannot be used as a DOS system disk; in other words, you cannot use the back-up diskette for a DOS System Reset.

1. Insert your IBM PC DOS diskette in drive A and your IBM PC 3270 Emulation Program diskette in drive B.

    Refer to Note 2 following the chart in "Hardware and Software Requirements" on page 3-4 for the appropriate level of IBM PC DOS.

2. Turn on your IBM PC.

3. At the prompt, type the date, and press the Enter key.

4. At the prompt, type the time, and press the Enter key.

5. At the IBM PC DOS prompt , type

    B:SETUP

    and press the Enter key.

6. Follow the prompts on the display to run the SETUP procedure.

Preparing the IBM PC 3270 Emulation Program for a Two-Drive System (Continued)

Upon completion of SETUP, the PSC.BAT file contains the following commands:

ECHO OFF
REM RELEASE 2.0
MODE LPT1:
MODE **** (where "****" is MONO,CO80, or BW80)
B:
A:PSCPG A:
A:

Refer to "Loading the IBM PC 3270 Emulation Program" on page 3-20 for steps to load the IBM PC 3270 Emulation Program.

Copying the IBM PC 3270 Emulation Program onto a Fixed-Disk System

This procedure automatically installs your IBM PC 3270 Emulation Program onto your fixed disk or virtual disk for use.

It is assumed that IBM PC DOS is on your fixed disk in the root directory. If you do not have IBM PC DOS loaded from your fixed disk, load the IBM PC DOS diskette before you begin this procedure.

Refer to Note 2 on page 3-4 for the appropriate level of IBM PC DOS.

1. Turn on your IBM PC.

2. At the prompt, type the date, and press the Enter key.

3. At the prompt, type the time, and press the Enter key.

4. Remove the IBM PC DOS diskette if you loaded it.

5. Determine if you wish to copy the IBM PC 3270 Emulation programs into a *directory* other than the *root directory*.

   Note: You can load the IBM PC 3270 Emulation Program from the root as well as from the subdirectory by typing "PSC". This is discussed in more detail in "Loading the IBM PC 3270 Emulation Program" on page 3-20.

**If you are not familiar with using directories,
or if you do not wish to use a different
directory,** continue with step 6.

**If you wish to copy the programs into a
directory other than the root,** create the
directory now (use the IBM PC DOS MKDIR
command). Once you have created the directory,
continue with step 6. The SETUP program will
prompt you for the name of this directory.

6. Insert the original IBM PC 3270 Emulation
    Program diskette in drive A (left or top) and
    type

    A:SETUP

    and press the Enter key. This command loads
    the IBM PC 3270 Emulation SETUP program.

7. Follow the prompts on the display to run the
    SETUP program.

This procedure copies your IBM PC 3270
Emulation Program to the IBM PC DOS
partition on your fixed disk. The fixed-disk copy
is the copy you use for your IBM PC 3270
Emulation Program operations.

**Copying the IBM PC 3270 Emulation Program
onto a Fixed-Disk System (Continued)**

Upon completion of SETUP, the PSC.BAT file
contains the following commands:

ECHO OFF
REM RELEASE 2.0
PATH **** (if subdirectory is specified, where
"****" is the path)
MODE LPT1:
MODE **** (where "****" is MONO,CO80, or
BW80)
d:PSCPG d:/(xxxxx/xxxx) (where "xxxxx/xxxx"
is the optional directory path, the "/" is a
backslash, and "d" is the drive where you
installed PC 3270 Emulation Programs.)

Refer to "Loading the IBM PC 3270 Emulation
Program" on page 3-20 for steps to load the IBM
PC 3270 Emulation Program.

Using the IBM PC AT

To run the IBM PC 3270 Emulation Program using the IBM PC AT you need the following:

- An IBM PC DOS Version 3.0 through 3.2

- Either:

  - A diskette-based IBM Personal Computer AT

                    OR

  - A fixed-disk IBM Personal Computer AT with IBM PC DOS in the root directory.

The following chart shows the compatibility of your IBM Personal Computer AT drives with different types of formatted diskettes.

	Double Sided Diskette (320/360K)	High Capacity Diskette (1.2M)
Double Sided Drive	Read or Write	Do Not Use
High Capacity Drive	Read Only*	Read or Write

* If you write (record) on a double sided diskette with your High Capacity drive, that diskette may become unusable in a Double Sided drive.

The IBM PC 3270 Emulation Program supports three basic IBM Personal Computer AT configurations. Follow the instructions that match your system's configuration.

Using the IBM PC AT (Continued)

- **IBM PC AT with a fixed disk**

  - Use the IBM PC 3270 Emulation SETUP program to copy the original program diskette onto your fixed disk.

- **IBM PC AT with two high-capacity diskette drives (1.2MB)**

  - Use the IBM PC 3270 Emulation SETUP program to copy the original program diskette. The SETUP program copies the original diskette onto a single IBM 5.25 2HC diskette (1.2MB).

    You may use the SETUP program to copy the original program diskette onto a 360KB diskette. However, you may not be able to use the back-up diskette on other IBM PC diskette drives.

- **IBM PC AT with one high-capacity diskette drive (1.2MB) and one double-sided diskette drive (360KB)**

  - Use the SETUP program to copy the original program diskette onto a 360KB diskette.

  - Follow the steps below to copy the **original** programs onto an IBM 5.25 2HC diskette (1.2MB).

  - **DO NOT** use the SETUP program to copy the original program diskette onto an IBM 5.25 2HC diskette (1.2MB).

Installing IBM PC the 3270 Emulation Program on the IBM PC AT

This SETUP procedure is for use on a PC AT with one high-capacity diskette drive (1.2MB) as drive A and one double-sided diskette drive (360KB) as drive B.

You need an IBM PC DOS Version 3.0 through 3.2.

Use the following steps:

1. Label your 1.2MB diskette, "PSC".

2. Insert the diskette labelled "PSC" into drive A (the high-capacity diskette drive), and the IBM PC DOS diskette into drive B (the 360KB diskette drive).

3. Change the default drive to B. At the IBM PC DOS prompt, format your PSC diskette by typing:

   Format A:/S

4. Copy the IBM PC DOS MODE.COM file onto your PSC diskette by typing:

   COPY MODE.COM A:

5. Insert the original IBM PC 3270 Emulation Program into drive B and copy all the files from the original IBM PC 3270 Emulation Program diskette onto your PSC diskette by typing:

   COPY *.* A:

6. Use EDLIN to create a batch file for use with IBM PC 3270 Emulation. Create the IBM PC 3270 Emulation PSC.BAT file on your PSC diskette.

The characters ****, shown below, identify the mode that you should use to run IBM PC 3270 Emulation. The characters **** should be one of the following:

    MONO To use a monochrome display
    CO80   To use an 80-column color display
    BW80   To use an 80-column composite-video
           monitor.

Upon completion of this SETUP procedure, the PSC.BAT file contains the following commands:

```
ECHO OFF
REM THIS IS RELEASE 2.0
MODE LPT1:
MODE ****
B:
A:PSCPG A:
A:
```

7. Refer to "Loading the IBM PC 3270 Emulation Program" on page 3-20 for steps to load the IBM PC 3270 Emulation Program.

Note: If you want to install IBM PC 3270 Emulation on an IBM PC that has IBM PC Local Area Network, IBM PC DOS 3.2, IBM TopView 1.1, or VDI Graphics Development Tool Kit 1.1, refer to Chapter 7, "Using Other Applications with IBM PC 3270 Emulation" for compatibility details and installation procedures.

Loading the IBM PC 3270 Emulation Program

Once you have installed the program, you can load, or start IBM PC 3270 Emulation. The steps to do this are:

1. Determine if you want the *batch file*, PSC.BAT, to set up the preset mode commands, or if you want to use new ones.

   If you wish to use the batch file to set up the preset mode commands and invoke PSCPG, continue with step 2.[1]

   If you want to bypass the batch file, continue with step 3.

2. To use the batch file, at the IBM PC DOS prompt type:

   PSC

   and press the Enter key. Proceed to step 4.

_____

[1] If you use the batch file to start IBM PC 3270 Emulation and then enter the Alternate Field after loading the program, PSC.BAT completes execution as soon as IBM PC DOS receives control. The mode in the Alternate Field then returns to the mode that was active at the time the SETUP program was run. In the diskette-based system, the default drive changes to drive A. To avoid the situation described above, edit the PSC.BAT file and change the commands after PSCPG.

3. To bypass the batch file, at the IBM PC DOS prompt type one of the following:[2]

```
PSCPG
PSCPG,f
PSCPG C:\PROG,f
```

and press the Enter key. The IBM PC 3270 Emulation Title Page displays.

4. The first time the program runs, you may see a READ.ME file displayed on the screen, if the READ.ME file exists on the diskette. The file contains additional or changed information that was not available at publication time. You can TYPE or PRINT the READ.ME file later at any time.

5. At the prompt, press any key to load the program. The IBM PC 3270 Emulation Task Selection menu displays.

6. Type

- **a** (Communicate) to start a 3270 Session,
- **b** (Communication Profile Tasks) to customize the profile[3], or
- **z** (Exit) to exit the IBM PC 3270 Emulation Program.

---

[2] Type "PSCPG" to load IBM PC 3270 Emulation without using the batch file or any path options.

Type "PSCPG ,f" to load IBM PC 3270 Emulation using the *fast path option*. The fast path option is discussed in "The Fast Path Option" on page 3-24.

Type "PSCPG C:\PROG ,f" to load IBM PC 3270 Emulation and to use a *directory path* and fast path. The directory path option is discussed in "The Directory Path Option" on page 3-22.

[3] You **MUST** customize the profile before you can use the program. To do this, type **b** (Communication Profile Tasks), and refer to "Customizing the Profile" on page 4-71 for the steps to prepare your profile.

The Directory Path Option

The PSCPG command provides an option to specify a directory path. This option enables you to establish a drive and/or directory from which all subsequent programs are to be loaded.

If you installed the IBM PC 3270 Emulation Program onto your fixed disk into a directory other than the root directory, the directory path has already been specified following the PSCPG command which is in the batch file PSC.BAT.

If you choose not to use the batch file to load IBM PC 3270 Emulation, you may specify the directory path by entering it after the PSCPG command. If nothing is specified, the IBM PC DOS default drive and current directory at the time you load the program will be used.

If you specify only a drive, all programs loaded after IBM PC 3270 Emulation will be loaded from this drive and its current directory. If you specify a directory, IBM PC 3270 Emulation will assume this to be the full directory path from the root.

The format for the directory path option is presented on the following page.

The Directory Path Option Format

The format for the directory path option is:

```
PSCPG directory path
```

In the following example, the PSCPG.COM file
will be loaded from drive A, and all other IBM
PC 3270 Emulation programs must be in
C:\PROG.

```
A> PSCPG C:\PROG
```

If you want to use the *fast path option* with the
directory path option, you must type:

```
PSCPG directory path, fast path parameter
```

Each parameter must be separated by a comma,
no embedded blanks are allowed in the
parameters, and if any character, except a
trailing blank, follows the fast path parameter, it
will be considered invalid.

Note: It is very important that the remainder of
the IBM PC 3270 Emulation programs remain in
the same subdirectory.

The Fast Path Option

The PSCPG command also provides a *fast path option* which enables you to bypass some of the menus when you load the program.

To use the fast path, you must either enter the fast path parameter with the PSCPG command on the command line, or edit the PSC.BAT file and change the PSCPG command to specify the fast path option. Do this by entering a comma plus a lowercase or uppercase **f** with the PSCPG command after the optional parameter for the directory path.

A sample format for this command is provided below.

```
A> PSCPG,f
```

When you specify the fast path option, the first menu to display is the logo menu with the "Loading Program" message. The next menu is the 3270 frame. The initial logo menu and the 3270 Task Selection menu are bypassed.

If you entered anything except for **,f** for the fast path option, the following message displays while the program is loading:

```
200   Invalid option for fast path.
```

If you see this message, you should change the PSCPG command on the command line or in the PSC.BAT file to reflect the correct fast path option.

Chapter Summary

- The IBM PC 3270 Emulation Program diskette should be copied onto a back-up diskette or loaded onto your fixed disk before you use it. The back-up copy or fixed disk copy is the copy you should always use.

- Once you have installed or copied the diskette, you can load the program and select "Communication Profile Tasks," to customize the profile, or "Communicate," to start a 3270 session with the host.

- You must customize the profile **before** you can start a 3270 session with the host computer. Details for customizing your diskette are provided in "Customizing the Profile" on page 4-71.

Notes:

Chapter 4. Menus and Customization

Notes:

About This Chapter

This chapter illustrates and explains the IBM PC 3270 Emulation menus and options in these menus. The information provided about each of the menus is:

- How to access the menu

- What the different options mean

- What the choices are for each option, plus a brief explanation of the choices, if needed

- What you can expect to happen when you select a certain option or choice

- How to exit the menu.

You also use certain menus to define how you want the workstation to perform. This process is called *customization*. This chapter explains the customization process in detail.

> **Note:** Throughout this chapter you will see messages that may display in any of the menus. Although these messages are briefly explained here, you may want a more detailed description of the cause and method of recovery for each message. You can find this information in Appendix A, "Message Descriptions: Causes and Responses."

The Menu Tree

This diagram shows the hierarchy of menus as
they exist on the program.

```
                              DOS
                               |
                      3270 TASK SELECTION
                               |
           ┌───────────────────┴───────────────────┐
      COMMUNICATION                              3270
        PROFILE                                 FRAME
         TASKS                                    |
           |                                      |
    ┌──────┼──────────────┐                     3270
COMMUNICATION  MODEM AND LINE  GATEWAY        REQUEST
   SETUP       DESCRIPTION     SETUP           TASKS
     |                          |       ┌────────┼────────┬────────┐
    3270                   LIST OF     3270   LIST OF   STATUS OF
   PRINTER                 NETWORK   PRINTER  NETWORK    NETWORK
    SETUP                  STATIONS  REQUESTS STATIONS   STATIONS
```
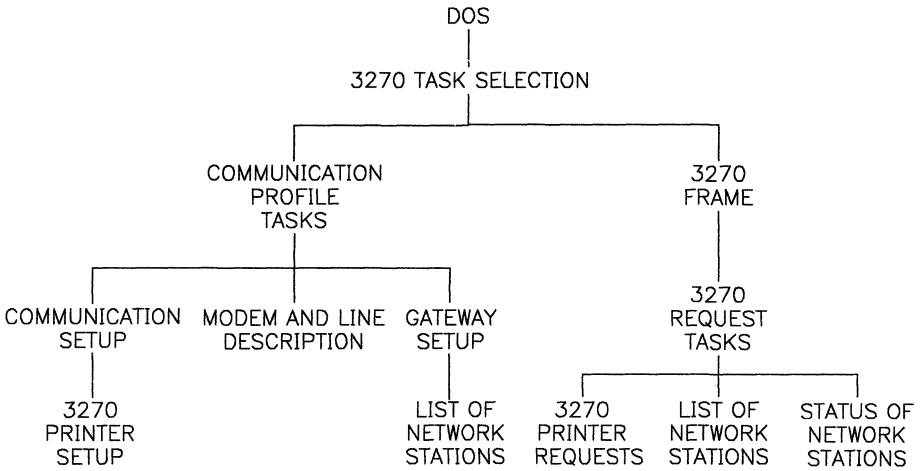
3270 Task Selection

This is the first menu to display when IBM PC 3270 Emulation is loaded, if you did not specify the fast path option. If you specified the fast path option, you will automatically see the 3270 Frame. (See "3270 Frame" on page 4-47.)

```
                                    Ext  101           200

                   3270 Task Selection

              ID    ITEM

              a     Communicate

              b     Communication Profile Tasks

              z     Exit




Type ID letter to choose ITEM; press ENTER:  ◻
```

The following prompt displays:

```
Type ID letter to choose ITEM; press ENTER:  ◻
```

3270 Task Selection Menu (Continued)

The items are:

- **a** - displays the 3270 Frame so you can communicate.

- **b** - displays the Communication Profile Tasks menu so you can change, or customize, the profile.

- **z** - exits the IBM PC 3270 Emulation Program.

  When you type **z**, control returns to IBM PC DOS if IBM PC 3270 Emulation was not loaded from within IBM TopView.

  If IBM PC 3270 Emulation was loaded from TopView, control returns to TopView when you type **z**.

  If you type **z**, and an Alternate Task is active, the following prompt displays:

  ```
  Program in Alternate Field will stop.  Press
  ENTER to exit or press ESC
  ```

  Press the ESC key to cancel the selection of "Exit," and the 3270 Task Selection menu displays.

Communication Profile Tasks

```
Chg Profile
                                                Ext    101            200
                    COMMUNICATION PROFILE TASKS
                                    YOUR       POSSIBLE
    ID    ITEM                      CHOICE     CHOICES

    a     Configuration            2          1 = Standalone Station
                                               2 = Network Station
                                               3 = Gateway
                                               4 = Gateway with
                                                     Network Station
    b     Communication Attachment  1          1 = SDLC      2 = DFT
    c     Alternate Tasks           2          1 = Yes       2 = No
    d     3270 Keyboard             101        1 - 999
    e     3270 Keyboard Remap       2          1 = Yes       2 = No

    f     Create or Revise Communication Setup
    g     Create or Revise Modem and Line Description
    h     Create or Revise Gateway Setup

    z     Return to Task Selection

    Type ID letter to choose ITEM; press ENTER: ⌶
```

Use the Communication Profile Tasks menu to specify your:

- Configuration
- Communication Attachment
- Alternate Tasks option
- 3270 Keyboard choice
- 3270 Keyboard Remap option.

This menu also allows you access to the Communication Setup, Modem and Line Description, and Gateway Setup menus. The Communication Setup menu allows you access to the 3270 Printer Setup menu once you have chosen "f Create or Revise Communication Setup."

The following prompt displays:

```
Type ID letter to choose ITEM; press ENTER: ▢
```

The items are:

- **a Configuration** - designates the configuration for the workstation.

  When you type **a**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER: ▢
  ```

  The choices are:

  1. Standalone Station
  2. Network Station
  3. Gateway
  4. Gateway with Network Station

- **b Communication Attachment** - specifies which attachment you will use to communicate to the host. This item does not apply if your configuration is Network Station.

  When you type **b**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER: ▢
  ```

  The choices are:

  1. SDLC
  2. DFT

  You would type **1** if you want to use an SDLC Adapter to attach to the host.

  You would type **2** if you want to use an IBM 3278/79 Emulation Adapter to attach to a 3274 Control Unit.

- **c Alternate Tasks** - specifies if you will be using another program at the same time you are using IBM PC 3270 Emulation. If you will be using IBM TopView, Alternate Tasks is not an available function.

  When you type **c**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ▯
  ```

  The choices are:

  1. Yes
  2. No

- **d 3270 Keyboard** - specifies the number of the 3270 keyboard being emulated when you are using IBM PC 3270 Emulation.

  When you type **d**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ▯
  ```

  See Appendix B, "IBM PC 3270 Emulation Keyboard Extensions" for a list of keyboards that IBM PC 3270 Emulation supports. The default value for the 3270 Keyboard will be your home 3270 keyboard.

  The selection is effective after you return to the Task Selection menu. The keyboard must be valid for IBM PC 3270 Emulation, and it must be specified. If these conditions are not met, the following message displays:

  ```
  120   Invalid 3270 Keyboard selected.
  ```

- **e 3270 Keyboard Remap** - specifies if you will be using 3270 Keyboard Remap, and it allows you to specify an input file to change the values of the keys on your keyboard. See Appendix C, "IBM PC 3270 Emulation Keyboard Remapping" for Keyboard Remapping explanation and procedures.

When you type **e**, the following prompt displays:

```
Type YOUR CHOICE; press ENTER:  ☐
```

The choices are:

1. Yes
2. No

When you choose "Yes", the following prompt displays:

```
Type file name; press ENTER:  ☐
```

Type the input file name that contains the new definitions of keys that you want to execute. If you have not created the input file, press the ESC key to exit the prompt, return to IBM PC DOS, and create the input file using the steps provided in "Creating the Input File" on page C-20.

After you type your input file name and return to the Task Selection menu, the following message displays, reminding you that you must reload IBM PC 3270 Emulation to ensure that the remapping you specified is active:

```
121  Exit and reload 3270.
```

Selecting "No" remaps the keys to their original definitions. The *original definition* of a key is the definition of the key prior to the remap program becoming active. When you return to the 3270 Task Selection menu after selecting "No", the following message displays:

```
141  Remapping to original definitions
     is complete.
```

- **f Create or Revise Communication Setup** - displays the Communication Setup menu which is explained in "Communication Setup" on page 4-14.

  This item does not apply if your configuration is Gateway. If your configuration is Gateway and you select this item, the following message displays:

```
122  Task not available for
selected configuration.
```

  If your configuration is not Gateway and you select this item, the Communication Setup menu displays.

- **g Create or Revise Modem and Line Description** - displays the Modem and Line Description menu which is explained in "Modem and Line Description" on page 4-28.

  This item does not apply if your configuration is Network Station. If your configuration is Network Station and you select this item, the following message displays:

```
122  Task not available for
selected configuration.
```

If your configuration is Gateway, Gateway
with Network Station, or Standalone, and you
specified "DFT" for "Communication
Attachment", the following message displays
when you type **g**.

```
123  Task not available for selected
Communication Attachment.
```

If your configuration is not Network Station
and your communication attachment is SDLC,
the Modem and Line Description menu
displays when you select this item.

- **h Create or Revise Gateway Setup** -
  displays the Gateway Setup menu which is
  explained in "Gateway Setup" on page 4-33.

  This option is available for Gateway and
  Gateway with Network Station configurations
  only. If your configuration is Standalone or
  Network Station and you select this item, the
  following message displays:

```
122  Task not available for selected
configuration.
```

  If your configuration is Gateway or Gateway
  with Network Station, the Gateway Setup
  menu displays when you select this item.

- **z Return to Task Selection** - displays the Task Selection menu.

  If you change the values for "Configuration," "Alternate Tasks," "Communication Attachment," "3270 Keyboard Remap," "File Transfer," "3270 Print," or the "Application Programming Interface (API)" in a way that alters the amount of memory that is required for these items, the following message displays if IBM TopView is active:

  ```
  134  Exit and reload 3270.
  Change max size in PIF to xxx.
  ```

  If IBM TopView is not active, this message displays:

  ```
  135  Exit and reload 3270.  New
  size:  xxx.
  ```

  When all choices are valid in the Communication Profile Tasks menu, type **z** to return to the 3270 Task Selection menu.

Communication Setup

You use this menu to prepare your program diskette for communications by giving it information that will identify functions supported by your network.

There are two Communication Setup menus. One is for Standalone and Gateway with Network Station configurations. The other is for Network Station configurations.

The Communication Setup menu does not display when your configuration is Gateway only.

Communication Setup Menu: Standalone and Gateway with Network Station

This is the menu a Standalone or Gateway with Network Station sees.

```
Chg Profile
                                           Ext    101       200
                        COMMUNICATION SETUP
                          YOUR       POSSIBLE
   ID   ITEM              CHOICE     CHOICES

   a    3270 Numeric Lock  2         1 = Yes      2 = No

   b    3270 Printer Use   3         1 = Screen Print
                                     2 = Host
                                     3 = Screen Print and Host
                                     4 = None

   c    File Transfer      2         1 = Yes      2 = No

   d    Application Programming 2    1 = Yes      2 = No
        Interface (API)


   When finished with this menu, press ENTER.

   Type ID letter to choose ITEM; press ENTER: ⌧
```

The following prompts display:

When finished ·with this menu, press ENTER.

Type ID letter to choose ITEM; press ENTER: ⌧

The items are:

- **a 3270 Numeric Lock** - specifies that only numbers, the minus sign, and the decimal point will be accepted in numeric fields during a 3270 session.

  When you type **a**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ▢
  ```

  The choices are:

  1. Yes
  2. No

- **b 3270 Printer Use** - specifies one of the four print modes allowed when you are using IBM PC 3270 Emulation.

  When you type **b**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ▢
  ```

  The choices are:

  1. Screen Print
  2. Host
  3. Screen Print and Host
  4. None

  "Screen Print" means that you only want to allow print of the content of the screen that is displaying when screen print is initiated. If the operator initiates the screen print, then the process is referred to as *operator-initiated screen print*, and you activate screen print with the Print key. If the host initiates the screen print, this process is called *host-initiated screen print.*

"Host" means that the only printing allowed will be the host initiating a remote session with the designated printer. No operator-initiated print is available; therefore, your Print key has no IBM PC 3270 Emulation function.

"Screen Print and Host" means that you can have the screen print function, and you can also have remote printer sessions.

"None" means that you want neither the screen print function nor remote printer sessions.

If you do not select "None" for this option, the 3270 Printer Setup menu displays when you press the Enter key.

- **c File Transfer** - specifies if you will be uploading files to your host computer or downloading files to your IBM Personal Computer.

  When you type **c**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER: ▯
  ```

  The choices are:

  1. Yes
  2. No

  When you choose "Yes" for the File Transfer option, the following prompt displays:

  ```
  Type host command; press ENTER: ▯
  ```

  The initial default for this prompt is IND$FILE. If you change the default, subsequent selection of this option displays the new value for the prompt default.

You must provide a valid host command at
this prompt. *Host command* refers to the
name of the host file transfer program, and
your host personnel or Run Book should
provide this command.

A valid host command consists of one to eight
characters with no single-byte EBCDIC
controls imbedded in the command, except for
spaces. The first space after a valid character
will be treated as the command delimiter.

> **Note:** If you are using a Keyboard ID
> other than 101, the host command
> should be changed to match the name
> expected by the host.
>
> For example, with Keyboard ID 313
> (U.K.), the dollar sign should be
> replaced with a pound sign. For 281
> (Denmark/Norway) or 285
> (Finland/Sweden) the dollar sign should
> be replaced with a capital A overcircle,
> and for 305 (Spain) it would be a peseta.
> All other languages should retain the
> dollar sign.

If you specify an invalid host command, you
are prompted again to enter a command, and
the invalid command still displays. The
following message also displays:

```
30  Invalid Host Command
```

When you choose "No" for this option, you
are specifying that you do not want to
transfer files to and from the host.

- **d Application Programming Interface
  (API)** - specifies if you will be using the API
  option.

  When you type **d**, the following prompt
  displays:

  ```
  Type YOUR CHOICE; press ENTER:  ▯
  ```

  The choices are:

  1. Yes
  2. No

  The API is not available on the Gateway
  configuration.

  When you choose "Yes" for the API option,
  the IBM PC 3270 Emulation API program is
  available for use during Communicate Tasks.
  You must run the API program,
  PSCAPI.COM, once before loading IBM PC
  3270 Emulation. See the *API/Host Reference*
  for steps to load the API.

  Choosing "No" for this option specifies that
  you do not want to use the API program
  during Communicate Tasks.

  When all choices are valid, press the Enter
  key, and the 3270 Printer Setup menu displays
  if "Printer Use" is not set to "None."

  If it is set to "None," you return to the
  Communication Profile Tasks menu.

Communication Setup Menu: Network Station

This is the Communication Setup menu that a Network Station operator sees.

```
Chg Profile
                                          Ext    101       200

                    COMMUNICATION SETUP
                              YOUR      POSSIBLE
   ID    ITEM                 CHOICE    CHOICES

   a     3270 Numeric Lock    2         1 = Yes      2 = No

   b     3270 Printer Use     3         1 = Screen Print
                                        2 = Host
                                        3 = Screen Print and Host
                                        4 = None

   c     File Transfer        2         1 = Yes      2 = No

   d     Application Programming  2     1 = Yes      2 = No
         Interface (API)
   e     Station Name                   Up to 15 Characters

   When finished with this menu, press ENTER.

   Type ID letter to choose ITEM; press ENTER: ⌑
```

For descriptions of the options for items **a**, **b**, **c**, and **d**, see "Communication Setup Menu: Standalone and Gateway with Network Station" on page 4-15.

- **e Station Name** - specifies the required Network Station name so that your station will be recognized on the Local Area Network.

The station name must be one to fifteen characters, and if the IBM PC Local Area Network 1.1 Program is loaded, the name must be different from the network name used by the IBM PC LAN Program.

The name is converted to uppercase when you exit this menu; therefore, when the name displays in the menu or in the status lines, it displays in all uppercase letters even if you entered it in lowercase letters.

If you do not specify a name, before exiting the menu, the menu re-displays with all changed values still video-reversed. Two asterisks (**) to the right of a value denote that it is an invalid value, and the following message displays:

```
108  Invalid choices.  Change choices
marked with **.
```

In addition, the following prompt displays:

```
Type ID letter to choose ITEM;
press ENTER:  ☐
```

When all choices are valid, press the Enter key, and the 3270 Printer Setup menu displays if Printer Use is not set to "None."

If "Printer Use" is set to "None," you return to the 3270 Task Selection menu.

3270 Printer Setup

The 3270 Printer Setup menu lets you specify
how you want your printed output to look and
where you want it to print. This menu displays
only if "Printer Use" is specified as "Screen
Print," "Host," or "Screen Print and Host." This
menu does not display when your configuration
is Gateway.

The choices you make in this menu become the
defaults. You can change all of these defaults
temporarily by using the 3270 Printer Requests
menu while in 3270 Request Tasks.

```
Chg Profile
                                      Ext    101              200
                   3270 PRINTER SETUP
                       YOUR      POSSIBLE
    ID   ITEM         CHOICE    CHOICES

    a    3270 Print Destination   1     1 = Printer        2 = Disk
    b    Lines Per Inch           1     1 = 6 LPI          2 = 8 LPI
    c    Line Spacing             1     1 = Single         2 = Double
    d    Maximum Page Length     66     1 – 99
    e    Maximum Print Position  80     1 – 158
    f    Compress Line Spacing    2     1 = Yes            2 = No
    g    Form Feed in Any Position 2    1 = Yes            2 = No
    h    Override Formatted Print 2     1 = Yes            2 = No
    i    Add Form Feed            3     1 = After Print Key
                                        2 = After Print    3 = No
    j    Printer Device Name      1     1 = LPT1 (PRN)
                                        2 = LPT2           3 = LPT3


When finished with this menu, press ENTER.

Type ID letter to choose ITEM; press ENTER: ◻
```

The following prompts display:

When finished with this menu, press ENTER.

Type ID letter to choose ITEM; press ENTER: ◻

The items are:

- **a 3270 Print Destination** - specifies the
  destination for your printed output.

  When you type **a**, the following prompt
  displays:

  ```
  Type YOUR CHOICE; press ENTER:  ⌑
  ```

  The choices are:

  1. Printer
  2. Disk

  If you select "Printer," all documents will
  print at your printer. This is referred to as
  Direct Print. See "Direct Print" on page 6-15
  for explanation and procedures for this type
  of print.

  Selecting "Disk" means that all documents
  will be sent to your disk or diskette, and you
  can revise them before sending them to the
  printer. This type of print is referred to as
  Deferred Print. The section "Deferred Print"
  on page 6-17 lists the procedures for using
  this type of print.

  When you select "Disk," the following prompt
  displays:

  ```
  Type file name;  press ENTER:  ⌑
  ```

  You can enter a file name, or you can exit the
  prompt by pressing the ESC key. This prompt
  has no initial default. Once you enter a file
  name, however, all print to disk files will be
  sent to the file you specify at the prompt until
  you name another file for that function.

- **b Lines Per Inch** - specifies the line spacing
  for your printed output.

When you type **b**, the following prompt displays:

Type YOUR CHOICE; press ENTER: ⊡

Your choices are:

1. 6 LPI
2. 8 LPI

- **c Line Spacing** - specifies line spacing of either single-spacing or double-spacing.

  When you type **c**, the following prompt displays:

  Type YOUR CHOICE; press ENTER: ⊡

  The choices are:

  1. Single
  2. Double

- **d Maximum Page Length** - specifies the number of printed lines allowed on a page.

  When you type **d**, the following prompt displays:

  Type YOUR CHOICE; press ENTER: ⊡

  The choices are 1 - 99, and the default is 66.

- **e Maximum Print Position** - specifies the maximum number of characters per line.

  When you type **e**, the following prompt displays:

  Type YOUR CHOICE; press ENTER: ⊡

  The choices are 1 - 158. The default is 80.

- **f Compress Line Spacing** - specifies if you want the printed output condensed by overriding the host-specified Lines Per Inch setting during LU1 printing.

  When you type **f**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ☐
  ```

  The choices are:

  1. Yes
  2. No

  When you select "Yes," the printed output will be condensed to eight LPI if you or the host has instructed eight or six LPI. The printed output will be condensed to six LPI when four LPI is specified.

- **g Form Feed in Any Position** - specifies whether the Form Feed Character (space character) must be in the first position. This option is valid during Direct or Deferred Print operations.

  When you type **g**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ☐
  ```

  The choices are:

  1. Yes
  2. No

  When you select "Yes," a form feed character, or space character, in any position ejects the form currently in the printer and advances the paper forms until the first print line of the next page is reached. This happens only if the first form is properly aligned and the "Maximum Page Length" value is correct.

When you select "No," a form feed character located in any print position other than print position one is printed as a space.

- **h Override Formatted Print** - used during Direct or Deferred Print operations to specify whether nulls will print as blanks or if they will be skipped over and not printed.

  When you type **h**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ⌷
  ```

  The choices are:

  1. Yes
  2. No

  If you select "Yes," nulls will print as blanks.

  If you select "No," nulls will be skipped over, and they will not print.

- **i Add Form Feed** - used during Direct or Deferred Print operations to specify whether a Form Feed will be added after a Print key has been pressed, after any print operation, or only if Form Feed is encountered in the printer output.

  When you type **i**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ⌷
  ```

The choices are:

1. After Print Key
2. After Print
3. No

"After Print Key" means that when you initiate a screen print, a form feed is performed at the printer after the operator-initiated print operation.

"After Print" means that a form feed is performed after each host-initiated *and* operator-initiated print operation.

"No" means that a form feed is only performed when a valid form feed order is issued for a host-initiated print operation.

- **j Printer Device Name** - specifies which printer port you are using.

  When you type **j**, the following prompt displays:

  Type YOUR CHOICE; press ENTER: ☐

  The choices are:

  1. LPT1 (PRN)
  2. LPT2
  3. LPT3

To exit this menu, press the Enter key, and the Communication Profile Tasks menu displays.

Modem and Line Description

Use this menu to prepare a description of the communication equipment your IBM Personal Computer uses to communicate with your host. This menu applies only if your configuration is Standalone, Gateway, or Gateway with Network Station, and you are communicating via SDLC attachment.

Your host personnel should provide the information needed to complete this menu correctly.

```
Chg Profile
                                        Ext    101              200

                    MODEM AND LINE DESCRIPTION
                            YOUR    POSSIBLE
    ID   ITEM               CHOICE  CHOICES

    a    Physical Unit ID    00000

    b    Network Facility    1       1 = Switched      2 = Dedicated
                                     3 = Switched Backup
    c    SDLC Station Address
    d    Continuous Carrier  2       1 = Yes                     2 = No

    e    Half Speed          2       1 = Yes                     2 = No
    f    NRZI Encoding       2       1 = Yes                     2 = No
    g    Answer-Tone Generation 2    1 = Yes  (Switched only)    2 = No
    h    End With REQDISCONT 2       1 = Yes                     2 = No


When finished with this menu, press ENTER.

Type ID letter to choose ITEM; press ENTER:
```

The following prompts display:

When finished with this menu, press ENTER.

Type ID letter to choose ITEM; press ENTER: ⊡

4-28

The items are:

- **a Physical Unit ID** - specifies the physical unit identification (PUID) that identifies the control unit on a switched line to the host computer. (This is the NCP PU IDNUM.)

  When you type **a**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ☐
  ```

  If the host system requires a unique PUID, then the specific PUID must be supplied by your host personnel. The PUID can be up to five hexadecimal numbers or letters.

- **b Network Facility** - specifies the type of telecommunication lines you are using with the modem.

  When you type **b**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ☐
  ```

  The choices are:

  1. Switched
  2. Dedicated
  3. Switched Backup

  With a *Switched* telecommunications line, you establish communication to the host by *dialing* a number on a telephone.

  With a *Dedicated*, or non-switched, telecommunications line, you do not dial a number on the telephone to establish communication to the host.

  A *Switched Backup* telecommunications line is a Dedicated line which can be switched to dial-up if the dedicated line goes down.

- **c SDLC Station Address** - specifies a secondary station on a telecommunication link such as yours. (This is the NCP PU ADDR.)

  When you type **c**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ▢
  ```

  This address must be supplied by your host personnel, and it can be up to two hexadecimal letters or numbers.

- **d Continuous Carrier** - specifies whether your modem has a continuous carrier facility.

  When you type **d**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ▢
  ```

  The choices:

  1. Yes
  2. No

  When you select "Yes," IBM PC 3270 Emulation will communicate with the host using *constant request to send* mode.

  You should select "No" for multidrop lines.

- **e Half Speed** - specifies whether your modem can operate at half speed or full speed.

  When you type **e**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ▢
  ```

  1. Yes
  2. No

"Yes" means that your modem can operate at half speed; "No" means it will always operate at full speed.

- **f NRZI Encoding** - specifies whether your transmission uses Non-Return to Zero Inverted encoding.

  When you type **f**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ▯
  ```

  The choices are:

  1. Yes
  2. No

- **g Answer-Tone Generation** - specifies whether your IBM PC 3270 Emulation Program will generate an answer tone on a switched line.

  When you type **g**,the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ▯
  ```

  The choices are:

  1. Yes (Switched only)
  2. No

- **h End With REQDISCONT** - specifies how the IBM PC 3270 Emulation Program will terminate the host connection when you end the 3270 task.

When you type **h**, the following prompt displays:

```
Type YOUR CHOICE; press ENTER:  ☐
```

1. Yes
2. No

"Yes" means that REQDISCONT is always sent to the host.

"No" means that IBM PC 3270 Emulation internally deactivates its active SNA/SDLC sessions and, if the connection is switched, disconnects the link. The actions necessary to reestablish the connection are dependent upon the NCPGEN parameters.

Note: NCPGEN is the process on the host computer that creates a network control program load module that defines the network configuration and the operating parameters of a particular controller of the data communication network.

To exit this menu, press the Enter key, and the Communication Profile Tasks menu displays.

Gateway Setup

The Gateway Setup menu allows you to specify
your Gateway Name and the number of Network
Stations it supports. This applies only if your
configuration is Gateway or Gateway with
Network Station.

```
Chg Profile
                                    Ext    101                200

                           GATEWAY SETUP

                           YOUR          POSSIBLE
  ID    ITEM               CHOICE        CHOICES

  a     Gateway Name                     Up to 15 Characters

  b     Maximum Number of Sessions  32   8, 16, 24, or 32




When finished with this menu, press ENTER.

Type ID letter to choose ITEM; press ENTER: ⊠
```

The following prompts display:

When finished with this menu, press ENTER.

Type ID letter to choose ITEM; press ENTER: ⊠

The items are:

- **a Gateway Name** - specifies your required
  name for the Gateway so that your network
  can recognize your Gateway when you
  attempt to use network facilities.

When you type **a**, the following prompt displays:

```
Type YOUR CHOICE; press ENTER:  ▯
```

The Gateway Name must match the syntax of a valid IBM PC Network or IBM Token-Ring Network name, but it cannot be an existing name on either of those networks. The *syntax* of a name or command is the format that you must follow in creating that name or command. The syntax is usually defined by the system or program that you are sending the command or name to. In this case, the receiver of the information is the IBM PC Network or the IBM Token-Ring Network. Refer to the publications for each of those if you need the correct syntax for the Gateway name.

The name is converted to uppercase when you exit this menu; therefore, when the name displays in the menu or in the status lines, it is in all uppercase letters even if you entered it in lowercase letters.

The Gateway Name is required, and if you do not specify a name before exiting the menu, it re-displays with all changed values still video-reversed. Two asterisks (**) to the right of a value denote that it is an invalid value, and the following message displays:

```
108  Invalid choices.  Change choices
marked with **.
```

In addition, the following prompt displays:

```
Type ID letter to choose ITEM;
press ENTER:  ▯
```

- **b Maximum Number of Sessions** - specifies the maximum number of display and printer sessions your IBM PC 3270 Emulation Gateway will support.

  When you type **b**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ☐
  ```

  The choices are 8, 16, 24, or 32. This number determines the number of menus to display in the List of Network Stations and the Status of Network Stations menu sequences. When you leave this menu and enter the List of Network Stations menu, the value you entered for "Maximum Number of Network Stations" is stored.

  A DFT Gateway attaches to the Control Unit to provide server functions for up to five display or printer sessions. An SDLC Gateway emulates a subset of Control Unit functions to the host to provide server functions for up to 32 display or printer sessions.

  The default value for "Maximum Number of Sessions" is 32; this allows you to see all Network Station numbers available.

  When you are finished with this menu, press the Enter key, and the List of Network Stations menu displays.

List of Network Stations

The List of Network Stations menu is required
for each Gateway, and it should include the
names of all Network Stations attached to the
Gateway. This menu displays when you select
"Revise List of Network Stations" in the 3270
Request Tasks menu, or after the Gateway Setup
menu in the Communication Profile Tasks menu.

Four possible List of Network Stations menus
can display, and the number you will see depends
on the "Maximum Number of Sessions" you
specified in the Gateway Setup menu. Only one
menu displays if you selected eight sessions, two
menus for 16 sessions, three menus for 24
sessions, and four menus for 32 sessions. The
following menu is the first to display:

```
Chg Profile        3270GATEWAY
                                    Ext    101              200

                    LIST OF NETWORK STATIONS
                              YOUR              POSSIBLE
  ID   ITEM                   CHOICE            CHOICES
  a    Network Station Name 02                  Up to 15 Characters
  b    Network Station Name 03                  Up to 15 Characters
  c    Network Station Name 04                  Up to 15 Characters
  d    Network Station Name 05                  Up to 15 Characters
  e    Network Station Name 06                  Up to 15 Characters
  f    Network Station Name 07                  Up to 15 Characters
  g    Network Station Name 08                  Up to 15 Characters
  h    Network Station Name 09                  Up to 15 Characters

  i    Display Sessions                         02-09 Separated
  j    Printer Sessions                         by Spaces



  Press ↓ key or ↑ key to see more.  When finished, press ENTER.

  Type ID letter to choose ITEM; press ENTER: ⊠
```

The following prompts display:

```
Press ↑ key or ↓ key to see more.
When finished, press ENTER.
```

```
Type ID letter to choose ITEM; press ENTER:  ▯
```

The items are: ⸜

- **a-h Network Station Name xx** - items a through h specify the required names for the Network Stations in your LAN. The **xx** can be any number from 02-33, depending on how many sessions you choose. These numbers change as you scroll through the List of Network Stations menus.

  When you type an ID **a** through **h**, the following prompt displays:

  ```
  Type YOUR CHOICE; press ENTER:  ▯
  ```

  Be sure that each Network Station Name corresponds to the name on each Network Station. Each name must also match the syntax of valid IBM PC Network or IBM Token-Ring Network names, but it cannot be an existing name on either of those networks. It is your responsibility to ensure this. The name converts to uppercase when you exit this menu; therefore, when the name displays in the menu or in the status lines, it is in all uppercase letters even if you entered it in lowercase letters.

Any characters, including all blanks, are valid, leading blanks are significant, and trailing blanks are not significant. For example, if Network Station Name 02 is 'GATE' and Network Station Name 03 is ' GATE', these two names will be treated as two different names. These two names will be treated as identical names if Network Station Name 03 is 'GATE   '.

A null entered as a Network Station Name choice deletes the Network Station Name from the Gateway's list.

When you attempt to change or delete a Network Station name, and IBM PC 3270 Emulation is loaded on that Network Station and an IBM PC Network or IBM Token-Ring Network session is active, the following message displays:

```
81  Cannot choose active session.
```

The session lines must correspond to what is set up in the NCPGEN. For stations 02-09, either 02-09 or 2-9 may be entered on the session lines. The leading zero is optional.

- **i Display Sessions** - specifies the number of each session defined as a display (LU2). The numbers change as you scroll through the List of Network Stations menus.

  When you type **i**, the following prompt displays:

```
Type YOUR CHOICE; press ENTER:  ◻
```

The choices are 02-33 separated by spaces. If you enter duplicate items or more than eight items on the same line, the following message displays:

`53  Invalid choice.`

- **j Printer Sessions** - specifies the number of each session defined as a printer (LU1 or LU3). The numbers change as you scroll through the List of Network Stations menus.

    When you type **j**, the following prompt displays:

    `Type YOUR CHOICE; press ENTER:  ▢`

    The choices are 02-33, separated by spaces. If you enter duplicate items or more than eight items on the same line, the following message displays:

    `53  Invalid choice.`

    If you select a Network Station as a printer, be sure that the corresponding Network Station sets up the Printer Use option in the Communication Setup menu.

***The List of Network Stations and DFT
Attachment:*** For DFT attach, the control unit
is customized, using the Multiple Interactive
Screen feature, with the number and addresses of
the logical terminals it is to support on a
Gateway-attached port.

The first and subsequent entries on the List of
Network Stations menu will correspond to the
control unit's list of logical terminals for the
specified port.

> **Note:** Local SNA attachment, remote
> SNA, and local non-SNA are supported.

An example for DFT attachment is provided
below in this Control Unit Port Address Table
entry.

C@..	A03	physical 3270 port
#IS.	5	number of addresses assigned to port
P@..	05	primary address in hexadecimal
S@..	08-0B	range of secondary addresses in hexadecimal.

NCPGEN has the secondary address 09
configured as a printer.

The IBM PC 3270 Emulation List of Network Stations menu would look like this for DFT attachment:

a Network Station Name 02
(corresponds to primary address 05)

b Network Station Name 03
(corresponds to secondary address 08)

c Network Station Name 04
(corresponds to secondary address 09)

i Display Sessions   02, 03, 05, 06

j Printer Sessions   04

For standalone configurations, the first entry in the device address list for that port is used as the display session. The second entry, if present, is used as the printer session if IBM PC 3270 Emulation specifies one.

The Network Station Names are specified on the List of Network Stations menu in the Gateway. IBM PC Network Adapter and IBM Token-Ring Network PC Adapter check the names to ensure that they match the syntax of valid IBM PC Network and IBM Token-Ring Network names.

The following rules are checked when exiting this menu:

• The total items listed on the display and printer lines combined cannot be greater than eight on each List of Network Stations menu.

- If you list a Network Station as a display or printer, then you must specify a Network Station Name for that item.

- If you specify a Network Station Name, then you must list the Network Station as a display or printer.

- You cannot list a Network Station Name twice for the same session type; for example, two displays cannot have the same Network Station Name.

- You cannot specify a Network Station Name as the same session type on two different List of Network Stations menus.

If you do not adhere to all of the above rules for the List of Network Stations menus, the menus re-display with all changed values still video-reversed. Two asterisks (**) to the right of a value denote that it is an invalid value, and the following message displays:

```
108  Invalid choices.  Change choices
     marked with **.
```

In addition, the following prompt displays:

```
Type ID letter to choose ITEM;
press ENTER:  ▯
```

See the **Notes** *on the following page.*

Notes:

1. If you configured the Gateway as a Gateway with Network Station, you must put the Gateway name in the List of Network Stations during Communication Profile Tasks.

2. If you want both a display and printer session in the Gateway, you must add the Gateway name to the list twice during Profile Tasks: once as a display and once as a printer.

3. You must configure the Network Station in the Gateway during Profile Tasks. Once the Communicate Task is running, the 3270 Request Tasks menu cannot be used to add or delete the Gateway name to the List of Network Stations.

The remaining List of Network Stations menus display in the order shown, depending on the number of sessions you selected.

```
┌─────────────────────────────────────────────────────────────────────┐
│ Chg Profile       3270GATEWAY                                         │
│                                          Ext   101            200     │
├─────────────────────────────────────────────────────────────────────┤
│                      LIST OF NETWORK STATIONS                         │
│                                                                       │
│                            YOUR            POSSIBLE                    │
│   ID   ITEM                CHOICE          CHOICES                     │
│                                                                       │
│   a    Network Station Name 10            Up to 15 Characters         │
│   b    Network Station Name 11            Up to 15 Characters         │
│   c    Network Station Name 12            Up to 15 Characters         │
│   d    Network Station Name 13            Up to 15 Characters         │
│   e    Network Station Name 14            Up to 15 Characters         │
│   f    Network Station Name 15            Up to 15 Characters         │
│   g    Network Station Name 16            Up to 15 Characters         │
│   h    Network Station Name 17            Up to 15 Characters         │
│                                                                       │
│   i    Display Sessions                   10-17 Separated             │
│   j    Printer Sessions                   by Spaces                   │
│                                                                       │
│                                                                       │
│   Press ↓ key or ↑ key to see more.  When finished, press ENTER.      │
│                                                                       │
│   Type ID letter to choose ITEM; press ENTER: ⌷                       │
│                                                                       │
└─────────────────────────────────────────────────────────────────────┘
```

```
Chg Profile          3270GATEWAY
                                    Ext    101              200
                      LIST OF NETWORK STATIONS
                            YOUR          POSSIBLE
ID   ITEM                   CHOICE        CHOICES

a    Network Station Name 18              Up to 15 Characters
b    Network Station Name 19              Up to 15 Characters
c    Network Station Name 20              Up to 15 Characters
d    Network Station Name 21              Up to 15 Characters
e    Network Station Name 22              Up to 15 Characters
f    Network Station Name 23              Up to 15 Characters
g    Network Station Name 24              Up to 15 Characters
h    Network Station Name 25              Up to 15 Characters

i    Display Sessions                     18-25 Separated
j    Printer Sessions                     by Spaces


Press ↓ key or ↑ key to see more.  When finished, press ENTER.

Type ID letter to choose ITEM; press ENTER: ⌶
```

```
Chg Profile          3270GATEWAY
                                    Ext    101              200
                      LIST OF NETWORK STATIONS
                            YOUR          POSSIBLE
ID   ITEM                   CHOICE        CHOICES

a    Network Station Name 26              Up to 15 Characters
b    Network Station Name 27              Up to 15 Characters
c    Network Station Name 28              Up to 15 Characters
d    Network Station Name 29              Up to 15 Characters
e    Network Station Name 30              Up to 15 Characters
f    Network Station Name 31              Up to 15 Characters
g    Network Station Name 32              Up to 15 Characters
h    Network Station Name 33              Up to 15 Characters

i    Display Sessions                     26-33 Separated
j    Printer Sessions                     by Spaces


Press ↓ key or ↑ key to see more.  When finished, press ENTER.

Type ID letter to choose ITEM; press Enter: ⌶
```

4-44

If you selected more than eight sessions, use the Cursor Down key to scroll forward through the menus, and use the Cursor Up key to scroll backwards. If you attempt to cursor down past the last menu or up past the first menu, the following immediate message displays:

```
59  Invalid key.
```

When you change the maximum number of sessions, you may need to update the List of Network Stations menus. Following are important points to remember when changing or updating the menus.

Notes:

1. If you press the ESC key after making changes to the menu, the current List of Network Stations menu re-displays without the changes. Only those changes made to the currently displayed List of Network Stations menu are cancelled.

2. When you change a menu, cursor up or down to another menu, or press the Enter key, the changes you made to the previous menu are saved and are effective.

3. If you change a List of Network Stations menu and remain in the same menu, the change is ineffective until you exit the menu via the Enter key or a cursor key.

4. If you press the ESC key without making any menu changes, the Gateway Setup menu displays if you are in Profile Tasks, and the 3270 Frame displays if you are in the Communicate Task. For an explanation of the 3270 Frame see "3270 Frame" on page 4-47.

Notes (Continued)

5. If you plan to reduce the maximum number of sessions and increase it again later, you should make sure there are no conflicts in the List of Network Stations menu since added sessions have the same values that they had previously.

   For example, on a Gateway with Network Station configuration, assume that there are initially 16 sessions specified, and that the Gateway name is listed as station number 10 in the second List of Network Stations menu.

   If you change the maximum number of sessions value from 16 to 8, you must move the Gateway name to a different station, putting it on the first List of Network Stations menu. If you subsequently change the maximum number of sessions back to 16, the Gateway name is on the first and second menu since it was retained internally as station number 10. A duplicate menu session type situation exists. You can correct this by removing the Gateway name from either menu.

When you are finished with all List of Network Station menus, press the Enter key, and the Communication Profile Tasks menu displays.

3270 Frame

The 3270 Frame displays when you select
"Communicate" in the 3270 Task Selection menu.
In this frame you can log on and off the host,
communicate with the host (transfer files, save
screens, print files) or select the Request Tasks,
List of Network Stations, and Printer Requests
menus.

There are two 3270 Frames, one for the Gateway
Operator, and one for the Gateway with Network
Station, Standalone, and Network Station
Operators.

Both frames have an *Operator Information Line*
and *Status Lines*. On the Standalone, Network
Station, and Gateway with Network Station
configurations, however, you have the status
lines only when you are in the Request menus
that are accessed from within the 3270 Frame.

The Operator Information Line is located at the
bottom of the screen (line 25). The Status Lines
display on the first two lines of the screen.

The Operator Information Line indicates that
you have a message when it displays a blinking
square or a blinking > (greater than sign). If
small, blinking square displays, press the Msg
key to view any messages. If a blinking greater
than sign displays followed by a message, press
any key to remove the message.

When you are in the 3270 Frame, the Operator
Information Line displays any input inhibited
messages. See Appendix A, "Message
Descriptions: Causes and Responses" on
page A-1 for an explanation of input inhibited
messages.

The Operator Information Line, when in the 3270 Frame, also displays the status of the display, the communication session, and local printing.

The Status Lines at the top of the screen display information on the status of your communication session. Following is a breakdown of information that can display in each of the status lines.

The first Status Line displays the following:

- Context Field - displays one of the following:

    (blank)
    You are in the 3270 Task Selection menu.

    Chg Profile
    You selected "Communication Profile Tasks" from the 3270 Task Selection menu.

    3270
    You selected "Communicate" from the 3270 Task Selection menu.

- Gateway/Network Station name field - displays one of the following:

    (blank)
    Your PC is configured as a Standalone.

    Gateway name
    Your PC is configured as a Gateway or Gateway with Network Station, and the *Gateway name* is that of your Gateway. This displays during Communicate Task or while in the List of Network Stations during Communication Profile Tasks.

Network Station name
> Your PC is configured as a Network Station, and the *Network Station name* is that of your Network Station. This displays during Communicate Task.

The second Status Line displays the following:

- Communication Status - displays the following for each configuration:

  - Standalone

    READY
    > For SDLC, this means Data Terminal Ready (DTR on); for DFT, you are on-line to the DFT Control Unit you requested.

    CONNECTED
    > For SDLC, this means Data Set Ready (DSR on); for DFT, you are on-line to the DFT Control Unit.

    ON-LINE
    > For SDLC, this means that the link is active; for DFT, you are on-line to the host through the DFT Control Unit.

    SESSION
    > This means that an SNA LU-LU session is active.

  - Network Station

    INACTIVE
    > This means that the IBM PC Network Adapter or IBM Token-Ring Network PC Adapter connection to the Gateway is not active.

READY

For SDLC, this means the Gateway is ready (DTR on); for DFT, you are on-line to the DFT Control Unit you requested.

CONNECTED

For SDLC, this means the Gateway is ready (DSR on); for DFT, you are on-line to the DFT Control Unit you requested.

ON-LINE

For SDLC, this means that the link is active on the Gateway; for DFT, you are on-line to the host through the DFT Control Unit.

SESSION

This means that an SNA LU-LU session is active.

— Gateway or Gateway with Network Station

READY

For SDLC, this means Data Terminal Ready (DTR on); for DFT, you are on-line to the DFT Control Unit you requested.

CONNECTED

For SDLC, this means Data Set Ready (DSR on); for DFT, you are on-line to the DFT Control Unit you requested.

ON-LINE

For SDLC, this means that the link is active on the Gateway; for DFT, you are on-line to the host through the DFT Control Unit.

SESSION
This means that an SNA LU-LU session is active.

- Keyboard Extension Status - displays **EXT. xxx**, where **xxx** is the number of the active Keyboard Extension you have selected.

- System Version - displays **xxx**, where **xxx** is the IBM PC 3270 Emulation version number.

When in the 3270 Frame on a color display, the Operator Information Line displays as white. The rest of the display uses the same colors as an IBM 3279 Model S2A Display does:

- Protected Field
  - High-Intensity - white
  - Low-Intensity - cyan
- Unprotected Field
  - High-Intensity - red
  - Low-Intensity - green.

When in the 3270 Frame on a monochrome display, the high-intensity fields display bright, and low-intensity fields display as normal.

See Appendix A, "Message Descriptions: Causes and Responses" on page A-1 for a detailed explanation of the message lines and types of messages.

To exit the 3270 Frame, you can press the Alt Task key to return to the Alternate Field, or you can end the communicate session. To end a session, refer to the steps in "Ending a Session" on page 6-10.

3270 Frame: Gateway with Network Station, Standalone, and Network Station

This is the 3270 Frame that a Gateway with Network Station, Standalone, and Network Station operator sees.

```
4B
```

3270 Frame: Gateway

This is the 3270 Frame that a Gateway operator sees.

```
3270                    3270GATEWAY
READY                                         Ext    101         200




        Press REQUEST Key to view options for Request Tasks.







 4B
```

When in the 3270 Gateway Frame, the following keys are the only keys that can be used:

- REQST
- END TASK
- RESET
- Msg
- Alt Task
- Print
- DIR.

3270 Request Tasks

You perform most of your basic tasks using the
3270 Request Tasks menu. You access this menu
by pressing the REQST key while in the 3270
Frame.

Changes made in this menu temporarily alter
your defaults. Use the Communication Profile
Tasks menu to set your defaults.

```
3270
SESSION                                Ext    101              200
                       3270 REQUEST TASKS

                                     YOUR     POSSIBLE
          ID   ITEM                  CHOICE   CHOICES

          a    Name File for 3270 Screen Save
          b    Name File for 3270 Print to Disk
          c    3270 Printer Requests
          d    File Transfer
          e    Display Status of Network Stations
          f    Revise List of Network Stations
          g    Data Trace                  2     1 = Start  2 = Stop
          h    Screen Mode                 1     1 = Color
                                                 2 = Black and White


   Available options are marked with an asterisk (*).

   When finished with this menu, press ENTER.

   Type ID letter to choose ITEM; press ENTER: ⌡
```

The following prompts display:

```
Available options are marked with an
asterisk (*).
```

```
When finished with this menu, press ENTER.
```

```
Type ID letter to choose ITEM; press ENTER:  ⌑
```

The items that are available for your
configuration are marked on the display with an
asterisk. If you select an item that is not marked
with an asterisk, the following message displays:

```
122  Task not available for
selected configuration.
```

When this message displays, the 3270 Request
Tasks menu remains on the screen until you
select an item that is marked with an asterisk.
You can also press the Enter key or the ESC key
to exit the 3270 Request Tasks menu and return
to the 3270 Frame.

If you select an item that is marked with an
asterisk, you will exit the Request Tasks menu
and return to the 3270 Frame as soon as you
complete the operation.

The items are:

- **a Name File for 3270 Screen Save** -
  specifies a document name so you can save
  3270 screens in that file on your diskette.

  When you type **a**, the following prompt
  displays:

  ```
  Type file name; press ENTER:  ⌑
  ```

  This option does not apply if your
  configuration is Gateway.

The choice is any valid file name. You should not specify an IBM PC DOS reserved device name such as CON, LPT1, LPT2, LPT3, PRN, COM1, for example. The IBM PC 3270 Emulation Program, however, does not prevent you from using one of these reserved names.

During Screen Save, if one ASCII file is appended, or added to the end of another ASCII file, IBM PC 3270 Emulation will not modify the existing file. Therefore, if you append to a file that contains an IBM PC DOS end of file character, and then attempt to TYPE the file on the display, you may not see the entire file. It is your responsibility to determine if and how an editor can be used to allow the entire file to display.

- **b Name File for 3270 Print to Disk** - specifies the file name that deferred print documents will be sent to. Deferred print procedures can be found in "Deferred Print" on page 6-17.

  When you type **b**, the following prompt displays:

  ```
  Type file name; press ENTER:  ▯
  ```

  This option does not apply if your configuration is Gateway, or if your configuration is Standalone, Network Station, or Gateway with Network Station and you have selected "None" for "3270 Printer Use" in the Communication Setup menu. See "Communication Setup Menu: Standalone and Gateway with Network Station" on page 4-15.

  If you specified a file name in the Communication Setup menu, you do not need to specify the file name again here unless you wish to change it. Press the ESC key to exit

the prompt if you do not want to change the
file name.

The choices are any valid file name. You
should not specify an IBM PC DOS reserved
device name such as CON, LPT1, LPT2,
LPT3, PRN, COM1, for example. The IBM
PC 3270 Emulation Program, however, does
not prevent you from using one of these
reserved names.

During Print to Disk, if one ASCII file is
appended, or added to the end of another
ASCII file, IBM PC 3270 Emulation will not
modify the existing file. Therefore, if you
append to a file that contains an IBM PC
DOS end of file character, and then attempt
to TYPE the file on the display, you may not
see the entire file. It is your responsibility to
determine if and how an editor can be used to
allow the entire file to display.

- **c 3270 Printer Requests** - allows you access
  to the 3270 Printer Requests menu so you can
  change your print destination and options
  temporarily.

  When you type **c**, the 3270 Printer Requests
  displays.

  This option does not apply if your
  configuration is Gateway, or if your
  configuration is Standalone, Network Station,
  or Gateway with Network Station and you
  have specified "3270 Printer Use = none" in
  the Communication Setup menu. See
  "Communication Setup Menu: Standalone
  and Gateway with Network Station" on
  page 4-15.

- **d File Transfer** - allows you to download
  (RECEIVE) or upload (SEND) files to and
  from the host. See "File Transfer" on
  page 6-20 for steps to transfer files.

When you type **d**, the following prompt displays:

```
Type command;  press ENTER:  ▯
```

This option does not apply if your configuration is Gateway, or if your configuration is Standalone, Network Station, or Gateway with Network Station and you have specified "File Transfer = no" in the Communication Setup menu. See "Communication Setup Menu: Standalone and Gateway with Network Station" on page 4-15.

For an explanation of the command format, see "File Transfer Command Format" on page 6-22.

- **e Display Status of Network Stations** - allows the Gateway Operator to see the status of the Network Stations listed in the List of Network Stations.

  When you type **e**, the Status of Network Stations menu displays.

  This option does not apply if your configuration is Standalone or Network Station; only a Gateway Operator can use this option.

- **f Revise List of Network Stations**- allows you to revise your list of Network Station names.

  When you type **f**, the List of Network Stations menu displays.

  This option does not apply if your configuration is Standalone or Network Station; only a Gateway Operator can use this option.

- **g Data Trace** - activates or deactivates the trace function by specifying whether the system is to save the Path Information Unit (PIU) sent or received by IBM PC 3270. This information can be used to diagnose transmission system protocol problems. The operator of an IBM PC configured as Gateway can trace all communication between each Network Station and the host computer.

  The Data Trace option defaults to 2 (Stop) and does not activate unless you select 1 (Start) from the menu. When you type **g**, the following prompt displays:

  `Type YOUR CHOICE; press ENTER:` ⊡

  The choices are:

  1. Start
  2. Stop

  When you select "Start," the following prompt displays:

  `Type file name; press ENTER:` ⊡

  You should not specify an IBM PC DOS reserved device name such as CON, LPT1, LPT2, LPT3, PRN, COM1, for example. The IBM PC 3270 Emulation Program, however, does not prevent you from using one of these reserved names.

  When you select "Stop," the Data Trace file is closed.

If a problem occurs with the disk while the Data Trace is in progress, the trace stops, the appropriate Data Trace error message displays, and the following message displays:

```
132  Trace stopped.  Use REQST to
restart trace.
```

> **Note:** If you select a Data Trace option, alter the option, then press the ESC key, the value of the Data Trace option is the same even though it is no longer highlighted on the screen.

The trace file name you entered before does not display as the default trace file name. You must name the data trace file name before exiting the prompt. If you cancel the prompt, the trace is set to "Stop." If you specify a file name which already exists, the following message displays:

```
130  File already exists.  Name
a new file for Data Trace.
```

Following that message, you are prompted again for the file name. After you name a file for Data Trace, an attempt is made to open the file. If an error occurs during this attempt, the appropriate data trace error message displays, followed by the message:

```
131  Disk or file error.  ESC or retry
with new disk or file.
```

You cannot exit this menu until these problems are corrected. If you use the ESC key to cancel the menu, the trace will not start. If you select "Start" and the Data Trace is in progress, the start selection is ignored.

- **h Screen Mode** - allows you to select the mode for your screen. This option applies only when you are using a color monitor.

  When you type **h**, the following prompt displays:

  ```
  Type YOUR CHOICE;  press ENTER:  ▯
  ```

  The choices are:

  1. Color
  2. Black and White

  See "Screen Mode" on page 6-42 for an explanation of how the screen will appear when you select either of these items.

  When you select "Color" and exit this menu, the 3270 Request Tasks menu and all menus accessed from within that menu will display using the following colors:

  Yellow Underscore

  White Message Line and Context Field in Status Line

  Green All other fields

  Black Background.

  Reverse video is always represented as black on green.

  When you select "Black and White," the screen will change to black and white when you exit the Request Tasks menu, and it will remain that color while in the 3270 Frame until you select otherwise.

Status of Network Stations

The Status of Network Stations menu allows the
Gateway operator to see the status of the
Network Stations attached to the network. This
enables the Gateway operator to allocate sessions
not being used, or to perform problem
determination.

```
3270
SESSION                                      Ext    101              200
                    STATUS OF NETWORK STATIONS


                                             SESSION
         STATION   NAME        SESSION  TYPE  STATUS

         JOHNSON       02      Display        ON-LINE
         JOHNSON       03      Printer        ON-LINE
         JONES         04      Printer        CICS
         SMITH         05      Display        ON-LINE
         3270GATEWAY   06      Display        CICS
         WHITE         07      Display        INACTIVE
         GREEN         08      Printer        ON-LINE
         THOMAS        09      Display        INACTIVE




 Press ↓ key or ↑ key to see more.  When finished, press ENTER.

```

The following prompt displays:

Press ↑ key or ↓ key to see more.
When finished, press ENTER.

This menu reflects the current status for each
Network Station only when you enter the menu
or cursor down to the next menu. It displays
after you type **e** (Display Status of Network
Stations) in the 3270 Request Tasks menu, and
this menu is only valid for a Gateway or
Gateway with Network Station operator.

Four possible Status of Network Stations menus can display, and the number you see depends on the Maximum Number of Sessions you specified in the Gateway Setup menu. Only one menu displays if you selected eight sessions, two menus for 16 sessions, three menus for 24 sessions, and four menus for 32 sessions.

The menu on the previous page is the first to display, and if others display, they will look the same as this one, but the values in the columns will be different.

The following values can display in the SESSION STATUS column:

Value	*Meaning*
INACTIVE	IBM PC Network or IBM Token-Ring Network connection is not active between the Gateway and the Network Station.
READY	SDLC - Data Terminal Ready (DTR on); DFT - on-line to DFT Control Unit requested.
CONNECTED	SDLC - Link active; DFT - on-line to host through DFT Control Unit.
ON-LINE	SDLC - Link active; DFT - on-line to host through DFT Control Unit.

Other values that may appear in the SESSION STATUS column are the primary logical unit (PLU) name, such as CICS, when the SNA LU-LU session is active, shortened to eight characters.

Note: IBM PC 3270 Emulation cannot validate the session status field, and it displays whatever it receives. If nothing is received in the field, or if you are attached to a control unit via DFT, **SESSION** displays. Also, the PLU is the logical unit that contains the primary half-sessions for a particular LU-LU session.

ID numbers without an assigned station name display on the Status of Network Stations menu with a blank space for STATION NAME and SESSION TYPE, and an **INACTIVE** SESSION STATUS.

The remaining Status of Network Stations menus display in the order shown, depending on the number of sessions you selected.

If you selected more than eight sessions, use the cursor down key to scroll forward through the menus, and use the cursor up key to scroll backwards. If you attempt to cursor down past the last menu or up past the first menu, the following message displays:

59 Invalid key.

When finished with this menu, press the Enter key, and the 3270 Request Tasks menu displays. Type **e** (Display Status of Network Stations) again to see the updated changes.

3270 Printer Requests

This menu displays after you select "3270 Printer Requests" in the 3270 Request Tasks menu. It allows you to temporarily change the defaults for your printing options. To set the defaults, you must go to "3270 Printer Setup" on page 4-22.

This menu does not display when your configuration is Gateway only. You may see one of two 3270 Printer Requests menus, depending on whether your session type is LU3/none, or LU1.

3270 Printer Requests: LU3 Session or No Session

This is the menu that displays if you have an LU3 printer session or no printer session active.

```
3270
SESSION                                          Ext    101              200

                          3270 PRINTER REQUESTS

                          YOUR        POSSIBLE
 ID    ITEM               CHOICE      CHOICES

 a     3270 Print Destination   1     1 = Printer      2 = Disk
 b     Lines Per Inch           1     1 = 6 LPI        2 = 8 LPI
 c     Line Spacing             1     1 = Single       2 = Double
 d     Maximum Page Length     66     1 - 99
 e     Maximum Print Position  80     1 - 158
 f     Compress Line Spacing    2     1 = Yes          2 = No
 g     Form Feed
 h     Reprint Buffer




 When finished with this menu, press ENTER.

 Type ID letter to choose ITEM; press ENTER: ▯
```

The following prompts display:

When finished with this menu, press ENTER.

Type ID letter to choose ITEM; press ENTER: ▢

Items **a** through **f** are the same as items **a** through **f** in the 3270 Printer Setup menu. See "3270 Printer Setup" on page 4-22 to refresh your knowledge of these items and their options.

The other items are:

- **g Form Feed** - allows you to send an immediate Form Feed to the printer, and it goes to the top of the next page.

  You can execute a form feed only if you chose "Printer" for "3270 Print Destination" in the 3270 Printer Setup menu.

- **h Reprint Buffer** - allows you to reprint the contents of your printer buffer. This is useful if you need to print something after a paper jam, for instance.

  When you type **h**, the following prompt displays:

  183 Message (Buffer Reprint) sent to host.

When finished with this menu, press the Enter key, and the 3270 Request Tasks menu displays.

3270 Printer Requests: LU1 Session

This is the menu that displays if you have an
LU1 session.

```
┌─────────────────────────────────────────────────────────────┐
│ 3270                                                         │
│ SESSION                              Ext    101         200  │
│ ┌───────────────────────────────────────────────────────┐   │
│ │             3270 PRINTER REQUESTS                      │   │
│ │                                                        │   │
│ │                      YOUR        POSSIBLE              │   │
│ │  ID   ITEM           CHOICE      CHOICES               │   │
│ │                                                        │   │
│ │  a    3270 Print Destination  1    1 = Printer   2 = Disk   │
│ │  b    Lines Per Inch          1    1 = 6 LPI     2 = 8 LPI  │
│ │  c    Line Spacing            1    1 = Single    2 = Double │
│ │  d    Maximum Page Length    66    1 - 99             │   │
│ │  e    Maximum Print Position 80    1 - 158            │   │
│ │  f    Compress Line Spacing   2    1 = Yes       2 = No    │
│ │  g    Form Feed                                       │   │
│ │  h    Reprint Buffer                                  │   │
│ │  i    PA1                                             │   │
│ │  j    PA2                                             │   │
│ │  k    Cancel Print                                    │   │
│ │                                                        │   │
│ │                                                        │   │
│ │  When finished with this menu, press ENTER.           │   │
│ │                                                        │   │
│ │  Type ID letter to choose ITEM; press ENTER: ⌑        │   │
│ │                                                        │   │
│ └───────────────────────────────────────────────────────┘   │
└─────────────────────────────────────────────────────────────┘
```

The following prompts display:

When finished with this menu, press ENTER.

Type ID letter to choose ITEM; press ENTER: ⌑

Items **a** through **f** are the same as items **a**
through **f** in the 3270 Printer Setup menu. See
"3270 Printer Setup" on page 4-22 to refresh your
knowledge of these items and their options.

The other items are:

- **g Form Feed** - allows you to send an immediate Form Feed to the printer, and it goes to the top of the next page.

  You can execute a form feed only if you chose "Printer" for "3270 Print Destination" in the 3270 Printer Setup menu.

- **h Reprint Buffer** - allows you to reprint the contents of your printer buffer. This is useful if you need to print something after a paper jam, for instance.

  When you type **h**, the following prompt displays:

  ```
  183  Message (Buffer Reprint) sent to
  host.
  ```

- **i PA1** - is a predetermined signal that you can send to your host computer. Your Run Book defines when you should use this option.

  When you type **i**, the following message displays:

  ```
  183  Message (PA1) sent to host.
  ```

- **j PA2** - is a predetermined signal that you can send to your host computer. Your Run Book defines when you should use this option.

  When you type **j**, the following message displays:

  183 Message (PA2) sent to host.

- **k Cancel Print** - allows you to cancel the current print job if you do not want it to complete printing.

  When you type **k**, the following message displays:

  185 Print cancelled.

When finished with this menu, press the Enter key, and the 3270 Request Tasks menu displays.

Customizing the Profile

Before you can use the IBM PC 3270 Emulation
program diskette, you must customize, or
personalize, the program.

Customization consists of changing several items
in the IBM PC 3270 Emulation menus. These
menus are:

1. Communication Setup

2. 3270 Printer Setup

3. Modem and Line Description

4. Gateway Setup

5. List of Network Stations.

You usually customize your program diskette
once, and change it only if your communication
requirements change. To customize the program
diskette for your workstation, ask your Network
Coordinator for completed *Customization
Worksheets*. These worksheets are in
Appendix D, "Customization Worksheets."

**Do not try to customize your profile without
consulting your Network Coordinator or host
personnel.**

Menu Trees for Customization

Beginning on the next page are menu trees that
show which menus you configure for each
configuration, and in what order these menus are
configured. These trees assume that you are
already in the Communication Profile Tasks
menu.

For the Network Station, configure the following menus:
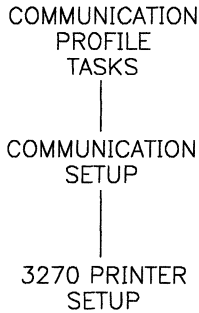
```
            COMMUNICATION
               PROFILE
                TASKS
                  |
                  |
            COMMUNICATION
                SETUP
                  |
                  |
             3270 PRINTER
                SETUP
```

Note: You will configure the 3270 PRINTER SETUP menu only if you do not select "None" for "Printer Use" in the COMMUNICATION SETUP menu.

For the Gateway with Network Station, configure the following menus:

```
                    COMMUNICATION
                       PROFILE
                        TASKS
                          |
        ┌─────────────────┼─────────────────┐
        |                 |                 |
      MODEM         COMMUNICATION        GATEWAY
     AND LINE           SETUP             SETUP
   DESCRIPTION            |                 |
                          |                 |
                        3270             LIST OF
                       PRINTER           NETWORK
                        SETUP            STATIONS
```
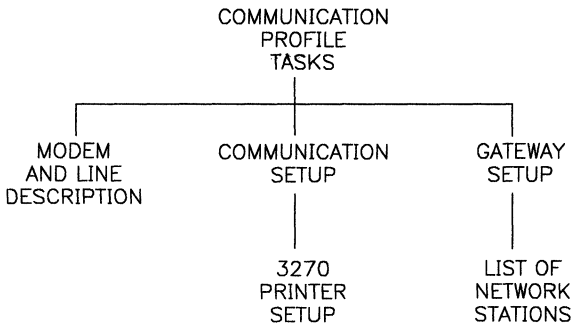
Note: You will configure the 3270 PRINTER SETUP menu only if you do not select "None" for "Printer Use" in the COMMUNICATION SETUP menu.

For the Gateway, configure the following menus:

```
              COMMUNICATION
                PROFILE
                 TASKS
          ┌────────┴────────┐
       MODEM              GATEWAY
      AND LINE             SETUP
    DESCRIPTION              │
                             │
                          LIST OF
                          NETWORK
                          STATIONS
```
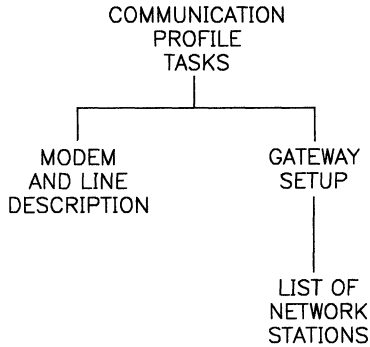
For the Standalone, configure the following menus:
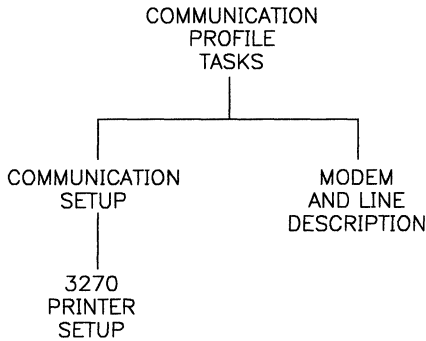
```
              COMMUNICATION
                PROFILE
                 TASKS
          ┌────────┴────────┐
    COMMUNICATION          MODEM
       SETUP              AND LINE
         │              DESCRIPTION
         │
       3270
      PRINTER
       SETUP
```

Note: You will configure the 3270 PRINTER SETUP menu only if you do not select "None" for "Printer Use" in the COMMUNICATION SETUP menu.

Using the Customization Worksheets

When you customize, use the *Customization Worksheets*.

At the top of each worksheet is the title of the menu, followed by the instructions to access the menu.

Next is a list of all ID letters in that menu, and your Network Coordinator has written in the choice for each of the ID letters which apply to your configuration.

The last item on each worksheet is instructions for exiting that menu once all choices are complete.

Now that you know how to read the Customization Worksheets, you are ready to learn how to use them to customize.

There are two ways to customize: a two-step method, and a one-step method. Both are presented in the following sections.

Customizing Using the Two-Step Method

These are the quick steps to customize using the two-step method:

1. Start in the 3270 Task Selection menu, type **b** to choose Communication Profile Tasks, and press the Enter key.

2. Type the ID of the item you are customizing, and press the Enter key.

3. When you pressed the Enter key, you either *received a prompt*, or a *new menu displayed*.

    If you received a prompt, continue with step 4.

    If a new menu displayed, then find the Customization Worksheet that corresponds to the new menu you are in, and continue with step 2.

    Note: Do not be alarmed if you exit a menu before you have made a selection for all of the ID letters. The selection of some ID letters automatically leads you to another menu, but you will return to the previous menu when you complete the one that automatically displayed.

4. At the prompt, type your choice for the item selected, and press the Enter key.

    Note: The ID and your choice are both highlighted.

5. If you have configured all ID items that your worksheets denote for the menu you are currently in, then follow the instructions on the screen or at the bottom of your Customization Worksheets to exit the menu.

   If all ID items have not been configured, repeat steps 2 through 4.

Customizing Using the One-Step Method

These are the quick steps to customize using the one-step method. This method can only be used for customizing IDs that do not lead you to another menu.

1. Start in the 3270 Task Selection menu, type **b** to choose Communication Profile Tasks, and press the Enter key.

2. Type the ID of the item you are customizing, type a space, type your choice for the item selected, and press the Enter key.

   Note: The ID and your choice are both highlighted.

3. Repeat step 2 until you have made a selection for all of the items your Customization Worksheet specifies.

Chapter Summary

The IBM PC 3270 Emulation menus exist on the program in a specific order. To access a menu, you must follow the proper channels. You use some of these menus to configure, or *customize*, your workstation.

Customization consists of changing items in the IBM PC 3270 Emulation menus. You should change these items to match the rest of your network, and make changes only as directed by your Network Coordinator.

Once you have customized, you are ready to perform IBM PC 3270 Emulation tasks. See Chapter 6, "Primary IBM PC 3270 Emulation Tasks" for a detailed explanation of your tasks, or refer to the *Quick Reference* card for short steps to perform most tasks.

Notes:

Chapter 5. Keys, Keyboards, and Keyboard Remapping

Notes:

About This Chapter

This chapter provides a glossary of definitions for the IBM PC 3270 Emulation keys and an explanation of the concept of *keyboard remapping*, the process of redefining keys.

Steps to remap keys and to create the *input file,* (the file which contains new definitions of the keys), are provided in Appendix C, "IBM PC 3270 Emulation Keyboard Remapping."

Using Your Keyboards Card

IBM PC 3270 Emulation works with three different keyboards that are part of different types of IBM PCs.

When the IBM PC 3270 Emulation Program is loaded on your PC and you select the Communicate Task, the definitions of IBM PC 3270 Emulation keys apply. You may not be familiar with these definitions because they may be different from those associated with another product or keyboard with which you are familiar.

Your IBM PC 3270 Emulation package includes a Keyboards Card that is designed to minimize any confusion and inconvenience associated with learning the functions of the IBM PC 3270 Emulation keys. This card illustrates the three keyboards that the IBM PC 3270 Emulation Program has been designed to work with.

Find the keyboard representation on the Keyboards Card that looks most like your keyboard. Note that the keys are labelled with their IBM PC 3270 Emulation definitions.

Glossary for the IBM PC 3270 Emulation Keys

While IBM PC 3270 Emulation is loaded into your IBM PC, certain keys on your keyboard have different functions than they would otherwise. An alphabetically arranged glossary of definitions for each key or key sequence follows:

> **Note:** The abbreviations used for some keys in this glossary and throughout this publication may not match the actual engraving on the keys on your keyboard. These abbreviations match those that appear on your *IBM PC 3270 Emulation Keyboards Card* and in the messages and prompts associated with this program.

Alt　　　　　Use the Alt key to select alternate key functions or with the keypad to enter characters not on the keys.

The Alt key also allows you to enter any character code from zero to 255 into the system from the keyboard. Hold down the Alt key, type the decimal value of the characters desired on the numeric keypad, and release the Alt key.

Alt Task　　　Use the Alt Task key (press and hold the Alt key, and press the ESC key) to switch between IBM PC 3270 Emulation and another IBM PC DOS application. See "Alternate Tasks Concepts and Definitions" on page 7-4.

ATTN	Use the ATTN key when you are waiting for the host computer to respond and you want to change or end your previous request.
Backspace ←	Press the Backspace key (←) to backspace over and erase the previous characters.
CLEAR	Press the CLEAR key when you want to erase all the characters displayed on your screen.
Ctrl	Hold the Ctrl key down to use extra functions of selected keys.
Cursor Down ↓	In the List of Network Stations menu or Status of Network Stations menu, press the Cursor Down key (↓) to move down through the menus.
Cursor Up ↑	In the List of Network Stations menu and Status of Network Stations menu, press the Cursor Up key (↑) to move to the previous menu.
CURSR SEL	Press the CURSR SEL (Cursor Select) key to allow a host application program to take action on a field.
Delete	Press the Delete key to delete the character above the cursor without leaving a blank space.

DEV CNCL   Use the DEV CNCL (Device
                Cancel) key to:

1. Cancel a Save request if the
   Screen Save was unsuccessful.

2. Cancel a Print request if the
   printer is busy (if the printer
   is performing a host-initiated
   screen print, you cannot
   cancel it with DEV CNCL).

3. Cancel a DEV CNCL message
   or to remove an Input
   Inhibited message.

4. Cancel a File Transfer
   operation.

DIR   Press the DIR key to display a
                directory.

Dup   Use the Dup key when required
                by your host application program.
                See your Run Book or your host
                personnel for more information
                about this key.

Enter   Press the Enter key when you
                want to send a command to the
                host.

END TASK   Press the END TASK key to exit
                the 3270 session.

Erase EOF   Press the Erase EOF key when
                you want to erase all the
                remaining characters from your
                cursor position on a line. When
                you use Erase EOF, the cursor
                does not move.

ErInp   Use the ErInp (Erase Input) key
to erase the currently displayed
screen. Most host computer
programs will allow you to enter
information only in certain areas
on the screen. When you use the
Erase Input key, you erase
information only in these fields.

ESC   Press the ESC key to cancel your
current menu operation.

FIELD   Use the FIELD MARK key to
MARK   mark a field according to an
application program at your host
computer.

HOME   Press the HOME key to return to
the first unprotected field of your
screen (usually the first space of
the top line), or to go to the top
of a directory (DIR) menu.

Insert   Press the Insert key to insert a
character in a field instead of
replacing the existing
character(s). Press the RESET
key to end the Insert mode.

Msg   Use Msg key to display queued
messages or remove immediate
and queued messages.

PA1   Use the PA1 key when required
by your host application program.
See your Run Book or your host
personnel for more information
about this key.

PA2	Use the PA2 key when required by your host application program. See your Run Book or your host personnel for more information about this key.
PF Select	Press and hold down the PF Select key when you want to select one of the PF host-controlled keys. For example, if you want to select the PF7 key, hold the PF Select key down and press the 7 key. PF Select is not available on the IBM Enhanced PC Keyboard.
PG DN	Press the PG DN key to scroll down in the directory menu.
PG UP	The PG UP key is not a valid IBM PC 3270 Emulation key.
Print	Use the Print key to print individual 3270 screens.
REQST	Press the REQST (Request) key when you want to perform 3270 Request Tasks.
RESET	Press the RESET key to free the keyboard when you get an Input Inhibited message or when you want to end Insert Mode.
Return ↵	Press the Return key to advance to a new line in a 3270 file or to use it as the Enter key in the 3270 Request Tasks or Communication Profile Tasks menus.

SAVE

Press the SAVE key when you want to save the information on the screen as a file on a disk or diskette.

SYS REQ

Use the SYS REQ to clear your display screen or to switch your work station between application and control programs. Check with your host personnel for an explanation of this key.

Tab

Press the Tab key to go forward to the next tab position.

Keyboard Remapping Overview

You may want certain IBM PC 3270 Emulation keys to function differently than as defined in the preceding section of this chapter. The IBM PC 3270 Emulation *Keyboard Remapping* application lets you change the definition of a key, thereby redefining the key to function like another key, string, or combination of keys and strings.

The Keyboard Remapping program reads an *input file* that you create. This file includes instructions to redefine keys as you specify. Guidelines for creating the input file are provided in Appendix C, "IBM PC 3270 Emulation Keyboard Remapping."

The Two Keyboard Remapping Methods

Read the following descriptions to determine why and when to use either of the following keyboard remapping techniques:

- The **Global Remap** method changes definitions of keys for all programs that you run after you run the global remapping program, REMAPKEY.COM. You execute this program while you are in IBM PC DOS before you load IBM PC 3270 Emulation. This means that the Global Remap is active before you even load IBM PC 3270 Emulation.

Keyboard Remapping Methods (Continued)

- The **3270 Keyboard Remap** method changes the definitions of keys only for the IBM PC 3270 Emulation program. When you enter the Alternate Field or exit the 3270 program, the definitions of the keys return to their previous definitions.

  Procedures for using both methods are detailed in Appendix C, "IBM PC 3270 Emulation Keyboard Remapping."

Chapter Summary

When running IBM PC 3270 Emulation on your IBM PC, some keys on your keyboard can have different functions. Use your Keyboards Card to provide assistance to learn and use your 3270 Keyboard.

If you want to change the definitions of keys, you can *remap* the keyboard using the appropriate keyboard remapping method. See Appendix C, "IBM PC 3270 Emulation Keyboard Remapping" for a more detailed discussion of Keyboard Remapping.

Notes:

Chapter 6. Primary IBM PC 3270 Emulation Tasks

Notes:

About This Chapter

In this chapter, you learn how and why IBM PC 3270 Emulation's principle tasks are performed. These tasks, along with a brief description of each, are listed below.

- **Starting an IBM PC 3270 Emulation Session**

  Steps to follow to start a 3270 session, or load the communicate function, are provided.

- **Ending an IBM PC 3270 Emulation Session**

  Steps to follow to end a 3270 session are provided.

- **Performing tasks from the 3270 Request Tasks menu**

  This chapter explains how to perform each of these tasks, but all of the options are also discussed in "3270 Request Tasks" on page 4-54. Refer to that menu discussion for an explanation of the different choices for each item and any possible restrictions on the choices for the items. The 3270 Request Tasks include:

  - **3270 Screen Save**

    With 3270 Screen Save you can save information displayed on your IBM PC screen. The steps to perform a Screen Save are provided.

About This Chapter (Continued)

- **Tasks from the 3270 Request Tasks menu (Continued)**

  - **3270 Print**

    Steps for performing two types of 3270 print are explained:

    1. Direct print
    2. Deferred print.

  - **3270 Printer Requests**

    This option on the Request Tasks menu allows you access to the 3270 Printer Requests menu so you can temporarily change the defaults for your printing options and destination. This section provides steps to change items in the Printer Requests menu.

  - **File Transfer**

    File Transfer allows you to download files from your host computer for revision at your IBM PC. It also allows you to upload the files when you have finished your revisions. The steps to perform file transfer are provided.

  - **Display Status of Network Stations**

    This section provides steps to enable the Gateway Operator to display the status of Network Stations in the Gateway's List of Network Stations.

About This Chapter (Continued)

- **Tasks from the 3270 Request Tasks menu (Continued)**

    - **Revise List of Network Stations**

      This section provides steps for the Gateway Operator to revise the List of Network Stations.

    - **Data Trace**

      This section provides steps to enable you to activate and deactivate a data trace.

    - **Screen Mode**

      This section provides the steps to enable you to select the screen mode from the Request Tasks menu.

Starting an IBM PC 3270 Emulation Session

To start a 3270 Session, or establish a communication session, perform the following:

1. Load the IBM PC 3270 Emulation Program.

2. Type **a** (Communicate) in the 3270 Task Selection menu, and press the Enter key.

   The 3270 Frame displays.

   > **Note:** If you use the fast path option when you load IBM PC 3270 Emulation, you automatically enter the 3270 Frame upon completion of the load process; therefore, you do not need to type anything to access the 3270 Frame where communication is established.

3. One of the following sequence of events will occur, depending on the type of communications attachment you are using. Choose the corresponding sequence for your type of attachment.

   - **If you are connected to the host via an SDLC switched line**, you will see a Communication Check message (504) at the bottom of the screen. This means that you are now in the 3270 Frame.

     Pick up the phone and dial the host. The number changes to 505, and when the host answers, the number changes to 510.

     When the communication check goes away and the host logo displays, you are ready to log on to the host.

     Proceed to step 4.

- **If you are connected to the host via an
  SDLC leased line**, you will see a
  Communication Check message (505) at
  the bottom of the screen. You are now in
  the 3270 Frame. The number will change
  to 510. This means that the SDLC link is
  active. When the communication check
  message goes away, you are ready to log
  on to the host.

  Proceed to step 4.

- **If you are connected to the host via
  DFT attachment**, the host logo screen
  displays.

4. Log on to the host.

   Because log-on procedures vary with different
   host systems, see your Run Book for steps to
   access your particular host.

   Note: If the Communication Check
   messages do not appear in the order shown
   here, then you must find the proper
   Communication Check message in
   Appendix A, "Message Descriptions:
   Causes and Responses" and note the
   possible cause and action.

Once you are in the 3270 Frame, the definitions
of certain keys on your keyboard change. Refer
to your Keyboards Card for an illustration of the
keyboard labelled with the new definitions, and
turn to Chapter 5 of this book for a glossary that
defines each of the new keys.

See "3270 Frame" on page 4-47 for details of
important message and status lines, a listing of
valid keys, and an explanation of how to exit the
frame.

Additional Session Initiation Information

While the communication session is being established for the Gateway, Gateway with Network Station, and Network Station, the station names and Gateway name you specified in the Gateway Setup menu are used to create network names using the 5CH Programming Interface of NETBIOS.

NETBIOS is the software interface between network adapters and IBM PC Programs. IBM PC 3270 Emulation goes directly to NETBIOS and not to the network software.

The names you specify in the Gateway Setup menu must not be existing IBM PC Network or IBM Token-Ring Network names. When you load IBM PC 3270 Emulation on the Gateway, the Gateway attempts to establish sessions for all of the stations in the List of Network Stations. When it attempts to establish a session with a Network Station and the maximum number of sessions is already established, the following message displays:

```
89  Unable to load; not enough Network
Control Blocks (NCBs).
```

When the Gateway attempts to establish a session with a Network Station and the Network Station is not loaded with IBM PC 3270 Emulation, the Gateway periodically retries.

Additional Session Initiation Information (Continued)

When you first load IBM PC 3270 Emulation on the Network Station and try to start a 3270 session, the following message displays:

```
85 Wait - Gateway has not called
Network Station.
```

The message is removed when the Gateway successfully establishes a 3270 session with the Network Station. This happens a few seconds after the Gateway is loaded with IBM PC 3270 Emulation and the Network Station name is listed in the Gateway's List of Network Stations.

Errors While Starting a 3270 Session

If an error occurs which generates a message, refer to Appendix A, "Message Descriptions: Causes and Responses" for a detailed description of the cause of the message and procedures for recovery.

Ending a Session

From a Network Station: To end a 3270
session from a Network Station:

1. Log off the host.
2. Press the END TASK key to end the
   Communicate task, and the 3270 Task
   Selection menu displays.

***From a Gateway or Gateway with Network
Station:*** To end a 3270 session from the
Gateway or Gateway with Network Station:

1. Press the END TASK key to bring down all of
   the sessions for all of the Network Stations.
   The following message displays:

   ```
   80  RESET or END TASK - all sessions
   will be cancelled.
   ```

2. The Gateway operator cannot end one
   Network Station at a time. The operator
   must cancel **all** or **none** of the sessions.
   Therefore, at this point you must determine if
   you wish to bring down *all Network Stations
   using the Gateway or Gateway with Network
   Station.*

   **If you do not wish to bring down all
   sessions or you want to remove this
   message**, press the Reset key.

Ending a Session (Continued)

If you wish to bring down all sessions ,
press the END TASK key, and the following
message displays:

```
95  Wait - ending task.
```

All Network Stations using the Gateway are
brought down. The Gateway name that was
created at initialization time (when you selected
"Communicate" from the 3270 Task Selection
menu) is deleted from the network adapter.

Note: The Network Station operator can
end the session by logging off the host.
That session can be reused by another
Network Station either by adding a new
name to the List of Network Stations menu
or by loading another Network Station
with the same name.

3270 Request Tasks

Once you are in the 3270 Frame, you can request to perform certain tasks. You perform these tasks from the 3270 Request Tasks menu, and the tasks, as listed in the menu, are:

- **Name File for 3270 Screen Save** - lets you specify a file name so you can save 3270 Frame screens in that file on your disk.

- **Name File for 3270 Print to Disk** - lets you specify a file on a disk in which to save print files to be printed later.

- **3270 Printer Requests** - allows you access to the 3270 Printer Requests menu so you can temporarily change the default values for your print destination and printing options.

- **File Transfer** - allows you to upload (SEND) and download (RECEIVE) files to and from the host.

- **Display Status of Network Stations** - allows the Gateway Operator to see the status of the Network Stations attached to the IBM PC Network or IBM Token-Ring Network.

- **Revise List of Network Stations** - allows the Gateway Operator to revise the list of Network Station names.

- **Data Trace** - allows you to activate or deactivate the trace function.

- **Screen Mode** - allows you to select the mode for the 3270 Frame.

To perform any of these tasks, press the REQST key from within the 3270 Frame, and the 3270 Request Tasks menu displays. Select the ID letter for the task you wish to perform.

3270 Screen Save

Your 3270 Screen Save function allows you to save on a diskette a copy of the 3270 screens that you view on your monitor while in the 3270 Frame.

The 3270 Screen Save procedure is as follows:

1. Start a 3270 Session.

   The 3270 Frame displays.

2. Access the 3270 Frame you wish to save.

   If you have already specified a file for screens to be saved in, proceed to Step 7. If you have not specified a file, continue with the next step.

3. Press the REQST key, and the 3270 Request Tasks menu displays.

4. Type **a** (Name File for 3270 Screen Save), and press the Enter key.

5. Type a file name when prompted.

   You can use the name of a file that already exists or create a new file. The default extension, **.SAV**, is added to the filename if you do not specify another extension.

6. After you type the file name, press the Enter key.

   The 3270 Frame automatically displays.

7. Press the Save key to save what is displaying on your screen while you are in the 3270 Frame and your IBM PC 3270 Emulation Program is running.

   The screen is saved in the file that you previously named for screen save.

3270 Print

When you print a document while using the IBM
PC 3270 Emulation Program, you are performing
3270 Print. When you use 3270 Print, your
printer is capable of printing documents that the
host computer sends to it, just like an IBM 3287
Printer can. Your printer can also still print
documents that you send to it.

To print documents, you must:

1. Select a configuration other than "Gateway"
    for your workstation.
2. Select a choice other than "None" for "3270
    Printer Use" in the Communication Setup
    menu.
3. Select the destination where you want the
    documents to print. Your choices are:
    a. Printer
    b. Disk.

If you select "Printer", host-initiated documents
will print at your printer. This is referred to as
Direct Print. See "Direct Print" on page 6-15 for
an explanation of and procedures for this type of
print.

If you select "Disk", host-initiated documents will
be sent to your disk or diskette, and you can
revise them before sending them to the printer.
This type of print is referred to as *Deferred Print*.
The section "Deferred Print" on page 6-17 lists
the procedures for using this type of print.

You can select the destination in either the 3270
Printer Requests menu or in the 3270 Printer
Setup menu. See "3270 Printer Requests" on
page 6-19 for an explanation of how to
temporarily change your print destination and
other printing options.

Direct Print

When you use Direct Print, your printer is your print destination. Before you can use Direct Print, you must select "Printer" as your 3270 Print Destination in either the 3270 Printer Setup menu or the 3270 Printer Requests menu. The three types of Direct Print are:

Operator-Initiated Screen Print: When your IBM PC is displaying a screen in the 3270 Frame that you want as a paper copy, use this type of direct print, otherwise referred to as Screen Print. The screen will print at your IBM PC physically-attached printer. To perform screen print:

1. Access the 3270 Frame that you want as a paper copy.

2. Turn your printer power switch to On.

3. Press and hold your Alt key, and then press the Print key.

The screen will now print at the printer.

Two other types of Direct Print (*Host Print* and *Host-Initiated Screen Print*) are discussed on the following page.

Direct Print (Continued)

Host Print: Host print occurs when the host computer sends a file to print on your printer. Since the procedure for using host print depends on your host program, follow the procedures listed in your Run Book for using host print.

Host-Initiated Screen Print: Host-initiated screen print occurs when the host computer causes the contents of your display screen to print. Since the procedure for using this type of print depends on your host program, follow the procedures listed in your Run Book for using host-initiated screen print.

> **Note:** Generally, for both types of host print, the host computer will, upon receiving your print request, issue a write command on the LU2 session, or begin a printer session (LU1 or LU3) with the specified printer.

Deferred Print

When you use Deferred Print, your disk or diskette is the Print Destination. You would use Deferred Print for a document you want to revise before printing or for a document that you want to print later. The two kinds of Deferred Print are host print and host-initiated screen print.

Host Print: The host computer stores data in a file you have already named on your diskette for editing and/or printing later.

Host-Initiated Screen Print: The host computer causes what is displaying on your screen to be stored on your diskette.

Both of these procedures are host-initiated; therefore, you should follow the procedures listed in your Run Book for using deferred print.

However, you must prepare your machine for deferred print by naming a file on your disk where the files will be saved (if this was not done previously in the Communication Profile Tasks menu). Steps for naming the file for 3270 Print to Disk are provided on the following page.

Deferred Print (Continued)

The steps for naming a file for 3270 Print to Disk are:

1. Select "Disk" for "3270 Print Destination" in either the 3270 Printer Setup menu or the 3270 Printer Requests menu.

2. Access the 3270 Request Tasks menu.

3. Type **b** (Name File for 3270 Print to Disk) and press the Enter key.

4. You are prompted to type a filename. The default extension, **.DFP**, is added to the filename if you do not specify a different extension.

You are now ready for deferred print data to be stored in the file you have just named on your disk.

3270 Printer Requests

When you use direct or deferred print, you determine the destination of and type of output for the document you are printing. You have two possible destination choices and up to ten printing options.

To set the defaults for your print destination and options, use the Communication Setup and Printer Setup menus. If you customized your profile, then you have already used these two menus. If you need to refresh your memory or need a first-time explanation, see the menu discussion for each of these in Chapter 4, and also refer to "Customizing the Profile" on page 4-71 for steps to customize each of these menus.

To temporarily change the defaults for your print destination and options, use the 3270 Printer Requests menu. Steps to access the menu and to change the options are presented below:

1. Access the 3270 Frame.

2. Press the REQST key.

   The 3270 Request Tasks menu displays.

3. Type **c** (3270 Printer Requests) and press the Enter key.

   The 3270 Printer Requests menu displays.

4. Type the ID for the option you wish to change, a space, your choice where given a choice (if needed, see "3270 Printer Requests" on page 4-66 for an explanation of your options), and then press the Enter key.

File Transfer

The IBM PC 3270 Emulation File Transfer
command can be used under two different sets of
operating environments:

- When using the 3270 Request Tasks,

    - or -

- While operating in an *Alternate Field* or in a
  TopView window (these applications can be
  used to run other programs with IBM PC 3270
  Emulation and are described in detail in
  Chapter 7, "Using Other Applications with
  IBM PC 3270 Emulation").

The "File Transfer Command Overview" and
"File Transfer Command Format" sections that
immediately follow this introduction are general
discussions that apply to file transfers performed
in either of these operating environments.

For specific information to perform File Transfer
procedures in each of the operating
environments, refer to the appropriate section as
directed below:

- "Performing File Transfer from the 3270
  Frame" on page 6-32

- "Performing File Transfer from the Alternate
  Field or while Using the IBM TopView 1.1
  Program" on page 6-34.

File Transfer Command Overview

Files can be transferred, or moved, in two
different directions for two different reasons, as
suggested by the names of the related procedures
listed below:

• Downloading Files (RECEIVE)

• Uploading Files (SEND).

Sometimes, instead of using your host computer
editing facilities, you may want to download
(RECEIVE) a file to an IBM PC diskette for
revision. In other words, you can bring a file
down from the host, or mainframe, to your
Personal Computer. You can then revise or print
the file.

After you have revised the files, you can upload
(SEND) them to the host computer.

During file transfer, you can only use the
following keys:

• REQST
• DEV CNCL
• Alt Task   (if you are not in an IBM
  TopView environment)
• CLEAR
• DIR
• PA2
• Msg.

For a detailed explanation of the command
format for file transfer, turn to the next section.

Refer to "Cancelling a File Transfer Command
Request" on page 6-36 for steps to cancel a file
transfer request.

File Transfer Command Format

To transfer files, you enter the file transfer commands, SEND and RECEIVE plus the other parameters, on the prompt line, as explained in the following section. The parameters associated with each command will vary according to the command chosen and whether the host is a VM/CMS, TSO, or CICS/VS machine.

Your Network Coordinator or host personnel should supply you with information regarding which parameters are valid for your type of host. Before you begin to transfer files, be sure you have all of this information, such as which parameters to use in a file transfer command for your particular host.

The section below gives detailed information on the command format for VM/CMS, and you can find this information for TSO in "TSO Format" on page 6-26. The command format required by CICS is documented in the *CICS/VS 3270-PC File Transfer Program Descriptions/Operations Manual* (SH20-6306-0).

VM/CMS Format: This is a **SAMPLE** download command for VM/CMS:

```
RECEIVE a:report.dat report
script a (CRLF
```

The basic command is:

```
SEND/RECEIVE filespec filename
filetype filemode (options
```

SEND
is the command that transfers a file from the PC to the host. IBM PC 3270 Emulation transforms this into the format expected by the host which is: IND$FILE PUT

File Transfer Command Format (Continued)

RECEIVE

is the command that transfers a file from the host to the PC. This is transformed to: IND$FILE GET

filespec

is the PC file name. You are allowed 32 characters for the path plus 12 characters for the IBM PC DOS filename and extension. The personal computer disk to be used and any file extension is optional. See your IBM PC DOS manual for PC file specifications. This is a required positional parameter.

filename

is the VM filename. This is a required positional parameter.

filetype

is the VM filetype. This is a required positional parameter for SEND. It is an optional positional parameter for RECEIVE. If this parameter is omitted, the default is "*".

filemode

is the VM filemode. This is an optional positional parameter. If this parameter is omitted, the default for SEND is A, and the default for RECEIVE is "*".

File Transfer Command Format (Continued)

The following keyword parameters are optional. They are separated from the last positional parameter by a ((left parenthesis). The positional parameters are filespec, filename, filetype, and filemode.

ASCII

With the **SEND** command, ASCII causes the host program to translate records from ASCII to EBCDIC before writing them to the file. With the **RECEIVE** command, ASCII causes the host program to translate file records from EBCDIC to ASCII before transmission to the PC. The default is no translation.

CRLF

With the **SEND** command, CRLF causes the host program to delete carriage return line feed characters from each record before writing it to the file. With the **RECEIVE** command, CRLF causes the host program to add carriage return line feed characters to the end of each file record before transmission to the PC. The default is no CRLF.

APPEND

Causes the file being transferred to be added to the end of the target file. If APPEND is not specified and the target file already exists, the target file is replaced. The APPEND parameter overrides any other values specified for LRECL and RECFM. The default is no APPEND.

File Transfer Command Format (Continued)

LRECL n

Used for **SEND** only. It provides the logical record length of the host file records. In the case of RECFM V, this is the maximum size record expected. If an existing host file is being replaced, its record length is used as the record length of the new version of the replaced file except if LRECL is provided in the parameter list. When LRECL is specified for a file which is being replaced, the specified values supersede the former record length of the file. If the APPEND option is specified, the current record length of the file is used and the LRECL value specified is ignored.

   n = length

The default length is 80.

RECFM F/V

Used for **SEND** only.

This specifies the recording mode to use for the host file.

F = fixed length

V = variable length

The default is F, unless the CRLF option is also specified, in which case V is the default.

File Transfer Command Format (Continued)

TSO Format: This is a **SAMPLE** RECEIVE command for TSO:

```
RECEIVE  myfile.ext boss(bossname) ASCII
```

The basic command is:

```
SEND/RECEIVE filespec dataset name<
(member name) /password> options
```

SEND
> is the command that transfers a file from the PC to the host. IBM PC 3270 Emulation transforms this into the format expected by the host which is: IND$FILE PUT

RECEIVE
> is the command that transfers a file from the host to the PC. This is transformed to: IND$FILE GET

filespec
> is the PC file name. You are allowed 32 characters for the path plus 12 characters for the IBM PC DOS filename and extension. The personal computer disk to be used and any file extension is optional. See your IBM PC DOS manual for PC file specifications. This is a required positional parameter.

File Transfer Command Format (Continued)

dataset name
> is the TSO dataset name which may be up to 44 characters in length, including periods. The data set can be either a physical sequential data set or a partitioned data set. For a full description of TSO data set naming conventions, refer to the *OS/VS2 TSO Terminal User's Guide.* This is a required positional parameter.

(member name)
> This is a required positional parameter for partitioned data sets. The partitioned data set must already exist before the SEND command is used.

/password
> Allows access to password protected physical sequential or partitioned data sets. This is an optional positional parameter.

The following keyword parameters are optional and are valid for both SEND and RECEIVE.

ASCII
> With the **SEND** commands, ASCII causes the host program to translate records from ASCII to EBCDIC before writing them to the file. With the **RECEIVE** command, ASCII causes the host program to translate file records from EBCDIC to ASCII before transmission to the PC. The default is no translation.

File Transfer Command Format (Continued)

CRLF
> With the **SEND** command, CRLF causes the host program to delete carriage return line feed characters from each record before writing it to the file. With the **RECEIVE** command, CRLF causes the host program to add carriage return line feed characters to the end of each file record before transmission to the PC. The default is no CRLF.

APPEND
> Causes the file being transferred to be added to the end of the target file. If APPEND is not specified and the target file already exists, the target file is replaced. APPEND is not supported for members of a partitioned data set. The default is no APPEND.

The following optional keyword parameters are only valid when the command is SEND and the data set is of physical sequential organization. If you specify any of these parameters for a partitioned data set or with the RECEIVE command, an error condition will occur.

File Transfer Command Format (Continued)

LRECL(n)

Used for SEND only. This provides the logical record length of the host file records. In the case of RECFM V or U, this is the maximum size record expected. If a file is being replaced, LRECL must not be specified. In this case the old record length is used. If the APPEND option is specified, LRECL must not be specified. In this case the old record length is used.

n = desired logical record length. For variable length records, the value specified must include the maximum data length (up to 32,752) plus four bytes for the record-descriptor word (RDW).

The default length is 80 for files with RECFM (F/U) and 84 for RECFM (V), except under the replace and APPEND conditions mentioned above.

BLKSIZE(n)

Used for SEND only. This specifies the desired block size of the host file.

n = desired length. It cannot exceed the capacity of a single track.

If BLKSIZE is omitted, the default is LRECL for new files. If a file is being replaced or appended to, BLKSIZE is ignored.

File Transfer Command Format (Continued)

RECFM (F/V/U)

Used for SEND only. This specifies the recording mode to use for the host file.

F = fixed length

V = variable length

U = undefined record type

The default is F, unless CRLF option is also specified, in which case V is the default.

SPACE(q < ,i >)

Used for SEND only. This specifies the amount of space to be allocated for a new TSO data set.

i = the number of units (increment) of space to be allocated initially for a data set. It is required if the SPACE parameter is specified.

q = the number of units (quantity) of space to be added to the data set each time the previously allocated space has been filled.

The default is SPACE(10,50).

File Transfer Command Format (Continued)

AVBLOCK(n)

Used for SEND only. This is only valid if SPACE is also specified. This specifies the average block length of the records that will be written to the data set.

n = desired average block length in bytes.

TRACKS

Used for SEND only. This is only valid if SPACE is also specified. This specifies that the unit of space is to be a track.

CYLINDERS

Used for SEND only. This is only valid if SPACE is also specified. This specifies that the unit of space is to be a cylinder.

Note: The parameters AVBLOCK, TRACKS and CYLINDERS are mutually exclusive. The command will be rejected by the host if more than one is present within the command. If none of the three are specified, then the value specified for BLKSIZE will be used as the unit of space for the SPACE parameter. If BLKSIZE is not specified, then the default BLKSIZE value (80) will be used as the unit of space for the SPACE parameter.

Performing File Transfer from the 3270 Frame

Before you attempt to transfer files, make sure you have customized the profile to specify that you want to use the File Transfer option. See "Customizing the Profile" on page 4-71 for steps to do this.

After you have customized for File Transfer, perform the following steps to download and upload files.

1. Start a 3270 session and log on to the host.

2. Press the REQST key. The 3270 Request Tasks menu displays.

3. Type **d** (File Transfer) and press the Enter key. You are prompted to type your command.

4. Type **RECEIVE** (to download files) or **SEND** (to upload files) and the other information your host computer requires, and press the Enter key.

    > **Note:** The correct command format and valid keyword parameters are listed in "File Transfer Command Format" on page 6-22. However, you must consult with your host personnel or your Run Book to see if your host requirements differ from those listed in this publication.

    The 3270 Frame displays.

5. The status of the file transfer is reported on the operator information line in the following message:

    ```
    37  Wait or DEV CNCL- Bytes
    transferred:(...)
    ```

Performing File Transfer from the 3270 Frame (Continued)

The default extension, **.HST**, will be used for received files if no extension was specified in the filespec in the command.

Also, when you specify RECEIVE, the file transfer command is scanned for the APPEND option. The search for APPEND is started after the host file name or dataset name. Any occurrence of the string APPEND (in uppercase or lowercase), followed by a blank or the end of command, causes the APPEND option to be selected.

Cancelling a File Transfer: Refer to "Cancelling a File Transfer Command Request" on page 6-36 for steps to cancel a file transfer request.

File Transfer-Related Messages: Refer to Appendix A, "Message Descriptions: Causes and Responses" for an explanation of all File Transfer-related messages.

Performing File Transfer from the Alternate Field or while Using the IBM TopView 1.1 Program

The purposes for using and methods of accessing the Alternate Field and TopView applications are detailed in Chapter 7, "Using Other Applications with IBM PC 3270 Emulation." If you are unfamiliar with these applications, refer to that information **before** attempting to complete the following procedure.

The steps for downloading and uploading files from the Alternate Field or while using the IBM TopView 1.1 Program are:

1. Run the PSCAPI.COM Program by typing **PSCAPI.COM** at the IBM PC DOS prompt.

2. Load the IBM PC 3270 Emulation Program, or IBM TopView **and then** the IBM PC 3270 Emulation Program.

3. Select "Yes" for the File Transfer option in the Communication Profile Tasks menu.

4. Reload the IBM PC 3270 Emulation Program.

5. Start a 3270 Session and log on to the host.

6. Press the Alt Task key to enter the Alternate Field, **or** enter a TopView window.

7. On the command line or in a batch file, type **RECEIVE** (to download files) or **SEND** (to upload files) and the other information your host computer requires and press the Enter key. *See the* **Note** *on the following page.*

Performing File Transfer from the Alternate Field or while Using the IBM TopView 1.1 Program (Continued)

The following messages may appear after issuing this File Transfer command:

```
TRANS01 File Transfer command being
processed.
```

This message means that your File Transfer has begun. It may be followed by this message:

```
39  Send/receive function not available.
```

If this message appears, check to see that you selected "Communicate" from the 3270 Task Selection menu and that you specified "Yes" for the File Transfer option in the Communication Profile Tasks menu. If you had correctly chosen both of those, then make sure that the PSCAPI.COM program is loaded.

> **Note:** The correct command format and valid keyword parameters are listed in "File Transfer Command Format" on page 6-22. However, you must consult with your host personnel or your Run Book to see if your host requirements differ from those listed in this publication.

Cancelling a File Transfer Command Request

To cancel a File Transfer that originated from the 3270 Request Tasks menu: Press the DEV CNCL key, and the file transfer begins termination. The following message displays:

```
33  Wait - device cancel in progress.
```

When the file transfer termination is complete, the following message displays:

```
34  File transfer cancelled at operator
request.
```

If you press the END TASK key during a file transfer, the following message displays:

```
31  Cannot END TASK during file
transfer, use DEV CNCL to cancel.
```

When you press the DEV CNCL key during file transfer, a PF2 key is sent to the host. Any data processed before you pressed the DEV CNCL key is already written to the file, and the file is not restored to its condition before this transfer.

Cancelling a File Transfer Command
Request (Continued)

To cancel a File Transfer that originated from the Alternate Field or from a TopView window: Press the Ctrl and Break keys. This begins File Transfer termination. The following message displays:

38 File transfer being cancelled.

When the File Transfer termination is complete, the following message appears:

34 File transfer cancelled at operator request.

Display Status of Network Stations

The Gateway operator may need from time to time to see which sessions are active or inactive to be able to use sessions efficiently.

Display Status of Network Stations allows the Gateway Operator to see the status of the Network Stations attached to the IBM PC Network or to the IBM Token-Ring Network. This enables the Gateway operator to allocate sessions not being used or to perform problem determination.

To use the Display Status of Network Stations option, perform the following steps:

1. Access the 3270 Request Tasks menu by pressing the REQST key while in the 3270 Frame.

2. Type **e** (Display Status of Network Stations), and press the Enter key. The Status of Network Stations menu displays.

3. Press the ↓ (cursor down) key or the ↑ (cursor up) key to scroll through the station names and to view the SESSION STATUS of each. Refer to "Status of Network Stations" on page 4-62 for an explanation of the values that can display in the SESSION STATUS column.

    Viewing the status of the Network Station sessions permits you to determine which sessions can be reallocated or to perform problem determination procedures.

4. Press the ENTER key to return to the 3270 Frame.

Revise List of Network Stations

To revise your list of Network stations, perform the following steps.

1. Access the 3270 Request Tasks menu by pressing the REQST key while in the 3270 Frame.

2. Type **f** (Revise List of Network Stations), and press the Enter key. The List of Network Stations menu displays.

3. Press the ↓ (cursor down) key or the ↑ (cursor up) key to scroll through the Network Station Names.

4. To change one, type its ID letter. You will then be prompted to type your choice.

5. Type the new Network Station Name and press the Enter key.

    See "List of Network Stations" on page 4-36 for an explanation of valid names and of the special requirements for changing the List of Network Stations menu.

6. Press the Enter key again to activate the new choices and to return to the 3270 Frame.

Data Trace

At times you may experience a communications problem that **does not** either (a) result in a message, or (b) **is not** described in Chapter 8 of this book. If this happens, you can use the Data Trace option to isolate the error. Use the Data Trace option by starting the trace before the command that failed is issued, and stopping the trace after the command is complete.

Warning: The Data Trace option should only be used if you are experiencing a serious communications error and you need to report it to your host personnel.

The operator of an IBM PC configured as Gateway can trace all communication between each Network Station and the host computer.

To use the Data Trace option, perform the following steps.

1. Access the 3270 Request Tasks menu by pressing the REQST key while in the 3270 Frame.

2. Type **g** (Data Trace), a space, and **1** (Start), and press the Enter key. The prompt at the bottom of the screen changes to:

   `Type file name; press ENTER.`

3. Type a unique file name for your data trace and press the Enter key. See "3270 Request Tasks" on page 4-54 for Data Trace restrictions.

   The default extension, **.TRC**, will be appended to all Data Trace files that do not already have an extension.

Data Trace (Continued)

4. Use your IBM PC 3270 Emulation program to perform and trace a task assigned to you by your host personnel. Now, you have a data trace file with the information for your host personnel.

5. Turn the trace off when completed with the task. To do this, type **g** (Data Trace), a space, and **2** (Stop), and press the Enter key.

6. Press the Enter key to return to the 3270 Frame.

7. Contact your host personnel or Network Coordinator(s) and give them the diskette with the data trace on it.

Screen Mode

To change the mode for your screen while you are in the 3270 Frame, perform the following steps:

1. Access the 3270 Request Tasks menu by pressing the REQST key while in the 3270 Frame.

2. Type **h** (Screen Mode), a space, and your choice (1 or 2), and press the Enter key.

3. Press the Enter key to return to the 3270 Frame.

The choices for the Screen Mode option are *Color* and *Black and White.*

When you select "Color" and exit this menu, the 3270 Request Tasks menu and all menus accessed from within that menu will display using the following colors:

Yellow Underscore

White Message Line and Context Field in Status Line

Green All other fields

Black Background.

Reverse video is always represented as black on green.

When you select "Black and White," the screen will change to black and white when you exit the Request Tasks menu, and it will remain that color while in the 3270 Frame until you select otherwise.

> **Note:** This option only applies when you are using a color monitor.

Tasks Classification by Controlling Program

With IBM PC 3270 Emulation, your IBM PC can emulate other machines and access host computer capabilities, as well as use the IBM PC DOS application. Because of the variety of available functions and applications for which different commands and definitions of keys may apply, you may occasionally want clarification as to which application you are actually using to complete a given task.

For example, is File Transfer an IBM PC DOS, host, or IBM PC 3270 Emulation application? Or at what point do the IBM PC 3270 Emulation commands become active? The table that begins on the following page is designed to answer such questions and to help you better understand the relationship between IBM PC 3270 Emulation, IBM PC DOS, and the host system.

The controlling program is the program that determines which definitions of the keys on your keyboard apply for a particular task. The three basic controlling programs that you may be operating under are:

- **IBM PC DOS** - uses only IBM PC DOS commands and IBM PC DOS definitions of keys.

- **IBM PC 3270 Emulation** - uses IBM PC 3270 Emulation Communication Profile Tasks menus and IBM PC DOS definitions of keys.

- **IBM PC 3270 Emulation and host** - uses the IBM PC 3270 Emulation Communicate Task, but also is host-attached and uses IBM PC 3270 Emulation definitions of keys.

Tasks Classification by Controlling Program (Continued)

The following table lists selected general IBM PC functions, along with the principal tasks associated with your IBM PC 3270 Emulation Program, according to the associated controlling program.

ACTION or 3270 TASK	Controlling Program
Turn on the PC	IBM PC DOS
Install IBM PC 3270 Emulation	IBM PC DOS and IBM PC 3270 Emulation
Load IBM PC 3270 Emulation	IBM PC DOS leading into IBM PC 3270 Emulation
Customize the IBM PC 3270 Emulation profile	IBM PC 3270 Emulation[1]
Establish communication with the host (start a 3270 session)	Switches from IBM PC 3270 Emulation to IBM PC 3270 Emulation with host[2]
Communicate with a Gateway or Network Station	IBM PC 3270 Emulation
Transfer files from the 3270 Frame	IBM PC 3270 Emulation with host[2]
Transfer files from the Alternate Field	IBM PC 3270 Emulation
Transfer files from IBM TopView	IBM TopView and IBM PC 3270 Emulation

ACTION or 3270 TASK	Controlling Program
Global Remap	Starts in IBM PC DOS and is effective in IBM PC 3270 Emulation with host
3270 Keyboard Remap	IBM PC 3270 Emulation[1]
Alternate Tasks	Alternates between IBM PC 3270 Emulation or IBM PC 3270 Emulation with host to IBM PC DOS
Access the 3270 Request Tasks menu	IBM PC 3270 Emulation
Screen save	IBM PC 3270 Emulation
Screen print	IBM PC 3270 Emulation with host[2]
Host-initiated print	Host to IBM PC 3270 Emulation[2]
Display or Revise List of Network Stations	IBM PC 3270 Emulation
Data Trace	IBM PC 3270 Emulation

Notes:

1. Although this is strictly an IBM PC 3270 Emulation task, IBM PC 3270 Emulation is still using IBM PC DOS.
2. Although this is strictly an IBM PC 3270 Emulation with the host computer task, IBM PC 3270 Emulation is using IBM PC DOS and the required communication hardware and networking software.

Chapter Summary

In this chapter you learned about the primary
and most commonly used IBM PC 3270
Emulation tasks that you can perform. A
summary of some key points to remember is
presented below.

- **Starting an IBM PC 3270 Emulation
  Session**

  Your IBM PC 3270 Emulation Program must
  be properly loaded and configured *before* you
  can start or initiate an IBM PC 3270
  Emulation Session.

- **Ending an IBM PC 3270 Emulation
  Session**

  To end a 3270 session from a Network
  Station, you should log off the host then press
  the END TASK key to end the Communicate
  task.

  To end a 3270 session from a Gateway or
  Gateway with Network Station, press the
  END TASK key twice to end the
  Communicate task and to bring down all
  Network Stations attached to the Gateway.

- **Performing 3270 Request Tasks Options**

  - **3270 Screen Save**

    3270 Screen Save allows you to save
    information displayed on your IBM PC
    screen.

    First, name a file for 3270 Screen Save.
    Then, press the Save key in a 3270 session
    to save the screen on a diskette.

Chapter Summary (Continued)

- **3270 Request Tasks Options (Continued)**

  - **3270 Print**

    3270 Print lets you perform operator-initiated screen print, host-initiated screen print, or host print.

  - **3270 Printer Requests**

    3270 Printer Requests lets you choose either the printer or the disk as the destination for your host-initiated output.

    You can also change the defaults for your printing options temporarily in this menu.

  - **File Transfer**

    File Transfer allows you to download (RECEIVE) files from and upload (SEND) files to your host computer.

    To use File transfer, you have to select "Yes" for "File Transfer" in the Communication Setup menu and specify a host command.

  - **Display List of Network Stations**

    This option allows the Gateway Operator to see the status of Network Stations attached to the Network.

Chapter Summary (Continued)

- **3270 Request Tasks Options (Continued)**

    - **Revise List of Network Stations**

        This option allows the Gateway Operator
        to revise the List of Network Stations.

    - **Data Trace**

        This option activates or deactivates the
        trace function.

    - **Screen Mode**

        This option allows you to select the mode
        for your screen.

Chapter 7. Using Other Applications with IBM PC 3270 Emulation

About This Chapter

This chapter describes two different ways you can use other programs while running IBM PC 3270 Emulation and provides information for determining whether a program is compatible and can be run with IBM PC 3270 Emulation using one of these procedures.

The two procedures detailed here are the Alternate Tasks (Alt + ESC) key sequence and the IBM TopView 1.1 Program. A list of compatible IBM PC DOS application programs is provided in "Compatible IBM PC DOS Application Programs" on page E-18.

This chapter also introduces the following four new IBM PC programs that can be used with IBM PC 3270 Emulation to enhance your IBM PC workstation capabilities:

- IBM PC DOS 3.2

- IBM TopView 1.1

- IBM PC LAN

- VDI Graphics Development Tool Kit 1.1.

Introduction

At times you may want to access another application while you are using IBM PC 3270 Emulation to perform tasks or do other work that you cannot do with this program. For example, you may want to access a spreadsheet program or you may want to edit a file using a word processing program.

There are two ways you can do this. Both will require additional memory. You can use:

- The Alternate Tasks Key Sequence

  - OR -

- The IBM TopView 1.1 Program.

The Alternate Tasks Key Sequence, or **Alternate Tasks**, is an available IBM PC 3270 Emulation function, and it is discussed beginning on the next page. The IBM TopView 1.1 Program is a separate software program. It is discussed in "Using IBM TopView 1.1 To Run Other Applications with IBM PC 3270 Emulation" on page 7-12.

Notes:

1. IBM TopView 1.1 and Alternate Tasks cannot be used simultaneously.

2. Compatibility considerations for using the API with IBM TopView 1.1 are detailed in the *Application Programming Interface (API) and Host Reference for IBM PC 3270 Emulation.*

Alternate Tasks Concepts and Definitions

Alternate Tasks is an IBM PC 3270 Emulation option that lets you load a compatible program and do associated tasks while the IBM PC 3270 Emulation Program remains loaded.

Alternate Tasks is a possible option only when IBM PC 3270 Emulation is the *primary* program loaded in your IBM PC. In other words, IBM PC 3270 Emulation must be loaded at the IBM PC DOS prompt independently, rather than on top of another program including windowing programs like IBM TopView.

Here's how the Alternate Tasks option works:

- To make the Alternate Tasks option available, customize for it as directed in "Alternate Tasks Key Sequence Steps" on page 7-9.

- When it is loaded as the primary program, IBM PC 3270 Emulation operates in the *primary field*, called the **3270 Field**.

- By customizing for Alternate Tasks, you create another field, called the **Alternate Field**, in which the compatible program you wish to load will run.

- The initial screen you see when you access the Alternate Field is similar to an IBM PC DOS screen, but this is not actually the IBM PC DOS application. An IBM PC 3270 Emulation screen that resembles IBM PC DOS is what you are actually seeing. It provides a **neutral field** between the 3270 Field and the Alternate Field. The compatible program you wish to run with your IBM PC 3270 Program is loaded into the Alternate Field from this screen.

Alternate Tasks Introduction (Continued)

- Once the compatible program is loaded in the Alternate Field, the definitions of the keys, commands, and messages associated with that program are used instead of those associated with the IBM PC 3270 Emulation or IBM PC DOS Programs (unless changes have been made using the Global Remap program - see "Defining IBM PC 3270 Emulation Keyboard Remapping" on page C-3).

- When you return from the Alternate Field to the 3270 Field, (using the Alt Task Key), the 3270 functions once again become active.

- The 3270 Field and the Alternate Field can execute concurrently only if your IBM PC has enough memory to load both programs independently. When you are in the Alternate Field, IBM PC 3270 Emulation runs to ensure that the 3270 Communications Session remains active. Therefore, when you return to the 3270 Frame, the 3270 status lines at the top of the screen may contain new updated information.

See the **Notes** *on the following page.*

Alternate Tasks Introduction (Continued)

Notes:

1. A program you may wish to load in the Alternate Field must be compatible with both the IBM PC 3270 Emulation Program and IBM PC DOS.

2. The Ctrl + NumLock key (pause) is disabled in the Alternate Field.

3. Do not attempt to run the Global Remap application while in the Alternate Field. Also, the 3270 Keyboard Remap application, like other applications exclusive to IBM PC 3270 Emulation, is not active in the Alternate Field.

4. If you switch to the Alternate Field and change the default drive, the change is effective *only* in the Alternate Field. The default drive for IBM PC 3270 Emulation remains what it was when it was loaded.

5. When the IBM PC DOS FORMAT command is issued in the Alternate Field, you should not use the Alt Task key to return to the 3270 Field until the command completes; errors may occur with the format if you do.

6. **For European versions of this product:** load any keyboard drivers (KEYBxx) before loading the IBM PC 3270 Emulation Program.

Determining Compatibility

Loading incompatible programs in the Alternate Field while running IBM PC 3270 Emulation may cause unpredictable results. The following information can be used to help determine if a program is compatible and thus avoid operating problems.

A list of IBM PC DOS application programs that have been tested with IBM PC 3270 Emulation's suspend and resume functions and found to be compatible is provided in "Compatible IBM PC DOS Application Programs" on page E-18. Other IBM PC programs and vendor programs may run with the IBM PC 3270 Emulation Program if they meet the following limitations and requirements:

- IBM PC DOS 2.1, 3.0, 3.1, or 3.2.

- Relocatable (Must be able to be loaded at any available location in free memory).

- Cannot alter certain software/hardware interrupts: 09H, 0AH, 0BH, 0CH, 16H, or 21H.

- Restore altered interrupts before termination.

- Use published IBM PC DOS and BIOS interrupt function call interfaces.

- Use the IBM PC DOS functions GET VECTOR and SET INTERRUPT VECTOR to obtain and modify interrupt vectors.

- Any VDI Graphics Development Tool Kit application (see "VDI Graphics Development Tool Kit" on page 7-32) or other engineering application that uses the IBM BASIC language bindings and that was compiled using the IBM BASIC Compiler 1.0 is not compatible with the IBM PC 3270 Emulation Program.

Determining Compatibility (Continued)

- If using Macro Assembler 2.0 in the Alternate Field, the SALUT facility may not be used.

- Cannot reset the communications adapter.

  You cannot run any program in IBM PC 3270 Emulation's Alternate Field that resets the IBM PC Network Adapter, IBM Token-Ring Network PC Adapter, or any communications adapter in an IBM PC configured as a Network Station, Gateway, or Gateway with Network Station.

  Procedures for resetting these adapters are presented in "Sharing NETBIOS Resources with Other Applications" on page 7-18.

- Programs that terminate but stay resident in memory should not be loaded in the Alternate Field. Memory or other operational problems will result if you attempt to load programs such as REMAPKEY.COM, PRINT.COM, or PSCAPI.COM in the Alternate Field.

Alternate Tasks Key Sequence Steps

Use the Alt Task key to switch between the 3270 Field and the Alternate Field. Once you are in the Alternate Field you can load any compatible IBM PC DOS program.

These are the quick steps for using the Alternate Tasks key sequence, followed by a detailed discussion of the process.

1. Customize your IBM PC 3270 Emulation Program for Alternate Tasks.

   • Start in the 3270 Task Selection menu, and type **b** to select the Communication Profile Tasks menu. Press the Enter key.
   • In the Communication Profile Tasks menu, type **c**, a space, and **1** to select Alternate Tasks. Press the Enter key.

2. Exit the program and then load IBM PC 3270 Emulation since you changed values in the Communication Profile Tasks menu.

3. Press the Alt Task key to display the Alternate Field.

   The first time you enter the Alternate Field, the following logo displays:

   ```
   Alternate Field for IBM PC 3270 Emulation
   Program.  Compatible application programs
   may now be run.  Press Alt+Esc to return.
   ```

4. At the prompt in the *neutral field* load the program you wish to access.

Some additional considerations for loading a program in the Alternate Field are provided on the following page.

Alternate Tasks Key Sequence Steps (Continued)

Note: Be sure to determine whether the program meets compatibility requirements by referring to appropriate sections of this book as indicated below:

- "Determining Compatibility" on page 7-8 for some compatibility specifications.

- "Compatible IBM PC DOS Application Programs" on page E-18 for a list of tested compatible applications.

Exiting the Alternate Field

To exit the Alternate Field, press the Alt Task key. However, in some cases you may not be allowed to exit the Alternate Field. Circumstances related to such cases are outlined below.

The Alt Task key is disabled and a beep sounds in the following instances:

- When you start an application in the Alternate Field that issues an API Disable Service Input Request. You cannot return to the 3270 Field via the Alt Task key until the application issues an API Enable Input Service Request.

- When the application being run in the Alternate Field uses either of the following:

  - A graphics screen mode (BIOS Video Mode) greater than 7

  - The IBM Enhanced Graphics Adapter and BIOS Video Modes 6 or greater than 7.

Exiting the Alternate Field (Continued)

- While the screen image is being printed using the IBM PC DOS PrtSc key.

Your display unit lists any errors detected during the Alternate Task process. If you did not specify "Yes" for the "Alternate Tasks" option in the Communication Profile Task menu, and you press the Alt Task key, the following message displays:

```
127  Station not configured for
Alternate Tasks.
```

If IBM PC 3270 Emulation is running under IBM TopView 1.1 and you press the Alt Task key, the following message displays:

```
124  Alternate Tasks is not available
with TopView.
```

If you press the Alt Task key, and there is not enough memory available, even though you selected "Yes" for the Alternate Tasks option, the following message displays:

```
128  Not enough memory for Alternate Tasks.
```

That message also displays when you press the Alt Task key and the memory available for the Alternate Tasks application is not large enough to contain the IBM PC DOS command processor, COMMAND.COM.

Using IBM TopView 1.1 To Run Other Applications with IBM PC 3270 Emulation

Using the **IBM TopView 1.1 Program** is another way you can access and use other programs. First you load IBM TopView, and then load your IBM PC 3270 Emulation Program using the IBM TopView menus as directed in the *IBM TopView 1.1 User's Guide*.

Then, using the IBM TopView *Swapping* feature, you can run IBM PC 3270 Emulation with one or more other programs which are swappable, depending upon the availability of required memory (see "Hardware and Software Requirements" on page 3-4 for information on memory requirements).

Available IBM TopView 1.1 Functions

You can use the following IBM TopView 1.1 functions when it is running with IBM PC 3270 Emulation:

- Window

  - Move
  - Size
  - Zoom
  - Unzoom
  - Hide

- Scroll

- Scissors

  - Copy
  - Paste.

Available IBM TopView 1.1 Functions (Continued)

- Program swapping to hard disk or RAM drive; **however,** your IBM PC 3270 Emulation Program *is not* swappable.

Notes:

1. You can *paste* only when IBM PC 3270 Emulation is accepting multiple keystrokes followed by a carriage return. The paste data will be input as keystrokes beginning at the current 3270 cursor position in the 3270 Frame. During paste, any invalid keys will be replaced with an underscore, and the following message is displayed:

   ```
   59  Invalid key.
   ```

2. You **cannot use** the following IBM TopView 1.1 functions when it is running with IBM PC 3270 Emulation:

   a. Scissors
      − Cut
   b. Help
   c. Quit
   d. Suspend.

Things To Do before Loading IBM TopView 1.1

Use the IBM PC 3270 Emulation SETUP program to copy the original diskette and place the IBM PC 3270 Emulation files in the directory you choose. See "Installing Your IBM PC 3270 Emulation Program Diskette" on page 3-9 for instructions to execute SETUP.

Execute any mode changes required for running IBM PC 3270 Emulation before loading IBM TopView 1.1. You can determine the correct MODE commands by viewing the commands in the PSC.BAT file that SETUP creates. You can also specify the MODE by changing the SCREEN TYPE field in the Program Information File to 7 (25 x 80 monochrome) or 3 (25 x 80 color).

If you will be using the IBM PC 3270 Emulation API or performing File Transfer from an IBM TopView window, then you must load PSCAPI.COM before loading IBM TopView 1.1.

PSC.BAT can be used to start IBM PC 3270 Emulation with IBM TopView 1.1 if if the MODE command is edited out of the PSC.BAT file.

Precautions for using the Global Remapping function with IBM TopView 1.1 are detailed in "Global Keyboard Remapping and IBM TopView 1.1" on page 7-17.

CAUTION
Just as with IBM PC DOS, pressing the ctrl + NumLock key while using IBM TopView 1.1 in any application window will perform the pause function and may cause the communication line to drop.

Installing IBM PC 3270 Emulation with IBM TopView 1.1

The steps to install IBM PC 3270 Emulation with IBM TopView 1.1 are:

1. Add the IBM PC 3270 Emulation Program to IBM TopView 1.1 as follows:

   a. Load IBM TopView 1.1 and go to the Start a Program window.

      (See the *IBM TopView 1.1 User's Guide* for instructions to load IBM TopView 1.1.)

   b. Select "Add a Program to Menu."

   c. Select "Other."

   d. Indicate the path that points to IBM PC 3270 Emulation in the Program Location window, and press the Enter key.

   e. IBM TopView 1.1 locates the PSCTV.PIF file and displays "PC 3270 Emulation" as a selection in the Add Other window. Select the name and return to the Start a Program menu with IBM TopView 1.1's *button 2.*

2. Start IBM PC 3270 Emulation by selecting "PC 3270 Emulation" from the Start a Program window.

3. (Optional) Change the Program Information File.

Installing IBM PC 3270 Emulation with IBM TopView (Continued)

Note: IBM PC 3270 Emulation contains the file, PSCTV.PIF. The memory size of this file is already set to the smallest size required by the minimum hardware configuration (Network Station with no selectable options). The maximum memory size is set to the value required for the configuration that is shipped.

When you change the configuration, a message displays the amount of memory required for the selected configuration. If you are running on TopView, the message will tell you to change the PIF file.

Do this by selecting "Change Program Information" and "PC Network 3270" in the Start a Program window.

You can then change the maximum memory size in the Change Program Information window, and enter and save the information. You can do this procedure anytime you change the IBM PC 3270 Emulation options in use.

See "Hardware and Software Requirements" on page 3-4 for IBM PC 3270 Emulation memory requirements.

Global Keyboard Remapping and IBM TopView 1.1

Once the IBM TopView 1.1 Program is running, IBM PC 3270 Emulation's Global Remap application can not be used, but it can be run *prior* to loading IBM TopView 1.1.

Globally remapping keys prior to running IBM TopView will cause all applications run under IBM TopView to be similarly remapped, thereby changing key definitions as specified. However, certain numeric pad keys that perform TopView functions, and that are remappable under IBM PC 3270, will not be remapped when you are using IBM TopView 1.1 and are in TopView mode. These keys are:

- Cursor movement keys
- Pg Up
- 5
- Plus
- Minus
- Home.

Sharing NETBIOS Resources with Other Applications

Sometimes you may run a program with IBM PC 3270 Emulation that also uses the NETBIOS interface for networking purposes. If two or more IBM PC DOS applications use the NETBIOS interface, NETBIOS resources must be shared.

NETBIOS resources are defined as the number of sessions, the number of Network Control Blocks or commands, and the number of names available on the IBM PC Network Adapter or IBM Token-Ring Network PC Adapter.

Initially, the adapter has a default number of resources available. The application program can change the default number of resources by issuing a RESET ADAPTER NETBIOS command.

The following information is provided to help you understand:

• How the IBM PC 3270 Emulation Program uses NETBIOS resources, and

• How to set up IBM PC 3270 Emulation and the other application that will be using the NETBIOS interface.

Note: The IBM PC LAN 1.1 Program uses the NETBIOS interface. Refer to the last compatibility consideration on page 7-29.

Number of Resources Reset on the Adapter

When you load the communicate task, and your configuration is Network Station, IBM PC 3270 Emulation does not reset the IBM PC Network Adapter or IBM Token-Ring Network PC Adapter since it uses the default number of resources provided.

When your configuration is Gateway or Gateway with Network Station, IBM PC 3270 Emulation only resets the adapter if it determines that no other IBM PC Network Adapter or IBM Token-Ring Network PC Adapter application exists.

It is assumed that no other IBM PC Network Adapter or IBM Token-Ring Network PC Adapter exists when the NETBIOS ADAPTER STATUS reports that no NETBIOS resources (number of sessions, NCBs, and names) are being used.

When you select "Communicate" from the 3270 Task Selection menu, the adapter is reset to the following values depending on the value that you previously selected for the "Maximum Number of Sessions" in the Gateway Setup menu.

- Number of sessions available = Maximum Number of Sessions

- Number of NCBs or commands = Maximum Number of Sessions + 1 (but not more than 32).

Resetting the Adapter (Continued)

The following table illustrates the relationship described in the previous paragraph.

Maximum Number of Sessions	Number of Sessions	Number of NCBs or Commands
8	8	9
16	16	17
24	24	25
32	32	32

When you press the END TASK key, IBM PC 3270 Emulation determines that no other NETBIOS application exists, and the adapter is reset to the default values.

Number of Resources Used on the Adapter

When your configuration is Network Station, IBM PC 3270 Emulation uses only two sessions, four Network Control Blocks (NCBs) or commands, and one name on the IBM PC Network Adapter or IBM Token-Ring Network PC Adapter.

When your configuration is Gateway or Gateway with Network Station, IBM PC 3270 Emulation uses from zero to 32 sessions, from zero to 32 NCBs or commands, and one name on the IBM PC Network Adapter or IBM Token-Ring Network PC Adapter.

Number of Resources Used on the Adapter (Continued)

The actual number of sessions used depends upon the number of Network Station names you enter on the List of Network Stations menu.

You can use the following formula to determine the actual number of sessions.

- Number of sessions used = Number of Network Stations names

- Number of NCBs or commands used = Number of Network Station names + 1 (but not more than 32).

The following example illustrates this:

Number of Names added to menu	Number of Sessions	Number of NCBs or Commands
0	0	0
1	1	2
8	8	9
16	16	17
20	20	21
24	24	25
31	31	32
32	32	32

When you press the END TASK key, all NETBIOS resources are returned to the adapter.

Loading Sequence

If you are going to use any other NETBIOS application with the IBM PC 3270 Emulation Gateway, Gateway with Network Station, or Network Station, one of the following loading sequences must be observed:

1. Load the other NETBIOS application *first*, and provide enough unused NETBIOS resources to meet the IBM PC 3270 Emulation resource usage as explained earlier.

2. Load the other application *after* loading the IBM PC 3270 Emulation Gateway or Gateway with Network Station. The number of resources that IBM PC 3270 Emulation resets on the adapter minus the number of resources that IBM PC 3270 Emulation uses must provide enough unused resources to meet the other NETBIOS application's requirements.

3. Load the other NETBIOS application *after* loading the IBM PC 3270 Emulation Network Station. In this case, the number of default resources minus the number of resources that IBM PC 3270 Emulation uses must provide enough unused resources to meet the other NETBIOS application's requirements.

If you do not perform one of the above loading sequences, there will not be enough resources available for both IBM PC 3270 Emulation and the other NETBIOS application. When IBM PC 3270 Emulation detects that there are not enough resources, it displays an appropriate error message describing which resources have been depleted.

Personal Services/PC Considerations

Personal Services/PC (PS/PC) is a computer program that uses the IBM PC 3270 Emulation API. Some of the functions that PS/PC provides are:

- A send and receive capability that enables the user to transfer revisable-form-text documents, final-form-text documents, IBM PC DOS files, messages, and notes (messages associated with a document or file).

- Electronic file cabinet management that enables the user to work with the entire contents of or just a portion of the file cabinet, transform documents from one format to another, view files, print files, annotate items in the file with tags, work with new mail, and reply to received messages.

- Directory/Distribution List facility that allows the user to create and maintain lists of nicknames for a directory or a list of recipients for up to 50 separate distribution lists.

- The PS/PC main menu that enables the user to invoke an IBM PC DOS program directly from this menu.

- A trace facility to assist in problem diagnosis and resolution.

Compatibility Considerations for PS/PC

PS/PC requires the following:

- For the PC - PS/PC Program Release 1.04, P/N 631713

- For the host - DISOSS/370 Release 3 Version 2, P/N 5665-290 with the PTFs required for PS/PC support, or DISOSS/370 Release 3 Version 3.

To use PS/PC with IBM PC 3270 Emulation, you must:

1. Type **2** for "Select Host Attach" on the PS/PC Installation Panel.

2. Type **2** for "Connection Type" on the Host Logon Defaults menu.

New IBM PC Systems Software

The IBM PC programs listed below and described in this section are examples of new releases of IBM Systems software that can be run with your IBM PC 3270 Emulation Program. Running these programs together may further enhance your work efficiency and make your routine daily tasks more productive and easier.

The capabilities of these products, along with some compatibility considerations, are presented in this section. The programs discussed are:

- **IBM PC DOS 3.2**

- **IBM PC LAN 1.1 Program**

- **IBM TopView 1.1**

- **VDI Graphics Development Tool Kit 1.1.**

IBM PC DOS 3.2

The IBM PC **D**isk **O**perating **S**ystem (DOS) is a group of programs that controls the movement of information in the computer. IBM PC DOS is a *disk* operating system, meaning that the IBM PC DOS programs are to be used with diskettes or fixed disks.

The programs that IBM PC DOS contains are important because they (a) provide a way to organize and use the information you place on disks and (b) control the way your computer uses other programs, such as application programs.

IBM PC DOS tells your computer how to use or *read* information that you supply to the programs, **and** how to return or *write* information that the programs supply to you.

Compatibility Considerations

In addition to previous releases of IBM PC DOS (2.1 through 3.1), IBM PC 3270 Emulation is compatible with IBM PC DOS 3.2.

IBM PC Local Area Network 1.1 (LAN) Program

The IBM PC LAN 1.1 Program enables multiple IBM PCs to be used in a local area network configuration. The PC LAN Program supports the interconnection of IBM PCs, IBM Portable PCs, IBM PC XTs, and IBM PC ATs, each with an IBM PC Network Adapter.

The IBM PC LAN 1.1 Program provides a range of configurations for users who need different levels of function. These are Redirector, Receiver, Messenger, and Server. It also provides three levels of interface to the network:

- A full-screen, menu-oriented interface

- An IBM PC DOS command line interface

- A program interface for application developers.

Compatibility Considerations

The following restrictions apply to all valid IBM PC 3270 Emulation and IBM PC LAN combinations which are using IBM PC DOS 3.1 or 3.2:

- If an IBM PC LAN Messenger or Server receives a message while message logging is set to *OFF*, a window displays. If IBM PC 3270 Emulation is running, the window is suppressed, a beep tone sounds, and the message is buffered. The Ctrl-Alt-Break key sequence used to enter the IBM PC LAN 1.1 Program is rejected if IBM PC 3270 Emulation is running.

7-28

IBM PC 3270 Emulation and IBM PC LAN Compatibility Considerations (Continued)

- If an IBM PC LAN user receives a message while logging to CON active (the normal state of the Receiver or after a NET LOG CON) and IBM PC 3270 Emulation is running, the message is rejected. The following message displays at the sending station:

  ```
  Message sent but not received.
  ```

- When you attempt to load IBM PC 3270 Emulation, and a release *prior to 1.1* of the IBM PC LAN 1.1 Program is running with a configuration *other than* Redirector, the following prompt will display and IBM PC Network will exit to IBM PC DOS:

  ```
  110  PC LAN Program Version 1.1 or later is
  required to run configurations other than
  Redirector with PC 3270 Emulation.
  ```

- To use the Full Screen Interface with IBM PC 3270 Emulation, you must either (1) change to the IBM PC 3270 Emulation Alternate Field and issue the NET command to bring up the screens, or (2) exit IBM PC 3270 Emulation. The Full Screen Interface allows you to review messages received.

IBM PC 3270 Emulation and IBM PC LAN Compatibility Considerations (Continued)

- If the PC Network Full Screen Interface menus are in use in the PC Network 3270 Alternate Field, the "Exit" option on the 3270 Task Selection menu will not be allowed. If it is selected, the following message displays:

  ```
  136  Alternate Tasks program must be ended.
  ```

  You may use the Alt Task key to enter the Alternate Field and exit the PC Network Full Screen Interface, or select an option other than "Exit" from the 3270 Task Selection menu.

- Configure for IBM PC LAN **BEFORE** you load IBM PC Network 3270. Once you are in the IBM PC 3270 Emulation Alternate Field, the NET START command cannot be executed. If you try to do this, then IBM PC LAN will issue an error message.

- The IBM PC LAN Server will only run with IBM PC Network 3270 in an IBM PC AT or IBM PC XT.

- The /SES and /CMD parameters of the NET START command are used to specify the number of resources reset on the adapter. The /SES parameter specifies the number of sessions and the /CMD parameter specifies the number of NCBs or commands. See "Sharing NETBIOS Resources with Other Applications" on page 7-19 for more details.

Installing The IBM PC 3270 Emulation Program and the IBM PC LAN 1.1 Program

Install IBM PC 3270 Emulation by either:

• Using the SETUP command on the Program diskette, or

• Copying the program files to a disk or diskette.

The steps to install IBM PC 3270 Emulation together with IBM PC LAN are:

1. Load and configure IBM PC LAN BEFORE loading IBM PC 3270 Emulation.

2. Exit PC Network 1.1 and return to IBM PC DOS.

3. Load IBM PC 3270 Emulation using the instructions for installation and setup in Chapter 3.

   IBM PC 3270 Emulation now can access disks and printers that were previously used by NET USE. For example, a file transfer can now be redirected to a directory that NET USE accesses.

4. After you load IBM PC 3270 Emulation, use the Alternate Field to issue network commands. You can also enter the Full Screen Interface by using the NET command in the Alternate Field.

Note: All IBM PC LAN commands and functions except NET START, that is used to start the network application, can be issued while this program is running in the Alternate Field.

IBM TopView 1.1

The IBM TopView 1.1 Program lets you use more than one program at a time, as long as your IBM PC has enough memory to load them. IBM TopView 1.1 enhances the usability of the existing multi-tasking environment and adds the following new functions:

- VDI Graphics Development Tool Kit support.

- IBM PC LAN redirector support.

- Batch file processing

- Program groups

- Autostart of a program group.

  Note: The *program groups auto start* capability enables a user to configure the TopView profile to specify that certain programs will be loaded automatically after TopView has been loaded.

Compatibility Considerations

A more detailed description of IBM TopView 1.1 that includes IBM PC 3270 Emulation compatibility considerations is provided in "Using IBM TopView 1.1 To Run Other Applications with IBM PC 3270 Emulation" on page 7-13, and associated memory requirements are discussed in "Hardware and Software Requirements" on page 3-4.

VDI Graphics Development Tool Kit

The VDI (Virtual Device Interface) Graphics
Development Tool Kit is a device independent
interface to graphics devices. It lets you use your
IBM PC to:

- Define an interface that allows a computer to
  control several graphics devices without
  regard for their individual characteristics.

- Provide for the output of graphics primitives,
  such as polylines, polymarkers, test, bars,
  circles, arcs, and ellipses, with control over
  primitive attributes, such as color, fill style,
  and line style.

- Support output to multiple devices and is
  capable of performing several forms of
  graphic input, such as positional, character
  string, and selection.

Compatibility Considerations

VDI Graphics Development Tool Kit
applications can use graphics screen modes
(BIOS Video Modes) 4, 6, or greater than 7. IBM
PC 3270 Emulation's Alternate Task application
supports drivers VDIDY004.SYS and
VDIDY006.SYS in an IBM PC with the
Color/Graphics Adapter installed. If the VDI
application uses a graphics BIOS Video Mode
greater than 7, the Alternate Task key is
disabled, and a beep will sound.

The Alternate Task apllication supports *only*
driver VDIDY004.SYS and graphics BIOS Video
Mode 4 in an IBM PC with the **Enhanced
Graphics Adapter** installed. If the VDI
application uses a graphics BIOS Video Mode
greater than 4, the Alternate Task is disabled,
and a beep will sound.

Chapter Summary

The key points to remember if you want to use other programs with IBM PC 3270 Emulation are summarized below:

- The Alternate Task Key Sequence and the IBM TopView 1.1 Program allow you to have more than one program loaded on your IBM PC when you are running the IBM PC 3270 Emulation program.

  - After you customize your IBM PC Network 3270 Program diskette for Alternate Tasks and reload it, hold the Alt key down and press the ESC key to enter the Alternate Field and load a compatible program.

  - Use the IBM TopView 1.1 Program to load more than one program with IBM PC 3270 Emulation.

- Before attempting to run another program with your IBM PC 3270 Emulation Program, be sure to determine whether it is compatible. This can be done by checking one or both of the following sections of this book:

  - "Compatible IBM PC DOS Application Programs"

  - "Determining Compatibility" on page 7-8.

Chapter 8. What Went Wrong?

Notes:

About This Chapter

In some instances, a problem can occur for which
you will not receive a message or other indicator
to help you define and correct the problem.
Examples of this type of problem, along with
recovery procedures, are discussed in this
chapter. Problem determination and avoidance
techniques are also discussed.

Problems that result in a message that appears at
the bottom of your screen, along with other
messages that may appear there, are discussed in
Appendix A, "Message Descriptions: Causes and
Responses." Problems that you may encounter
while using one of the *keyboard remapping*
options, along with associated messages, are
discussed in "Step 3: Responding To Keyboard
Remapping Messages" on page C-31.

Problem Determination and Error Recovery

You may occasionally experience a problem
when using IBM PC 3270 Emulation. Some
problems result in a message that appears at the
bottom of your screen. However, not every
message indicates that there is a problem. A
message could, for example, be simply a status
report.

If a message does indicate that there is a
problem, or if you are not sure what a message
means but want to know how to proceed based
upon that message, turn directly to Appendix A
for assistance.

Problem Avoidance: Doing a Preliminary Check

You can avoid many problems by maintaining good work habits. The simple *Preliminary Check* presented below is designed to save you time and effort in completing your work. For the best results, refer to it regularly, or until each item comes to you automatically when you turn on your IBM PC or when you experience a problem.

Preliminary Check

Determine that your IBM PC is set up correctly by checking that:

- A version of IBM PC DOS (3.1 or 3.2 for the IBM PC LAN 1.1 Program, 3.2 for the Token-Ring Network Program, and 3.0 through 3.2 for an IBM PC AT) is loaded.

- The IBM PC 3270 Emulation diskette is loaded.

- The IBM Personal Computer cables are plugged in and secure.

- There are no unresolved prompts or messages on the display.

- The modem is ready for communication. Refer to the documentation supplied by the modem manufacturer, if necessary.

- The IBM PC 3270 Emulation Program diskette is customized correctly.

Preliminary Check (Continued)

If, after completing this check, a problem persists that has not been accompanied by a message, check "Problem or Symptom Description." If the problem is accompanied by a message, turn to "Understanding Your Messages" on page A-4.

CAUTION
If you experience a problem, DO NOT turn off your IBM PC and do not press the END TASK key. Your IBM PC should be ON for Problem Determination Procedures.

If you experience a problem that cannot be resolved after using this appendix, call the host personnel to determine if the problem is with the host computer.

Problem or Symptom Description

If you experience a problem that does not result in a message or some other problem symbol, check the list that starts on the following page for assistance.

Problem or Symptom Description (Continued)

Problem: No Answer from the Host Computer

Cause: The host computer may not respond for the following reasons:

- On host systems where the SNA NOTIFY commands are not supported, Network Stations may not be added from the Request Tasks menu.
- You reached a wrong number.
- There is a loose plug or cable hookup either with your IBM PC or with the host computer.
- Your host computer's automatic answering capability has not been activated.
- There is a compatibility and/or an options problem in the Modem and Line Description menu.

Action: Check each of the items above individually. If the problem is one of the above, you should be able to correct it yourself. If you can not or if the problem is in the host system or in the IBM PC Network, contact your local network coordinator.

Problem or Symptom Description (Continued)

Problem: Incorrect Characters Displayed

Cause: During customization, you may have incorrectly changed the 3270 Keyboard. It should be the same as the one on your Customization Worksheet.

```
XXX - Y
 |    |
 |    Keyboard Arrangement
 |
 Keyboard ID
```
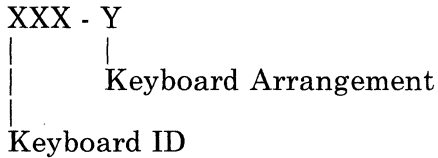
Action: Check for the correct 3270 Keyboard.

Problem: Line Busy

Cause: The line may simply be busy, the phone may be off the hook at the other end, **or** you may have reached a wrong number.

Action: Wait a few minutes, double check the phone number, then try dialing again. If the problem persists after several tries, check to be sure the problem is not mechanical (See: **PROBLEM: No Answer From Host Computer**) If the problem is not mechanical and it persists, contact your network coordinator.

Problem or Symptom Description (Continued)

Problem: Communication Established and Dropped Immediately

Cause: One of the following conditions:

- A power failure or unplugged modem at either location.
- Incompatible IBM PC and host computer modems.
- Incorrect choices were made for the items in the Modem and Line Description menu.

Action: Check for electrical power to your IBM PC or modem, **or** contact your local network coordinator to determine whether the modems at your locations are compatible, **or** correct the information in the Modem and Line Description menu.

Problem or Symptom Description (Continued)

Problem: Communication Established and Dropped after Some Use

Cause: This problem could result if:

- You pressed the END TASK key.
- You had a power failure.
- A modem has been unplugged at either location.
- You received any prompts **or** messages that you did not respond to.
- Your telephone line is down.
- Your host system is down.

Action: If you pressed the END TASK key, you must re-establish communications. Carefully check to see that your IBM PC or modem are receiving electrical power, and that your telephone line is operating correctly. If there is a message on your screen, check Appendix A, "Message Descriptions: Causes and Responses" on page A-1 for the appropriate action. If the problem persists, contact your network coordinator.

Chapter Summary

A summary of this chapter's key points and
highlights is listed below:

* In some instances, a problem can occur for
  which you will not receive a message or other
  indicator to help you define and correct the
  problem. If this happens, refer to the
  Recovery Procedures listed in this chapter,
  and check to see if the problem you are
  experiencing is listed there.

* Problems that result in a message that
  appears at the bottom of your screen, along
  with other messages that may appear there,
  are discussed in Appendix A, "Message
  Descriptions: Causes and Responses"

* If a message appears on your screen, it does
  not necessarily mean that there is a problem.
  A message could, for example, be a simple
  status report.

* If a message does indicate that there is a
  problem, or if you are not sure what a
  message means but want to know how to
  proceed based upon that message, turn
  directly to Appendix A for assistance.

* You can avoid many problems by maintaining
  good work habits. The simple *Preliminary
  Check* presented in this chapter is designed to
  save you time and effort in completing your
  work.

Chapter Summary (Continued)

DO NOT turn off your IBM PC or press the END
TASK key if you experience a problem that is
not documented with an error message or other
error indicator. If you experience a problem that
cannot be resolved after using this chapter, call
the host personnel to determine if the problem is
with the host computer.

Notes:

Appendix A. Message Descriptions: Causes and Responses

Notes:

About This Appendix

This appendix:

- Describes the types of messages you might receive on your *Operator Information Line* (defined in "The Operator Information Line" on page A-4).

- Explains how to determine whether a message is intended to indicate a problem or is provided for informational purposes only.

- Provides a numerically arranged list of these messages that includes a description of the probable causes and suggested user response.

In some instances, a problem can occur for which you will not receive a message or other indicator to help you define and correct the problem. Refer back to Chapter 8, "What Went Wrong?" on page 8-1 for examples of this type of problem and recommended recovery procedures.

Prompts that appear on your screen during the customization process or while you are performing an IBM PC 3270 Emulation task are discussed in associated sections of this book.

Messages that you might see while using one of this program's keyboard remapping functions are discussed in "Step 3: Responding To Keyboard Remapping Messages."

Understanding Your Messages

Does a Message Mean I Have a Problem?

Not all messages are intended to indicate that there is a problem. Some messages do refer specifically to a problem, but others are designed to provide information only.

Both types of messages are presented in this appendix, along with some pointers to help you tell what type of message you have received, beginning with "Understanding Your Messages."

The Operator Information Line

The bottom line (line 25) of your IBM PC Display Unit screen serves as your *Operator Information Line*. It provides machine status indicators, messages or indications of a message waiting to be viewed (see "Types of Messages" on page A-6), other types of problem indicators, and certain mode and key usage indicators.

When you are in Communicate Task in the 3270 Frame, the Operator Information Line provides status information for the communication session. The locations and meanings of this type of information are presented below:

- Columns 1-2 display an underscored 4 followed by a capital B, signifying an active communication session.

The Operator Information Line (Continued)

- Column 3 displays one of the following:

  - A video-reversed blank indicating the display is connected to your application program.

  - A ¥ (yen sign) indicating the display is connected to the system operator (control program).

  - A ? (question mark) indicating communication has been established with the host computer, but the display is not connected to any host program.

    (If Column 3 remains blank, the display has not been connected to the host computer).

- Columns 9-62 may display an Input Inhibited symbol or message (this type of message is defined in the following section of this appendix).

- The message NUM in Columns 65-67 indicates the Num Lock option was selected during Communication Profile Tasks, and the cursor is in a numeric field.

- An arrow in Column 73 indicates Insert mode.

- The following printer status indicators appear in Columns 76-80:

  - O-O01 indicates that your local print job has been authorized for the current session.
  - O-O01 lets you know your job is printing.

    (If Columns 76-80 remain blank, then local print is not authorized).

Types of Messages

The four different types of IBM PC 3270 Emulation messages are explained in this section.

Three of these *(Immediate, Queued, and Queued Action* messages) appear as necessary during the customization process in the Communication Profile Tasks menus and during Communicate Tasks.

The fourth type of message (*Input Inhibited*) applies to the Communicate Task process and appears in the 3270 Frame.

All IBM PC 3270 Emulation messages, with the exception of messages associated with keyboard remapping, appear on your screen in the Operator Information Line and are explained in this book in "List of IBM PC 3270 Emulation Messages" on page A-12.

- **Communication Profile Tasks Messages**

    - *Immediate* messages are intended to provide general direction on how to proceed while the IBM PC 3270 Emulation Program is engaged in a processing task; hence user response to these messages is usually not a necessity.

        Immediate messages are indicated by a blinking greater than sign (>), and will appear automatically. Press any key to remove the message.

Types of Messages (Continued)

- **Communication Profile Tasks Messages
  (Continued)**

    - *Queued* messages wait in a message queue
      until you are ready to read and, if
      necessary, respond to them. A small,
      blinking video-reversed square (■)
      appearing in your Operator Information
      Line indicates that a Queued message is
      waiting to be viewed. Press the Msg key
      to view it, and again to remove it.

    - *Queued Action* messages *require* you to
      take corrective action (only the proper
      action will delete the message from the
      display unit). An audio *beep* signals that
      such a message has entered the message
      queue.

      Like Queued messages, the presence of a
      Queued Action message in the message
      queue is also indicated by the blinking
      video-reversed ■ appearing in your
      Operator Information Line, and you must
      respond by pressing the Msg key to
      receive the message before the square will
      disappear.

Types of Messages (Continued)

- **Communicate Tasks Process Messages**

    - *Input Inhibited* messages:

        1. Indicate that you cannot currently enter data or perform normal 3270 functions, and

        2. Describe why this condition exists and what to do to correct it.

        Input Inhibited messages are displayed automatically, beginning in Column 11 of the Operator Information Line.

        Input Inhibited messages begin with a numeral between **1** to **9**, followed by a blank space and a phrase describing the cause of this condition and suggesting a corrective course of action.

        For example, such a phrase may begin by telling you to **Wait...**, or offer some other suggested course of action. Input is inhibited until you press the Reset key.

        Some Input Inhibited messages are referred to as *program checks*. These messages all begin with the numeral **9** and contain the the words "program check," followed by another numeral.

Message Prioritization

If an Input Inhibited condition occurs, an associated message will appear on your screen regardless of whether any messages are waiting in the message queue. These messages will also replace any Immediate Message (>) that may be on your screen.

However, if there is a blinking ■ in the Operator Information Line to indicate a Queued and/or Queued Action message is waiting, it will continue to blink even if you receive an Input Inhibited message.

If multiple Input Inhibited conditions exist, only one message will display. You should respond to this message; if the situation is corrected, but an additional input inhibited condition still exists, a new message will appear.

The message queue holds up to six Queued and/or Queued Action messages. When the queue is full, the Queued message that has been there the longest gets replaced by any incoming message, but a Queued Action message will remain in the queue until you have responded with the appropriate action.

Remember, to view and begin responding to either a Queued or Queued Action message, press the Msg key. Both Immediate and Input Inhibited messages appear automatically for the purpose of telling you how to proceed.

Using Your IBM PC 3270 Emulation Message List

The IBM PC 3270 Emulation Program-generated messages that may appear on your Operator Information Line are numerically arranged beginning on the following page.

The following information describes other aspects of the arrangement of messages in this book. Read this information to ensure quick and easy access to message information:

- *Only* the messages that are unique to this program are presented in the following section. Host computer originated or *TRANS* messages that you may receive on your Operator Information Line are presented in the following section ("TRANS Messages" on page A-71). Each of these messages:

    - Begins with **TRANS** and is followed by a number.

    - Is numerically arranged in this book by its TRANS number.

- Messages *1 through 9* are Input Inhibited messages.

- If a message number appears more than once, such as the numeral 14 in some Communication Check messages, and 9 in the program check messages, the messages are further arranged numerically by the program-generated number, or alphabetically if no other number appears in the message.

    For example, the message **9 RESET - program check 421.** precedes the message **9 RESET - program check 422.**

Using Your IBM PC 3270 Emulation
Message List (Continued)

- For messages that contain words, numbers, or other characters that are supplied by the host computer or by your IBM PC rather than by the IBM PC 3270 Emulation Program, the characters (...) are used in this appendix in place of the filename that would actually appear on your display screen.

  For example, in the following message, the host computer supplies the specific file name that already exists:

  ```
  57  (...) already exists.
  ```

  For such a message, a file name would actually appear on your screen rather than the (...) that appear in this book.

  In other messages listed here, (...) is used to indicate that a communication check number, error code number, or a number indicating some type of status or progress, will actually appear on your screen. For example:

  ```
  TRANS02 Number of bytes transferred
  so far: (...).
  ```

- A communication check will appear in one of the following three forms:

  10 RESET - communication check (...)
  10 RESET Communication check (...)
  17 Wait - Communication Check (...)

  A list including IBM PC 3270 Emulation messages, the probable cause of the message or problem, and the action, if any, that you should take begins on the following page. The messages as they appear on your screen are printed in **bold** type following the word **Message:**.

List of IBM PC 3270 Emulation Messages

Message: **1 Wait.**

Cause: You sent information to the host computer and it has not yet responded or is in the process of responding, **or** the host computer is sending information to your IBM PC, and IBM PC 3270 Emulation has not finished processing the information sent by the host computer.

Action: Wait one minute, then retry your operation. If the problem persists, contact your network coordinator or host personnel; **or** refer to your *IBM PC Local Area Network User's Guide.*

Message: **2 Wait or RESET - system.**

Cause: You sent information to the host computer while it was sending information to you.

Action: Wait 5 minutes for the host computer to complete processing both tasks, **or** press the RESET key and retry the operation.

Message: 3 Wait - saving to (...).

> *Cause:* The display screen is being put on a disk.

Action: Wait 5 minutes, then retry your operation. If the problem persists, contact your network coordinator.

Message: 4 RESET - try again.

> *Cause:* The task or function you tried did not work.

Action: Press the RESET key and try again.

Message: 5 RESET - action not valid in that field.

> *Cause:* You attempted to change data in a protected field, **or** You attempted to use CURSR SEL in a protected field.

Action: Press the RESET key and move the cursor to the correct field.

Message: 6 RESET - field full.

> *Cause:* Too many characters are in a field.

Action: Press the RESET key and use a shorter entry for this field.

Message: 7 RESET - numeric field only.

Cause: You tried to enter a letter in a number-only field.

Action: Press the RESET key and use only numbers, the minus sign, the decimal point, or the DUP key in this field.

Message: 8 RESET - function not available.

Cause: The function you are trying to use is currently not available.

Action: Press the RESET key and try another.

Message: 9 RESET - program check 401.

Cause: The host computer received an invalid command.

Action: Check your modem. Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: **9 RESET - program check 402.**

> *Cause:* The host computer received an invalid (out of range) address following a buffer address order.

Action: Check your modem. Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: **9 RESET - program check 403.**

> *Cause:* The host computer received a data stream containing data following a Read **or** Erase command.

Action: Check your modem. Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: **9 RESET - program check 404.**

> *Cause:* The data stream to your host computer ended before all required bytes were received.

Action: Check your modem. Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 413.

Cause: The function you attempted to use is not supported.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 420.

Cause: The host computer received an exception response when BIND specified a definite response.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 421.

Cause: The host computer received a definite response when BIND specified an exception response.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 422.

Cause: The host computer does not allow a "no" response.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 423.

Cause: The format indicator (FI) bit is not allowed.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 430.

Cause: The host computer detected a sequence number error.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 431.

Cause: The host computer detected a chaining error.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 432.

Cause: The host computer detected a bracket error.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 433.

Cause: The host computer detected a Data Traffic Reset.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 434.

Cause: The host computer detected a direction error.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 443.

Cause: A Change Direction is required.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 445.

Cause: An Activate LU (ACTLU) is not equal to Initial (COLD) **or** Error Recovery (ERP).

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 450.

Cause: The host computer detected a Profile error and returned a Bind Reject because the Bind Parameters do not match.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 451.

Cause: The host computer detected a Primary Protocol error and returned a Bind Reject because the Bind Parameters do not match.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 452.

Cause: The host computer detected a Secondary Protocol error and returned a Bind Reject because the Bind Parameters do not match.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 453.

Cause: The host computer detected a Common Protocol error and returned a Bind Reject because the Bind Parameters do not match.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 454.

Cause: The host computer detected a Screen Size Specification error and returned a Bind Reject because the Bind Parameters do not match.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 455.

Cause: The host computer detected an LU profile error and returned a Bind Reject because the Bind Parameters do not match.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 456.

> *Cause:* The host computer detected an LU Type 1 error and returned a Bind Reject because the Bind Parameters do not match.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 457.

> *Cause:* The host computer detected a bind specification for crypto when it was not present and returned a Bind Reject because the Bind Parameters do not match.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 470.

> *Cause:* You received an invalid character on your display.

Action: Press RESET key and retry the operation. If the problem persists, call your network coordinator.

Message: 9 RESET - program check 471.

Cause: You do not have the right host system configuration for File Transfer, **or** the host computer may be trying to send your IBM PC something it does not support.

Action: Press RESET key and retry the operation. If the problem persists, call your network coordinator.

Message: 9 RESET - program check 498.

Cause: A negative response was received.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: 9 RESET - program check 499.

Cause: An exception request was received.

Action: Press the RESET key to reset the program check indicator and retry the operation. Call your host personnel if the problem persists since it is possibly a data stream error.

Message: **10 RESET - communication check 501.**

Cause: The Data Set Ready (DSR) from your modem is off.

Action: Check your modem before you try to proceed.

Message: **10 RESET - communication check 504.**

Cause: Your IBM PC has been disconnected from the host computer, and you tried to proceed; **or** an initial connection has not been made - this is a normal, temporary condition.

Action: Re-establish communication before you try to proceed and dial-up to your host.

Message: **10 RESET - communication check 505.**

Cause: The communication line is not yet active (this is a normal, temporary condition) **or** a disconnect was received.

Action: If this Communication check number does not go away after a few seconds, call the host computer location and ask that the communication line be activated. If the line remains inactive, inform your network coordinator about the problem you encountered; include the Communication check number.

Message: **10 RESET - communication check 510.**

Cause: The communication line is active, but the host computer is not sending information; this is a normal temporary condition.

Action: Call your network coordinator before you try to proceed. Tell your network coordinator about the problem you encountered and the Communication check number.

Message: **10 RESET - communication check 518.**

Cause: Data reception problem.

Action: Call network coordinator before you try to proceed. Tell your network coordinator about the problem you encountered and the Communication check number.

Message: **10 RESET - communication check 521.**

Cause: Too much time before data was received.

Action: Retry the operation. If Communication Check 521 occurs frequently and you have to reload the program to clear the error, contact your network coordinator.

Message: **10 RESET - communication check 530.**

Cause: Transmit failure timeout.

Action: Check your modem. If there is no modem failure, call your network coordinator.

Tell your network coordinator about the problem you encountered and the communication check number.

Message: **10 RESET - communication check 790.**

Cause: You are communicating by way of a DFT attachment, but the control unit is not active or responding.

Action: Contact your host personnel.

Message: **11 RESET - function not selected in setup.**

Cause: You tried to print a screen, but you had not chosen the Screen Print option under "3270 Printer Use" in the Communication Setup menu.

Action: Go to the Communication Setup menu and type **1** (Screen Print) or **3** (Screen Print and Host) for "3270 Printer Use."

Message: **12 RESET - invalid character combination.**

Cause: The character you attempted to construct (for example, constructed from e and diaeresis) is not valid for the extension that you selected.

Action: Press the RESET key and try another combination.

Message: **13 Communication check 504. Dial host.**

Cause: Your IBM PC has been disconnected from the host computer, and you tried to proceed; **or** an initial connection has not been made - this is a normal, temporary condition.

Action: Re-establish communication before you try to proceed.

Message: **14 Communication check 501.**

Cause: The Data Set Ready (DSR) from your modem is off.

Action: Check your modem before you try to proceed.

Message: **14 Communication check 505.**

> *Cause:* The communication line is not yet active (this is a normal, temporary condition) **or** a disconnect was received.

Action: If this Communication check number does not go away after a few seconds, call the host computer location and ask that the communication line be activated. If the line remains inactive, inform your network coordinator about the problem you encountered; include the Communication check number.

Message: **14 Communication check 510.**

> *Cause:* The communication line is active, but the host computer is not sending information; this is a normal temporary condition.

Action: Call your network coordinator before you try to proceed. Tell your network coordinator about the problem you encountered and the Communication check number.

Message: **14 Communication check 518.**

> *Cause:* Data reception problem.

Action: Call network coordinator before you try to proceed. Tell your network coordinator about the problem you encountered and the Communication check number.

Message: **14 Communication check 521.**

Cause: Too much time before data was received.

Action: Retry the operation. If Communication Check 521 occurs frequently and you have to reload the program to clear the error, contact your network coordinator.

Message: **14 Communication check 530.**

Cause: Transmit failure timeout.

Action: Check your modem. If there is no modem failure, call your network coordinator.

Tell your network coordinator about the problem you encountered and the communication check number.

Message: **14 Communication check 790.**

Cause: You are communicating by way of a DFT attachment, but the control unit is not active or responding.

Action: Contact your host personnel.

Message: **15 SAVE, REQST, or DEV CNCL - save failed.**

Cause: Your attempt to save or store the information displaying on your screen on the diskette has failed.

Note: This message is preceded by a message explaining why the save failed. Note the message and refer to your reference files for appropriate actions.

Action: Press one of the following keys:

- SAVE key to save file.
- DEV CNCL key to end Save operation.
- REQST key to rename Save file.

Message: **16 RESET - host message received and rejected.**

Cause: A control program message was received while your IBM PC was communicating with an application program.

Action: Press RESET. If the message reappears, call your local IBM Network coordinator.

Message: **17 Wait. Communication check (...).**

Cause: Incompatibility with control unit.

Action: End and reinitiate the task. If the condition persists, report it to support personnel.

Message: **18 Wait - end requested.**

Cause: The host computer is ending communication.

Action: Wait one minute, then retry your operation. If the condition persists, contact your network coordinator or host personnel.

Message: **19 Wait or DEV CNCL - printer busy.**

Cause: You tried to Screen Print while another screen was being printed.

Action: Wait until the first screen has printed, **or** press the DEV CNCL key to cancel Screen Print.

Message: **20 Wait or DEV CNCL - printer very busy.**

Cause: You tried to print a screen during a host-initiated print.

Action: Wait until the file has printed, **or** press the DEV CNCL key to cancel your print request.

Message: **21 Wait or DEV CNCL - printer not working.**

> *Cause:* The printer needs operator intervention, or the printer is not working correctly.

Action: Press the Msg key to receive the operator intervention message and try to solve the printer problem, **or** press the DEV CNCL key to cancel your print request.

Message: **22 DEV CNCL - printer not working.**

> *Cause:* The printer needs operator intervention, or the printer is not working correctly.

Action: Press the Msg key to receive the operator intervention message and try to solve the printer problem, or press the DEV CNCL key to cancel your print request.

Message: **30 Invalid Host Command**

> *Cause:* You specified an invalid host command for File Transfer in the Communication Setup menu.

Action: Specify a valid host command. It must be eight characters or less without any single-byte EBCDIC controls.

Message: **31 Cannot END TASK during file transfer, use DEV CNCL to cancel.**

Cause: You pressed the END TASK key during a file transfer. The END TASK key is disabled during file transfer.

Action: Press the DEV CNCL key to cancel the file transfer. Then press the END TASK key if you still want to end your 3270 session.

Message: **32 Cannot use file transfer while file transfer in progress.**

Cause: You issued a File Transfer command while you were already uploading or downloading a file.

Action: Wait until File Transfer is completed.

Message: **33 Wait - device cancel in progress.**

Cause: You pressed the DEV CNCL key during File Transfer.

Action: None.

Message: **34 File transfer cancelled at operator request.**

Cause: You pressed the DEV CNCL key during a file transfer. The transfer process has been terminated.

Action: Proceed with task.

Message: **35 Task unavailable - no display session active.**

Cause: You selected the File Transfer option in the 3270 Request Tasks menu, but IBM PC 3270 Emulation is not in an LU.2 session.

Action: Make some other choice in the 3270 Request Tasks menu, **or** establish an LU.2 session.

Message: **36 Wait or DEV CNCL - File transfer in progress.**

Cause: You entered a File Transfer command and the system is processing your request.

Action: Wait for File Transfer to complete, **or** press the DEV CNCL key to cancel your File Transfer request.

Message: **37 Wait or DEV CNCL - Bytes transferred: (...).**

Cause: If you are *creating or uploading* a file, this message replaces the "Trans01" message after approximately 2K of initial data has been transferred, and continues with updates at intervals of approximately 2K until the file transfer is complete.

Action: Wait until the File Transfer is complete, **or** press the DEV CNCL key to cancel the File Transfer.

Message: 38 Send/receive function not available.

Cause: You issued a File Transfer command from the Alternate Field or TopView window, but one of the following conditions exists:

- You did not load IBM PC 3270's Communicate Task by selecting "Communicate" from the 3270 Task Selection menu.

- Communicate Task is loaded, but you did not select "Yes" to activate the File Transfer option in the Communication Profile Tasks menu.

- The PSCAPI.COM Program is not loaded.

Action: Check each of the possible causes listed above and correct the menus as indicated or load the PSCAPI.COM Program.

Message: 39 File Transfer being cancelled.

Cause: You issued a File Transfer command from the Alternate Field or TopView window, but you pressed the Ctrl and Break keys and terminated the File Transfer.

Action: Wait for message number 34 to appear. Then, retry or proceed as otherwise desired.

Message: **40 Wait or DEV CNCL - Bytes in file: (...).**

Cause: If you are *appending* a file, this message replaces the "Trans01" message after approximately 2K of initial data has been transferred, and continues with updates at intervals of approximately 2K until the file transfer is complete.

Action: Wait until the File Transfer is complete, **or** press the DEV CNCL key to cancel the File Transfer.

Message: **50 Invalid name.**

Cause: You specified an invalid name for a file. The name can contain any combination of letters (A-Z), numbers (0-9), or both.

Action: Press the ESC key and retype the name using valid characters, **or** display the directory contents and note exactly how the file name is typed.

Message: **51 (...) is damaged. Use copy.**

Cause: The disk containing the file or program you tried to access is unusable.

Action: Use another copy of the program.

Message: **52 Disk error on drive (...).**

Cause: The diskette you loaded in the specified disk drive has an error, **or** the diskette is not mounted in the specified drive.

Action: Make sure the diskette is in the right drive, **or** refer to the *IBM PC Guide to Operations* for recovery.

Message: **53 Invalid choice.**

Cause: In the List of Network Stations menu, there are duplicate items or more than eight items for the display sessions and printer sessions; **or** in the Communication Setup menu, you specified an invalid host command for the File Transfer and then attempted to cancel this option.

Action: Enter a new file transfer command, **or** change one of the duplicate items, **or** press the ESC key to cancel the menu.

Message: **54 Invalid ID letter.**

Cause: You specified an invalid ID letter on a menu.

Action: Specify a valid ID letter, one of those displayed on the menu.

Message: **55 Diskette on drive (...) is unsupported type.**

Cause: You are using a diskette that IBM PC 3270 Emulation cannot support; it may, for example, be an unformatted diskette.

Action: Restart the task using a diskette that is a supported type.

Message: **56 (...) not found.**

Cause: The file name that you entered does not exist as typed, **or** the correct disk is not inserted.

Action: First, try the following steps:

1. Display the directory.
2. Check the spelling and capitalization of the file name.
3. Choose the item again, and type it exactly as it appears in the directory, or choose the file from the directory.
4. Press the Enter key;

or

Insert the correct disk and try again, **or** press the ESC key to cancel the task.

Message: **57 (...) already exists.**

> *Cause:* When the system requested the file name, you entered a file name with one of the following problems:
>
> • It is already on a disk,
> • It is the same as a file name with an .RES extension that exists on your disk,
> • It either already exists for an output file, or is a default output file name used by the system.

Action: Use a different file name, **or** delete or rename the file with the .RES extension.

Message: **58 (...) is unsupported type.**

> *Cause:* You specified a file for the Screen Save, Data Trace, File Transfer, or Deferred Print that is a Revisable-Form document.

Action: Restart the task using a file that is not a Revisable-Form document.

Message: 59 Invalid key.

Cause: You pressed either a key which is invalid for your 3270 Keyboard while in the 3270 Frame, or the REQST key while the directory is displayed on the screen; **or** while in the List of Network Stations menu or Status of Network Stations menu, you attempted to cursor down past the last menu or up above the first menu.

Action: Select a valid key. For the Gateway configuration, your choices are REQST, RESET, DIR, Msg, Alt Task, END TASK, and PrtSc. In the List and Status of Network Station menus, your valid keys are the cursor up and cursor down keys.

Message: 60 Too many characters. BACKSPACE or ESC.

Cause: You specified a value for an item that is longer than allowed for that item.

Action: Backspace to remove the extra characters, **or** specify a shorter value, **or** press the ESC key to cancel the prompt.

Message: 61 Name not specified.

Cause: When the system requested a file name, you pressed the Enter key without typing the file name first.

Action: Type the file name and press Enter.

A-40

Message: **62 Diskette on drive (...) is write protected.**

Cause: The disk on which the 3270 screen, Deferred Print file, File Transfer file, or Data Trace data is to be saved is write protected.

Action: Retry using a disk that is not write protected.

Message: **63 Disk error accessing program (...).**

Cause: A disk error occurred while the system was trying to load a program.

Action: Try to load the program again, **or** if you have another copy of the program, try to load it.

Message: **64 Invalid drive specifier.**

Cause: The drive specifier you typed is not valid for your system.

Action: Select a valid drive specifier and try again (see an *IBM PC DOS User's Guide* for more details).

Message: **65 Specified file(s) invalid for this task.**

Cause: You have specified a file that cannot be used for the task you have selected.

Action: Use a different file name and retry.

Message: 66 Disk full on drive (...). Restart task using another disk.

Cause: The disk on which the Deferred Print or File Transfer file, 3270 screen, or Data Trace data is to be saved is full.

Action: Restart the task using a disk with available space.

Message: 67 Directory error for (...).

Cause: The directory specified for the Screen Save, Data Trace, File Transfer, or Deferred Print does not exist, **or** the directory specified is the root, and it is full.

Action: Specify another directory and retry.

Message: 68 Invalid choice. File name cannot exceed 44 characters.

Cause: You specified a file name greater than 44 characters.

Action: Specify a file name of 44 characters or less **or** press the ESC key to cancel the operation.

Message: 69 No files found for (...)

Cause: The directory you chose for the Display Directory function was not found **or** has no files in it.

Action: Choose a different directory.

Message: **70 Not enough memory. Display Directory can be loaded in Task Selection.**

Cause: You pressed the DIR key and there was not enough memory to load the DIR function at initialization time.

Action: Return to the 3270 Task Selection menu and press the DIR key there.

Note: If, when you press the DIR key, there is an outstanding prompt for file name, the item selected in the Display Directory menu will be used to answer the prompt.

Message: **71 Unknown DOS critical error detected.**

Cause: IBM PC DOS, which was loaded before the IBM PC 3270 Emulation Program, has been terminated by an error.

Action: Try to start over, using a backup copy of IBM PC DOS before you load IBM PC 3270 Emulation.

Message: 72 Printer error. (...) cancelled.

Cause: Possible causes are:

- An error was encountered by your system while it was trying to access the printer during a print job,

  or

- There may be a printer-related problem, such as a paper jam, loss of power, the printer is out of paper, the printer ribbon may need to be changed, or the printer was not ready because **Stop** or **Offline** was pressed,

  or

- Your system has an unrecoverable hardware error,

  or

- DOS background print or another print job is active, and the printer is consequently unavailable.

Action: Check for any of the printer or printer system problems described above, and then try again, **or** wait for the current print job to finish and then try again, or cancel any other print jobs and start your print job.

Message: 73 Program (...) not found.

Cause: You tried to use a program that does not exist on your disk.

Action: Use a different program or use a disk with the program on it that you need.

Message: **74 Cannot open file. Maximum number of files open.**

Cause: You cannot use the task you chose because it would require more files to be open than your system has available to it.

Action: Choose another task, **or** change the configuration of your system by including a FILES command in a CONFIG.SYS DOS file. For more information, see the directions for configuring your system in the *IBM PC DOS User's Guide* that corresponds to the level of DOS you are using (2.1 through 3.2 are possibilities).

Message: **75 (...) is invalid program.**

Cause: A file exists on the disk which is not a program but which has the correct program name.

Action: Use another copy of the program.

Message: **76 Software error. Record screen and error status. Press any key or power off.**

Cause: IBM PC 3270 Emulation encountered a software error that caused the system to abnormally halt the running of the program.

Action: Record the state of the screen (note the menu name, status indicators, and the numbers of any message). Then press any key to return to IBM PC DOS (or turn off the IBM PC), and contact your network coordinator.

Message: **77 Insufficient memory.**

Cause: You pressed the DIR key and there was not enough memory to load the DIR function at initialization time.

Action: Return to the 3270 Task Selection menu and press the DIR key there.

Note: If, when you press the DIR key, there is an outstanding prompt for file name, the item selected in the Display Directory menu will be used to answer the prompt.

Message: **80 RESET or END TASK -
sessions will be cancelled.**

Cause: You pressed the END TASK
key on the Gateway or Gateway with
Network Station.

Action: There is no way to end only the
Network Station session on a
Gateway with Network Station. If
you have not logged off, press the
RESET key and then perform the
logoff procedure from your Run Book.
Check that all people on your IBM
Network are ready to end. If you
have logged off and all Network
Stations are ready to end, press the
END TASK key again.

Message: **81 Cannot choose active session.**

Cause: You selected an active Printer
or Display Session to be changed or
deleted in the List of Network
Stations menu.

Action: Wait until the session is inactive, or
select another session; **or** press the
ESC key to cancel the menu.

Message: **82 GATEWAY Name not in List of Network Stations. Use Profile Tasks.**

Cause: For the Gateway with Network Stations configuration, your Gateway name is not specified as a Network Station in the List of Network Stations menu.

Action: Return to the Communication Profile Tasks menu and add the Gateway name to the List of Network Stations menu.

Message: **83 Use Profile Tasks to specify a Station name.**

Cause: For the Network Station configuration, you did not specify a Network Station name in the Communication Setup menu.

Action: Use Communication Profile Tasks to specify a Network Station name in the Communication Setup menu.

Message: **84 Use Profile Tasks to specify a Gateway name.**

Cause: For the Gateway or Gateway with Network Station configuration, you did not specify a Gateway Name in the Gateway Setup menu.

Action: Use Communication Profile Tasks to specify a Gateway name in the Gateway Setup menu.

Message: 85 Wait - Gateway has not called Network Station.

Cause: You have loaded IBM PC 3270 Emulation in the Network Station PC, but the program has not been loaded in the Gateway PC.

Action: Make sure IBM PC 3270 Emulation is loaded in the Gateway PC and that your Network Station name is in the Gateway List of Network Stations. Add the name if necessary, then wait one minute, then retry your operation. If the problem persists, contact your network coordinator or host personnel.

Message: 86 Wait - too many sessions on PC network.

Cause: The maximum number of sessions with Network Stations is already established, **or** some other application is using IBM PC Network sessions.

Action: Wait until a session is available, **or** end the other application and reload IBM PC 3270 Emulation. For more information, see "Sharing NETBIOS Resources with Other Applications" on page 7-19.

Message: **87 Wait - PC network error (...).**

> *Cause:* A problem with the IBM PC Network Adapter or IBM Token-Ring Network Adapter, **or** some other network condition is preventing the Network Station from communicating on the network.

Action: Wait 5 to 10 minutes, then retry your operation. If the problem persists, contact your network coordinator or host personnel.

Message: **88 Cannot call all requested Network Stations.**

> *Cause:* Some other application(s) are using network sessions; there are consequently not enough sessions available to provide for the number of IBM PC Network or IBM Token-Ring Network sessions that you have requested.

Action: End the other sessions, **or** allow only the available number of sessions to be used by the IBM PC 3270 Emulation Program by requesting fewer Network Station sessions. For further information, see "Sharing NETBIOS Resources with Other Applications" on page 7-19.

Message: 89 **Unable to load; not enough Network Control Blocks (NCBs).**

Cause: Some other application(s) are using network sessions; there are consequently not enough sessions available to provide for the number of IBM PC Network or IBM Token-Ring Network sessions that you have requested.

Action: Continue to use IBM PC 3270 Emulation using no more 3270 sessions, **or** end the other application's sessions. For further information, see "Sharing NETBIOS Resources with Other Applications" on page 7-19.

Message: 90 **PC network error (...).**

Cause: There is a network condition or problem that is preventing the Gateway Station, Network, or Gateway with Network Station from communicating on the LAN.

Action: Contact your network coordinator and describe the problem, **or** refer to the *IBM PC Local Area Network 1.1 Program User's Guide* or IBM Token-Ring Network user's documentation.

Message: **91 Name (...) already in use. Use Profile Tasks.**

Cause: You tried to give your station a name that already exists on the IBM PC Network or the IBM Token-Ring Network.

Action: Select another name in the Communication Profile Tasks menu or in the Gateway Setup menu.

Message: **92 Function is not available on Gateway.**

Cause: You pressed an IBM PC 3270 Emulation function key that is not valid for the Gateway function.

Action: Valid keys for the Gateway are Alt Task, Msg, REQST, RESET, END TASK, PrtSc and DIR.

Message: **93 Key is not available on Gateway.**

Cause: You pressed an IBM PC 3270 Emulation function key that is not valid for the Gateway function.

Action: Choose one of the valid keys for the Gateway: DIR, REQST, END TASK, RESET, Alt Task, Msg, and PrtSc.

Message: 94 Too many sessions on PC network.

Cause: The maximum number of sessions on the PC Network is already established, leaving no sessions for use by your IBM PC 3270 Emulation Program.

Action: Wait until a session is available, **or** end the other application and reload IBM PC 3270 Emulation. For more information, see "Sharing NETBIOS Resources with Other Applications" on page 7-19.

Message: 95 Wait - ending task.

Cause: The END TASK function is being performed on the Gateway or Gateway with Network Station; this is a normal, temporary report of task status.

Action: Wait one minute. If the message remains on the Operator Information Line, retry your operation. If the problem persists, contact your network coordinator or host personnel.

Message: 100 Unable to load program; communication hardware unavailable.

Cause: There is no SDLC, DFT, IBM PC Network, or IBM Token-Ring adapter(s) installed as your configuration requires.

Action: Contact your network coordinator.

Message: **101 RESET or END TASK - display session active.**

Cause: You pressed the END TASK key while the display application was still active.

Action: If you have not logged off, press the RESET key, then perform the logoff procedure from your Run Book. If you have logged off, press the END TASK key again.

Message: **102 REQST or DEV CNCL - screen save file not named.**

Cause: You have not named the file that will be created **or** added to when the display is saved on diskette.

Action: Use the REQST key to name file, **or** press the DEV CNCL key to end the save operation.

Message: **103 RESET or END TASK-display/print sessions active.**

Cause: You pressed the END TASK key while the display and printer applications were still active.

Action: If you have not logged off, press the RESET key, then perform the logoff procedure from your Run Book. If you have logged off, press the END TASK key again.

Message: 104 Use Profile Tasks to create a modem and line description.

Cause: You have not specified an SDLC Station Address in the Modem and Line Description menu.

Action: Contact your network coordinator and obtain the Customization Worksheets. Go to the Communication Setup menu and specify an SDLC Station Address.

Message: 105 SAVE, REQST, or DEV CNCL - file for save named.

Cause: The task to name a save file is complete. A Save file has been previously named.

Action: Press one of the following keys:

- SAVE key to save file.
- DEV CNCL key to end Save operation.
- REQST key to rename another Save file.

Message: 106 File for 3270 print to disk not named. Use Request Tasks.

Cause: You have not named the 3270 Print to Disk file.

Action: Name the 3270 Print to Disk file in the 3270 Request Tasks menu.

Message: **107 Use Request Tasks to name a new file for 3270 print to disk.**

Cause: The print data cannot be written to your disk.

Action: Press the REQST key, type **b** "Name File for 3270 Print to Disk," and press the Enter key. When prompted, type a new Print file name.

Message: **108 Invalid choices. Change choices marked with **.**

Cause: You did not specify the Network Station Name or Gateway Station Name before exiting the menu, **or** the Network Station Name specified is invalid.

Action: Either change your choices that are marked with **, **or** press the ESC key to cancel the invalid choices made in the menu. If no selections were made, IBM PC 3270 Emulation will exit the menu. If you made selections, the invalid selections will be cancelled the first time you hit the ESC key. Press ESC again to exit the menu.

Message: **109 RESET or END TASK - printer session active.**

Cause: You pressed the END TASK key while the printer application was still active.

Action: If you have not ended the printer session, press RESET, then perform the procedure from your Run Book. If you have ended the printer session, press the END TASK key again.

Message: **110 PC LAN Program Version 1.1 or later is required to run configurations other than Redirector with PC 3270 Emulation.**

Cause: You used a *lower* version number of the *IBM PC LAN Program* when you tried to run its Server, Messenger, or Receiver option.

Action: Use only the PC LAN Redirector option, **or** use *IBM PC LAN, Version 1.1.*

Message: **120 Invalid 3270 Keyboard selected.**

Cause: You did not specify a 3270 Keyboard, or the keyboard specified is invalid.

Action: Refer to the Appendix B, "IBM PC 3270 Emulation Keyboard Extensions" on page B-1 for information on supported 3270 keyboards and retry the operation.

Message: **121 Exit and reload 3270.**

Cause: You selected "Yes" for "3270 Keyboard Remap," and you specified an input filename. You must reload IBM PC 3270 Emulation to activate the remapping application.

Action: Select "Exit" by typing **z** in the Task Selection menu. Then reload IBM PC 3270 Emulation.

Message: **122 Task not available for selected configuration.**

Cause: In the Communication Profile Tasks menu, one of the following errors exists:

- Your configuration is Gateway, and you selected "Create or Revise Communication Setup."
- Your configuration is Network Station, and you selected "Create or Revise Modem and Line Description."
- Your configuration is Standalone or Network Station, and you selected "Create or Revise Gateway Setup."

or

You chose an Item in the 3270 Request Tasks menu that is not valid for your configuration. The following are not valid for the Gateway configuration:

- Name File for 3270 Screen Save
- Name File for 3270 Print to Disk
- 3270 Printer Requests
- File Transfer.

Display Status of Network Stations and Revise List of Network Stations are valid for the Gateway and Gateway with Network Station. Data Trace is valid for all configurations. Screen Mode is not valid with a monochrome display.

Action: Select a task that is valid for your configuration.

Message: **123 Task not available for selected Communication Attachment.**

Cause: Your configuration is Gateway, Gateway with Network Station, or Standalone, and you selected "Create or Revise Modem and Line Description" in the Communication Profile Tasks menu, **and** you selected "DFT" as your Communication Attachment.

Action: Select another task that is valid for your specified communication attachment.

Message: **124 Alternate Tasks is not available with TOPVIEW.**

Cause: You pressed the Alt Task key while IBM PC 3270 Emulation was running under IBM TopView.

Action: None.

Message: **125 RESET - machine check (...).**

Cause: Incompatibility with control unit.

Action: End and reinitiate the task. If the problem persists, report it to network coordinator or other support personnel.

Message: **126 Unable to load program; not enough memory.**

Cause: Your IBM PC does not have enough memory to load the Communication Task with the configuration options you have selected.

Action: Either change your configuration selections to use less memory, **or** have additional memory added to your IBM PC.

Message: **127 Station not configured for Alternate Tasks.**

Cause: Your Communication Profile Tasks menu does not specify "Yes" for the Alternate Tasks option.

Action: If you want to use Alternate Tasks, go to the Communication Profile Tasks menu, and specify "Yes" for the Alternate Tasks option.

Message: **128 Not enough memory for Alternate Tasks.**

Cause: You pressed the Alt Task key and there was not enough memory available to support the two fields.

Action: Install enough memory in your IBM PC, **or** perform your operation without using Alternate Tasks.

Message: **129 Printer not ready. Check printer.**

Cause: There is a printer error such as Paper Jam, Printer Not Ready, Printer Not Attached, **or** Printer Power Off.

Action: Check your printer for any of the error conditions listed. Fix the problem and wait a minute for printing to continue.

Note: A 10-minute timer is set. **Keystrokes will not be accepted while the printer error is unresolved.** If the time expires before a successful print, the error condition will be reported to the host. If the printer error condition is cleared before the time expires, printing will continue after a delay of approximately one minute.

Message: **130 File already exists. Name a new file for Data Trace.**

Cause: You specified a Data Trace file name that already exists. Trace data cannot be appended to an existing file.

Action: Choose an original file name and retry.

Message: **131 Disk or file error. ESC or retry with new disk or file.**

Cause: There is a disk or file error in the file you named for Data Trace when the file was opened.

Action: Use the ESC key to cancel the menu (the Data Trace will not be started), **or** retry with a new disk **or** file.

Message: **132 Trace stopped. Use REQST to restart trace.**

Cause: Your Data Trace has stopped because a problem was encountered with the disk.

Action: Using another disk, use REQST to restart the trace. See "3270 Request Tasks" on page 4-54 for valid options for each configuration.

Message: 134 Exit and reload 3270. Change max size in PIF to (...).

Cause: IBM TopView is active and you changed the values for your configuration, Alternate Tasks option, communication attachment specification, or keyboard remap option. As a result, you changed the amount of memory that IBM PC 3270 Emulation requires. The number that appears in the message in the same location as the *(...)* printed above indicates the amount of memory now required.

Action: Exit IBM PC 3270 Emulation, access the IBM TopView Program Information File, and change the maximum memory size to the number shown in this message. Reload IBM PC 3270 Emulation.

Message: 135 Exit and reload 3270. New size: (...) KB.

Cause: You changed the values for your configuration, Alternate Tasks option, communication attachment specification, and keyboard remap option. As a result, you changed the amount of memory that IBM PC 3270 Emulation requires. The number that appears in the message in the same location as the *(...)* printed above indicates the amount of memory now required.

Action: Exit IBM PC 3270 Emulation and reload.

Message: **136 Program in Alternate Field must be ended.**

Cause: You typed **z** to exit from the 3270 Task Selection menu, and an active program in the Alternate Field requires that it must be ended before IBM PC 3270 Emulation can perform this task.

Action: Return to the Alternate Field and end the program running there, then return to the 3270 menu to exit, or proceed as desired.

Message: **160 Wait - API in use.**

Cause: A Disable Input service request was issued.

Action: Wait until the application program issues an Enable Input service request or a Disconnect From Keyboard service request (program dependent).

Message: **161 Cannot END TASK while API is in use.**

Cause: You pressed the END TASK key between the time a Disable Input Service request was issued and the time an Enable Input Service request was issued.

Action: Wait until the application using the API is terminated, then press the END TASK key; **or** end the application using the API, then press the END TASK key.

Message: **162 API function not available; you have not loaded PSCAPI.COM.**

Cause: PSCAPI.COM was not run before loading IBM PC 3270 Emulation, "API=yes" was selected in the Communication Setup menu, and you selected Communication Tasks from the 3270 Task Selection menu.

Action: Return to IBM PC DOS, run the PSCAPI.COM program, and reload IBM PC 3270 Emulation, **or** continue in Communicate Tasks but do not use the API.

Message: **163 Cannot use file transfer while API is in use.**

Cause: You tried to issue a File Transfer command from the 3270 Frame, Alternate Field, or an IBM TopView 1.1 window between the time a Disable Input service request was issued and the time an Enable Input service request was issued.

Action: Wait until the application using the API is terminated, then try the File Transfer (SEND or RECEIVE command) again, **or** end the application using the API, then retry the transfer.

Message: **166 PSCAPI - IBM PC 3270 Emulation support program loaded.**

Cause: You loaded PSCAPI.COM to perform File Transfer from the Alternate Field or while in an IBM TopView window, **or** to run the IBM PC 3270 Emulation API.

Action: No action is required. Load IBM PC 3270 Emulation to continue.

Message: **180 Communication error. Unable to disconnect.**

Cause: You have a wrong line configuration, and the modem cannot drop its signal.

Action: Check your Customization Worksheets to be sure that you have the right configuration.

Message: **181 An SDLC Station Address must be specified.**

Cause: You tried to exit the Modem and Line Description menu without specifying an SDLC Station Address.

Action: Choose the ID "c" and specify the SDLC Station Address.

Message: **182 Use Request Tasks to send PA1 or PA2 printer message to host.**

Cause: The host computer has requested PA1 or PA2 (application program dependent).

Action: Choose PA1 or PA2 as specified by your Run Book.

Message: **183 Message (Buffer Reprint) sent to host.**

Cause: You selected Buffer Reprint in the 3270 Printer Requests menu.

Action: No action is necessary.

Message: **183 Message (PA1) sent to host.**

Cause: You selected PA1 in the 3270 Printer Requests menu.

Action: Proceed with your task.

Message: **183 Message (PA2) sent to host.**

Cause: You selected PA2 in the 3270 Printer Requests menu.

Action: Proceed with your task.

Message: **184 Buffer not available for reprint.**

> *Cause:* You selected "Reprint Buffer" from the 3270 Printer Requests menu, and the last buffer stored in the printer has been partly replaced by another buffer received from the host computer; or the first buffer has not been received from the host computer.

Action: No action is possible unless the host computer sends the buffer again.

Message: **185 Print cancelled.**

> *Cause:* You selected Cancel Print from the 3270 Printer Requests menu.

Action: Proceed with task.

Message: **186 Printer Alarm received from host.**

> *Cause:* The host computer has sent a printer alarm.

Action: Perform the predetermined actions from your Run Book.

Message: **200 Invalid option for fast path.**

Cause: You specified an invalid fast path option.

Action: If you are using PSC.BAT, edit the PSC.BAT file by changing the PSCPG command to reflect the correct fast path option. Otherwise, type the Fast Path option correctly on the command line.

Message: **201 Too many characters in program directory path.**

Cause: You typed too many characters in the path name for the program directory.

Action: Check your spelling and try again, **or** shorten the path name to 28 characters or less.

TRANS Messages

Message: **TRANS01 File transfer command being processed.**

Cause: This status indicator appears in the Alternate Field or in an IBM TopView 1.1 window when a SEND or RECEIVE (File Transfer) request has been made and processing of it has begun.

Action: None - the "TRANS03 File transfer complete" message will appear when the transfer is completed.

Message: **TRANS02 Number of bytes in file: (...).**

Cause: If you are *appending* a file, this status indicator will replace the "Trans01..." in the Alternate Field or in an IBM TopView 1.1 window while a RECEIVE (File Transfer) request is being processed. Updates will be provided until the File Transfer is completed.

Action: None - the "TRANS03 File transfer complete" message will appear when the transfer is completed.

Message: **TRANS02 Number of bytes transferred so far: (...).**

Cause: If you are *creating or uploading* a file, this status indicator will replace the "Trans01..." in the Alternate Field or in an IBM TopView 1.1 window while a SEND or RECEIVE (File Transfer) request is being processed. Updates will be provided until the File Transfer is completed.

Action: None - the "TRANS03 File transfer complete" message will appear when the transfer is completed.

Message: **TRANS03 File transfer complete.**

Cause: The file transfer operation has been successfully completed.

Action: Proceed with task.

Message: **TRANS04 File Transfer complete with records segmented.**

Cause: The file transfer operation has been completed, and any record greater than the logical record length (LRECL) of the file being appended will divide and become multiple records.

Action: Proceed with task.

Message: TRANS05 Personal computer filespec incorrect: file transfer canceled.

Cause: You made an error in the IBM PC DOS filespec. For example, file name or extension: your specified file name and/or extension may be too long (maximum allowed is 44 characters if an extension is specified, 40 characters with no extension).

Action: Be sure the IBM PC DOS filespec in the File Transfer command conforms to the IBM PC DOS requirements for a filespec as stated in "File Transfer Command Format" on page 6-22.

Message: TRANS06 Command incomplete: file transfer canceled.

Cause: You did not enter the required parameters after SEND **or** RECEIVE.

Action: Read "File Transfer Command Format" on page 6-22 for requirements of the SEND and RECEIVE commands and retry.

Message: TRANS07 Cannot link to host: file transfer canceled.

Cause: There is a host connection problem.

Action: File transfer may not be working properly. Verify that the host is operating.

Message: **TRANS08 Command transmit error: file transfer canceled.**

Cause: There is a program error, **or** you pressed a key that produced an invalid code. For example, one that cannot be transmitted to the host.

Action: (1) Consult your "File Transfer Command Format" on page 6-22 and retry; if unsuccessful, (2) verify that the host computer is operating by contacting your host personnel.

Message: **TRANS11 Lost contact with host: file transfer canceled.**

Cause: The host is inactive.

Action: Try to re-establish communication with the host. If unsuccessful, contact your host personnel and describe the problem to them.

Message: **TRANS13 Error writing file to host: file transfer canceled.**

Cause: The host program has detected an error in the file data during a RECEIVE operation.

Action: Retry file transfer. If unsuccessful, contact your host personnel and describe the problem to them.

Message: **TRANS14 Error reading file from host: file transfer canceled.**

Cause: The host program has detected an error in the file data during a RECEIVE operation.

Action: Retry file transfer. If unsuccessful, contact your host personnel and describe the problem to them.

Message: **TRANS15 Required host storage unavailable; file transfer canceled.**

Cause: You need 30K of main storage (not disk space) for the file transfer, in addition to the host requirement.

Action: Contact your host personnel.

Message: **TRANS16 Incorrect request code: file transfer canceled.**

Cause: An invalid parameter has been sent by the SEND **or** RECEIVE application.

Action: Verify that current versions of SEND, RECEIVE, and IND$FILE MODULE are correctly installed. If they are, contact your host personnel.

Message: **TRANS17 Missing or incorrect TSO data set name: file transfer canceled.**

Cause: You did not specify the TSO data set name, or the specified TSO data set name is not a sequential or partitioned data set.

Action: Correct the TSO data set name in the command and retry.

Message: **TRANS17 Missing or incorrect. CMS data set name: file transfer canceled**

Cause: You did not specify the CMS data set name, or the specified CMS data set name is incorrect.

Action: Correct the CMS data set name in the command and retry.

Message: **TRANS18 Incorrect option specified: file transfer canceled.**

Cause: You specified an option that is not acceptable.

Action: Correct the command by specifying an acceptable option and retry.

Message: TRANS19 Error while reading or writing to host disk: file transfer canceled.

Cause: There is not enough space available for data on the host.

Action: Look at the 3270 Frame for host indications and correct the problem.

Message: TRANS27 Communication sequence with host disrupted: file transfer canceled.

Cause: There is a program error, **or** you pressed the DEV CNCL key and the host computer has not responded.

Action: Contact your host personnel.

Message: TRANS28 Invalid option (...): file transfer canceled.

Cause: You selected an option that is either not recognized, is specified as a positional keyword, or has an associated value that is incorrect.

Action: Correct the option in the command and retry.

Message: TRANS29 Invalid option (...) with RECEIVE: file transfer canceled.

Cause: You selected an option that is not valid with RECEIVE, but can be used with SEND.

Action: Remove the option from the command and retry.

Message: **TRANS30 Invalid option (...) with APPEND: file transfer canceled.**

Cause: You selected an option that is not valid with APPEND, but otherwise may be used.

Action: Remove the option from the command and retry.

Message: **TRANS31 Invalid option (...) without SPACE: file transfer canceled.**

Cause: You selected an option that can only be used if SPACE is also specified.

Action: Remove the option from the command and retry.

Message: **TRANS32 Invalid option (...) with PDS: file transfer canceled.**

Cause: You selected an option that is invalid with a host partitioned data set.

Action: Remove the option from the command and retry.

Message: TRANS33 Only one of TRACKS, CYLINDERS, AVBLOCK allowed: file transfer canceled.

Cause: SPACE can be specified in units of TRACKS, CYLINDERS, or AVBLOCK, and only one option can be used.

Action: Remove the unwanted option from the command and retry.

Message: TRANS34 CMS file not found: file transfer canceled.

Cause: You did not specify an existing CMS file for RECEIVE.

Action: Correct the CMS file specification in the command and retry.

Message: TRANS35 CMS disk is Read-Only: file transfer canceled.

Cause: You specified a CMS file mode for the SEND key that does not allow write access.

Action: Correct the CMS file specification in the command and retry.

Message: TRANS36 CMS disk is not accessed: file transfer canceled.

Cause: You specified a CMS file mode that is not in the CMS search order.

Action: Access the required disk in CMS **or** correct the CMS file specification in the command, and then retry.

Message: TRANS37 CMS disk is full: file transfer canceled.

Cause: The CMS disk is full, **or** the maximum number of files on the minidisk (3400) has been reached, or the maximum number of data blocks per file (16060) has been reached.

Action: Use another disk with enough space **or** remove unwanted files from the specified disk. If the PC file is over 1M bytes, divide it in several pieces, and retry the command.

Message: TRANS99 Host program error code (...): file transfer canceled.

Cause: There is a program error.

Action: Report the error code number to your host personnel.

Appendix B. IBM PC 3270 Emulation Keyboard Extensions

Notes:

Supported IBM PC 3270 Emulation Keyboard Extensions

The IBM PC 3270 Emulation Program supports the following 3270 keyboard extensions:

- 101 (US)
- 244 (Canadian Bilingual)
- 245 (Swiss-French)
- 245-1 (Swiss-German)
- 265 (Austria/Germany)
- 269 (Belgium/Netherlands)
- 277 (Canada/France)
- 281 (Denmark)
- 281-1 (Norway)
- 285 (Sweden/Finland)
- 289 (France)
- 293 (Italy)
- 301 (Portugal)
- 305 (Spain)
- 309 (Spanish-Speaking Latin America)
- 313 (UK).

Keyboard Extensions are used to enter characters that may be difficult to enter from your keyboard or that are not available in the ASCII character set. The extension is also used to determine what keys are valid for communication in the language that you have chosen, and for translation to a code expected by the host communicating in that language. You choose the language by entering the 3270 Keyboard ID in the Communication Profile Tasks menu.

Supported Keyboard Extensions (Continued)

Once you are in the Communicate Task, you have the 101 (US) data processing functions plus the functions of the extension that you are using. The functions specific to each extension are listed in this appendix under the appropriate extension number.

To type the extended character, press and hold the Alt key, and then press the base key.

The following characters are generated and sent to the host computer correctly, but display a different character because of hardware restrictions:

- Diaeresis (umlaut accent) displays as a video-reversed blank.
- Overbar displays as an underscore.
- Cedilla displays as a video-reversed blank.

Note:

During IBM PC 3270 Emulation Communicate Tasks, some keyboards have characters engraved on the keys that are not valid for the Keyboard ID that you have chosen. These characters, if typed, are replaced by characters that are valid.

If a Keyboard ID will cause engraved characters to be replaced with other characters, the engraved characters and their replacement characters are listed following the appropriate keyboard extension.

Extension 101 (US)

Base Key	Meaning
c	less than sign
e	vertical bar
i	cent sign
j	apostrophe
k	open brace
l	close brace
o	broken vertical bar
p	reverse slash
q	tilde
r	at sign
t	number sign
w	grave accent
x	greater than sign
y	logical not sign

Engraved Character	Replaced By
^	¢
[	¬
]	|

Extension 244 (Canadian Bilingual)

Base Key	Meaning
a	acute accent **
c	less than sign
d	circumflex **
e	at sign
f	diaeresis **
g	cedilla **
i	cent sign
j	apostrophe
k	close brace
l	open brace
o	broken vertical bar
p	reverse slash
q	tilde
r	number sign
s	grave accent
t	logical not sign
v	grave accent **
w	vertical bar
x	greater than sign

** These function as dead keys, meaning that they must be combined with another key to complete the character.

Extension 245 (Swiss-French)

Base Key	Meaning
a	tilde
b	right bracket
c	less than sign
d	right brace
e	number sign
f	cent sign
g	o diaeresis, lowercase
h	e acute accent, lowercase
i	u diaeresis, lowercase
j	a grave accent, lowercase
k	a diaeresis, lowercase
l	pound sign - lire
m	logical not
n	logical or
o	e grave accent, lowercase
p	acute accent
q	c cedilla, lowercase
r	broken vertical bar
s	left brace
t	apostrophe
u	circumflex **
v	left bracket
w	at sign
x	greater than sign
y	grave accent **
z	backslash

** These function as dead keys, meaning that they must be combined with another key to complete the character.

Extension 245-1 (Swiss-German)

Base Key	Meaning
a	tilde
b	right bracket
c	less than sign
d	right brace
e	number sign
f	cent sign
g	e acute accent, lowercase
h	o diaeresis, lowercase
i	e grave accent, lowercase
j	a grave accent, lowercase
k	a diaeresis, lowercase
l	pound sign - lire
m	logical not
n	logical or
o	umlant accent
p	acute accent
q	c cedilla, lowercase
r	broken vertical bar
s	left brace
t	apostrophe
u	circumflex **
v	left bracket
w	at sign
x	greater than sign
y	grave accent **
z	backslash

** These function as dead keys, meaning that they must be combined with another key to complete the character.

Extension 265 (Austria/Germany)

Base Key	Meaning
c	less than sign
f	o diaeresis, capital
g	o diaeresis, lowercase
h	a diaeresis, capital
i	apostrophe
j	a diaeresis, lowercase
k	circumflex
l	number sign
o	u diaeresis, capital
p	u diaeresis, lowercase
q	section symbol
u	grave accent
x	greater than sign
y	sharp s, lowercase

Extension 269 (Belgium/Netherlands)

Base Key	Meaning
a	AE dipthong, capital
b	backslash
c	syllable hyphen
d	cent sign
e	A overcircle, capital
f	pound sign
g	yen sign
h	middle dot accent
i	O slash, capital
j	section/paragraph symbol
k	logical not
l	vertical line, bar
n	numeric space
o	degree symbol
p	ae dipthong, small
q	required space
r	sharp s small
s	international currency symbol
t	c cedilla capital
u	o slash, small
v	right brace
w	a overcircle, small
x	left brace
y	vertical bar
z	overline

Extension 277 (Canada/France)

Base Key	Meaning
c	less than sign
e	diaeresis, umlaut accent **
i	e grave accent, lowercase
j	acute accent **
k	cedilla accent **
l	grave accent **
m	e acute accent, lowercase
n	apostrophe
o	a grave accent, lowercase
p	circumflex **
q	at sign
u	u grave accent, lowercase
w	number sign
x	greater than sign

** These function as dead keys, meaning that they must be combined with another key to complete the character.

Extension 281 (Denmark)

Base Key	Meaning
c	less than sign
g	ae diphthong, capital
h	ae diphthong, lowercase
i	a overcircle, lowercase
j	o slash, capital
k	o slash, lowercase
l	apostrophe
o	circumflex
p	u umlaut, lowercase
q	number sign
t	grave accent
u	a overcircle, capital
w	international monetary symbol
x	greater than sign
y	reverse slash

Extension 281-1 (Norway)

Base Key	Meaning
c	less than sign
g	apostrophe
h	ae diphthong, capital
i	a overcircle, lowercase
j	ae diphthong, lowercase
k	o slash, capital
l	o slash, lowercase
o	circumflex
p	u umlaut, lowercase
q	number sign
t	grave accent
u	a overcircle, capital
w	international monetary sign
x	greater than sign
y	reverse slash

Extension 285 (Sweden/Finland)

Base Key	Meaning
c	less than sign
g	o diaeresis, capital
h	o diaeresis, lowercase
i	a overcircle, lowercase
j	a diaeresis, capital
k	a diaeresis, lowercase
l	apostrophe
o	circumflex
p	u diaeresis, lowercase
q	section symbol
t	e acute accent, capital
u	a overcircle, capital
w	international monetary symbol
x	greater than sign
y	e acute, lowercase

Extension 289 (France)

Base
Key   **Meaning**

c   less than sign
f   e grave accent, lowercase
g   e acute accent, lowercase
h   degree
i   circumflex **
j   u grave accent, lowercase
k   pound sign - lire
m   micro
o   c cedilla, lowercase
p   a grave accent, lowercase
u   diaeresis, umlant accent **
w   section symbol
x   greater than sign
y   apostrophe

** These function as dead keys, meaning that
they must be combined with another key to
complete the character.

Extension 293 (Italy)

Base Key	Meaning
c	less than sign
f	c cedilla, lowercase
g	o grave accent, lowercase
h	degree
i	i grave accent, lowercase
j	a grave accent, lowercase
k	section symbol
l	u grave accent, lowercase
o	e acute accent, lowercase
p	e grave accent, lowercase
q	pound sign - lire
u	circumflex
x	greater than sign
y	apostrophe

Extension 301 (Portugal)

Base Key	Meaning
w	left bracket
u	apostrophe
o	a tilde, lowercase
p	a tilde, capital
h	c cedilla, lowercase
j	c cedilla, capital
k	o tilde, lowercase
l	o tilde, capital
z	less than sign
x	greater than sign

Extension 305 (Spain)

Base Key	Meaning
c	less than sign
d	n tilde, capital
e	peseta
f	n tilde, lowercase
g	open bracket
i	logical not sign
j	open brace
k	close bracket
l	close brace
o	grave accent
p	reverse slash
q	vertical bar
u	diaeresis
w	at sign
x	greater than sign
y	apostrophe

Extension 309 (Spanish-Speaking Latin America)

Base Key	Meaning
c	less than sign
f	n tilde, capital
g	n tilde, lowercase
h	open bracket
i	logical not sign
j	close bracket
k	open brace
l	close brace
o	grave accent
p	reverse slash
q	vertical bar
u	diaeresis
w	at sign
x	greater than sign
y	apostrophe

Extension 313 (UK)

Base Key	Meaning
c	broken vertical bar
e	pound sign - lire
i	grave accent
l	close brace
m	greater than sign
n	less than sign
o	at sign
p	open brace
q	vertical bar
t	apostrophe
u	logical not sign
w	reverse slash
x	over bar
y	number sign

Appendix C. IBM PC 3270 Emulation Keyboard Remapping

Notes:

About This Appendix

This section briefly defines keyboard remapping and explains the two methods for remapping: Global Keyboard Remap and 3270 Keyboard Remap. Detailed procedures for the remapping processes are listed here.

Defining IBM PC 3270 Emulation Keyboard Remapping

Keyboard Remapping is an IBM PC 3270 Emulation facility you can use to change the definitions assigned to your keys.

You can remap your keys one of two ways:

1. *Global Remap* changes the definitions of keys for all programs that you run after you load the Global Keyboard Remap program, REMAPKEY.COM. The remapping definitions in the input file that you specify when you execute REMAPKEY.COM are effective immediately.

   The remapping remains effective during applications loaded after executing REMAPKEY.COM (if the application does not remap keys for its own use) and while in the IBM PC 3270 Emulation Program.

For example, if you remap your keys globally at the IBM PC DOS prompt and load a compatible program that does not alter definitions of keys, your keys are still globally remapped while in the compatible program. When you load the IBM PC 3270 Emulation Program, the keys are still globally remapped.

2. *3270 Keyboard Remap* changes definitions of keys only while in the IBM PC 3270 Emulation Program. When you exit the program or go into Alternate Tasks, the definitions of the keys change to the definitions of the new environment.

To activate 3270 Keyboard Remap, use the Communication Profile Tasks menu and select "Yes" to the Keyboard Remap option, and then enter the name of an input file. This input file contains the definitions you wish to use, and you must create the file before loading the IBM PC 3270 Emulation Program. Steps are provided later in this section.

The remapping definitions in the input file that you specify are active after you re-start IBM PC 3270 Emulation. The remappings are effective only while you are in the IBM PC 3270 Emulation Program and not in Alternate Tasks.

Global and 3270 Remappings can stand alone or be active at the same time. If you execute Global Remap before loading IBM PC 3270 Emulation, you can also execute 3270 Remap. In effect, you can have a cumulative remapping, so be very cautious when executing both remappings.

Defining IBM PC 3270 Emulation Keyboard Remapping (Continued)

Note also that cancelling either Global or 3270 Remap does not disable the other type of remapping if it is currently active.

The remainder of this appendix lists the keyboard remapping steps for Global and 3270 Keyboard Remap. For both remapping methods, begin with "Step 1: Building Your Input File" on page C-6.

When you reach "Step 2: Running Your Keyboard Remapping Program" on page C-23, select either Global or 3270 Keyboard Remap, and follow the corresponding instructions.

The next step, "Step 3: Responding To Keyboard Remapping Messages" on page C-31, is the same for both remapping methods.

IBM PC 3270 Emulation Keyboard Remapping Process

Step 1: Building Your Input File

There are two basic ways to build the input file: use an available editor to create the file, or use the short method provided in "Creating the Input File" on page C-20.

Both methods allow you to enter Keyboard Remapping commands into the input file that the remapping programs use. Both methods also require knowledge of the *command syntax*, or *format* for typing in new definitions for keys.

This section, "Step 1: Building Your Input File," defines the command syntax for the input files, explains the short method for creating the input file, and also lists instructions for displaying and printing the input file.

If you will be using the IBM Enhanced PC Keyboard, you have the ability to remap more keys than you could remap using another keyboard. For this reason, you will need to follow additional guidelines when typing keywords in the input file.

Read through this section, and at the end you will find "IBM Enhanced PC Keyboard Remapping Support" on page C-14 which provides a list of the keywords added for the IBM Enhanced PC Keyboard that are supported by the Remap programs.

Background Information and Definitions

In order to build your input file of remapping commands, you need to understand some definitions and to adhere to the following guidelines.

You should use an available editor to create your input file, or use the short method explained in "Creating the Input File" on page C-20. That section provides a simple approach to creating the file, and also lists sample remappings.

If you do not use the method provided in this book, use an editor that creates a carriage return and line feed as the line ending, and stores the file as ASCII. (IBM PC DOS provides the EDLIN line editor.)

The filename, regardless of which method you choose to create the file, can be any valid IBM PC DOS filename, and the input file must be in ASCII.

The maximum number of remappings is 100 keys. Fewer remappings are allowed if you remap keys to multiple keys, strings, or any other combination of remapping commands. Although the limitation is the buffer space, that space is large enough for a normal remapping.

Remapping commands: are placed in the input file, and they are composed of keys, keywords, qualifiers, strings, and spaces. This section defines and illustrates each of these items.

Background Information and Definitions (Continued)

Command syntax:

- pfs (*switch to alternate PF Select key*).
- key (*original*) = key (*reassignment*)
- key (*original*) = "string"
- key (*original*) = any number of keys or strings in any combination, for example,

    ```
    f10 = "dir a:" enter
    ```

    causes the f10 key to execute a dir command.

An additional command word, "pfs", can be placed in the input file to specify that ctrl f4 is the PF Select function key, and f4 has no IBM PC 3270 Emulation definition.

In other words, the "pfs" command word allows the f4 key to be remapped. This function has been added so you can remap keys to include 3270 PF keys.

If "pfs" is used, it must appear on a line by itself in the remap input file. Regardless of where you type "pfs" in the input file, first line or last line, it causes ctrl f4 to function as PF Select for the entire input file. The "pfs" command word will have no effect when using the IBM Enhanced PC Keyboard.

The pfs command will be valid in both remap programs, and any error in syntax will be reported in the error file. If the syntax is correct, in Global Remap the command is ignored. In 3270 Keyboard Remap the command causes the PF Select function to move to the ctrl f4 key.

Background Information and Definitions (Continued)

Spaces: are the delimiters between parameters. A space on either side of the equal sign separates the key from its assignment. These commands are equivalent:

```
b = "bbb"     (3 keystrokes)
b = b b b     (3 keystrokes).
```

This command is not equivalent to the previous two:

```
b = "b b b "  (6 keystrokes).
```

This is invalid because it is not a string, keyword, or qualifier:

```
b = bbb
```

Comments: can be put in the file. They are not used by the programs; they are only comments or notes that you may want to add for yourself. For example, you may want to add a note to remind you why you remapped a certain key, such as,

```
**Remap the PF Select key to be the
**ctrl f4 key so I can have 3270 PF keys.
```

Comments such as this begin with double asterisks, and the asterisks must be the first characters in the line with no spaces in front of them. Comments cannot exceed 80 characters, including the carriage return and line feed characters.

Background Information and Definitions (Continued)

Keywords: such as enter and end, must be typed in lowercase, except when uppercase is a command requirement. Remapping commands cannot exceed 80 characters.

Blank lines: are not allowed in the keyboard remapping input file. They are considered a command with a syntax error.

Qualifiers: that you can use to modify the meaning of keys or keywords include:

```
shft   (shifted keys)
alt    (alternate keys)
ctrl   (control keys)
```

Qualifiers can be put in front of the following keys or keywords. You must place one space only between a qualifier and its key or keyword, as shown in the list below:

```
ctrl a-z              shft tab
ctrl prtsc            shft f1-f10
ctrl end
ctrl pgdn
ctrl home             alt a-z
ctrl left             alt f1-f10
ctrl right            alt 0-9
ctrl f1-f10           alt =
ctrl pgup             alt -
```

See the **Warning** *on the following page.*

Background Information and Definitions (Continued)

Warning:

If you remap the following control keys, the corresponding key will be remapped because of the way BIOS handles the control keys.

```
ctrl h remaps backspace
ctrl i remaps tab
ctrl j remaps ctrl enter
ctrl m remaps enter
```

For example, if you remap CTRL M to be a logon, then the Enter key also gives you the logon. You lose the Enter function if you have not previously remapped another key to be the Enter key.

Strings are any sequence of ASCII characters enclosed in quotation marks. Strings can contain upper and lowercase characters as well as special symbols.

To place quotation marks within a string, you must break the string into two strings and use double quotation marks as a key (example: f10 = "string" "" "string").

Background Information and Definitions (Continued)

Keywords are equivalent to keys in the remapping command syntax. Type keywords in lowercase as illustrated here:

The keyboard says:	You type:
	null
F1 (same through F10)	f1 (same through f10)
⇤⇥	tab
Home	home
↑	up
↓	down
←	left
→	right
PgUp	pgup
PgDn	pgdn
End	end
↵	enter
Ins	ins
Del	del
Esc	esc
PrtSc *	prtsc

* Only ctrl PrtSc can be remapped.

Background Information and Definitions (Continued)

Keys that are case sensitive are:

```
A-Z
a-z
0-9
all characters generated
       from your keyboard
```

If you define a key more than once in a file, the last definition is the one that is active.

Also, when you use the alt and ctrl qualifiers, always use lowercase (example: alt k).

A sample input file that illustrates case sensitivity and that defines a key more than once is provided below.

```
a = B
A = b
a = f
```

Note that both uppercase and lowercase "a" are defined, and also that "a" is defined twice. When you execute remap and specify this input file as the one that definitions should be changed to, the active definition for "a" is the last, "a = f".

IBM Enhanced PC Keyboard Remapping Support

On the following page is a table of keywords that can be used for creating the input file if you will be remapping the keys on the IBM Enhanced PC Keyboard.

The table lists keywords you will use to remap the base, shift, alternate, and control state of keys on the IBM Enhanced PC Keyboard. Note that some of the keywords do not differ from what you currently type to remap keys when you are not using this keyboard. Such cases are denoted with "n/c" (no change) in the appropriate column.

You should use these keywords in your input file, and they will only have meaning when you run the Remap programs while using an Enhanced PC Keyboard. If you run either Remap program while you are not using the Enhanced PC Keyboard, and you specify an input file that contains these keywords, these keywords will have no effect on the remapping. You will not receive an error message; the commands will just be ignored.

Notes for using the table: The last column in the table (*To remap the:*) defines the base key that the keywords in that particular row will remap. For example, if you wish to remap the shifted state of the ←⌋ on the keypad, you would type **shft entr2** in the input file.

Legend for the table:

n/c = no change for the Enhanced PC Keyboard (can currently be remapped on all keyboards)

* = cannot be remapped.

Base key Keyword	Shft + Base key Keyword	Ctrl + Base key Keyword	Alt + Base key Keyword	To remap the:
f11	shft f11	ctrl f11	alt f11	f11 key
f12	shft f12	ctrl f12	alt f12	f12 key
home2	shft home2	ctrl home2	alt home2	second Home key
up2	shft up2	ctrl up2	alt up2	second ↑ key
pgup2	shft pgup2	ctrl pgup2	alt pgup2	second Page Up key
left2	shft left2	ctrl left2	alt left2	second ← key
rt2	shft rt2	ctrl rt2	alt rt2	second → key
end2	shft end2	ctrl end2	alt end2	second End key
down2	shft down2	ctrl down2	alt down2	second ↓ key
pgdn2	shft pgdn2	ctrl pgdn2	alt pgdn2	second Page Down key
ins2	shft ins2	ctrl ins2	alt ins2	second Insert key
del2	shft del2	ctrl del2	alt del2	second Delete key
keyp5	*	ctrl keyp5	*	"5" on the keypad

Base key Keyword	Shft + Base key Keyword	Ctrl + Base key Keyword	Alt + Base key Keyword	To remap the:
n/c	n/c	ctrl keyp/	alt keyp/	"/" key on the keypad
entr2	shft entr2	ctrl entr2	alt entr2	"←⌐" key on the keypad
n/c	*	ctrl up	*	"↑" key on the keypad
n/c	*	ctrl down	*	"↓" key on the keypad
n/c	*	ctrl ins	*	Ins key on the keypad
n/c	*	ctrl del	*	Del key on the keypad
n/c	n/c	ctrl keyp+	alt keyp+	"+" key on the keypad
n/c	n/c	ctrl keyp-	alt keyp-	"-" key on the keypad
n/c	n/c	ctrl keyp*	alt keyp*	"*" key on the keypad
n/c	n/c	ctrl tab	alt tab	Tab key
n/c	*	*	alt backs	"←" key

Base key Keyword	Shft + Base key Keyword	Ctrl + Base key Keyword	Alt + Base key Keyword	To remap the:
n/c	n/c	*	alt enter	old "←⌐" key on the inboard keypad
n/c	n/c	*	alt [	" [" key
n/c	n/c	*	alt]	"] " key
n/c	n/c	*	alt ;	" ; " key
n/c	n/c	*	alt '	" ' " key
n/c	n/c	*	alt '	" ' " key
n/c	n/c	*	alt \	" \ " key
n/c	n/c	*	alt ,	" , " key
n/c	n/c	*	alt .	" . " key
n/c	n/c	*	alt /	" / " key

Notes:

1. Keywords that are listed with a "2" at the end of them (for example, up2) are listed as seconds because the base key is a duplicate of a key on the numeric keypad. Because BIOS does not distinguish between the base and shift keywords for these duplicated keys, the last one in the remap file is the one that is active. As a result, pressing either the base or shift of the key will give you the remapping of the last entry in the file.

2. "Keypad" refers to the *numeric* keypad.

3. "Inboard keypad" refers to the typewriter keypad that is located directly above the space bar.

Technical Notes for the IBM Enhanced PC Keyboard:

1. If an application is loaded that uses the *old* (0, 1, 2) INT x'16' function codes, and Global Remap is active, any keywords added for the IBM Enhanced PC Keyboard that are currently remapped under Global Remap will no longer be recognized as remapped keys, even if you are still using the Enhanced PC Keyboard. In other words, when an application uses old function codes, and that application is active, Global Remap will appear to ignore any key remappings that use the added keywords. This restriction is imposed by BIOS INT x'16'.

2. Some functions are duplicated on the Enhanced PC Keyboard so you can remap other keys to have that function. These functions are not labelled on the keyboard card, but the table below lists the functions and their respective keys.

Function	Key
CLEAR	ctrl f10
SYS REQ	ctrl f12
Print	ctrl f11
RESET	alt f12
DEV CNCL	alt f11
Enter	entr2 *

* ←⏎ on the keypad.

Creating the Input File

This part of "Step 2: Building Your Input File," provides a short method to create the input file for the REMAPKEY.COM program or for 3270 Keyboard Remap. If you have already globally remapped keys, it may be necessary to run REMAPKEY.COM, by typing **Remapkey**, to get back to the PC keyboard definitions before creating a file. If Global remap is not active, continue with the following steps:

1. On the IBM PC DOS prompt line, type:

   ```
   COPY CON: filename.ext
   ```

   and press the Enter key.

   The system is now waiting for input; no prompt displays.

2. Type your remapping commands. Some sample commands follow.

   - To remap the f10 key so that it will display the directory of drive a, type

     ```
     f10 = "dir a:" enter
     ```

     and press the Enter key.

   - To remap the b key so that it will be the enter key, type

     ```
     b = enter
     ```

     and press the Enter key.

- To remap the IBM PC 3270 Emulation functions which are currently located on the PC Function keys to be located on the alt Function keys, and to remap the PC Function keys so that they will function as 3270 PF keys, type the sample input file below. This input file will also interchange the functions of the Enter and End keys.

```
pfs
alt f1 = f1
alt f2 = f2
alt f3 = f3
alt f4 = f4
alt f5 = f5
alt f6 = f6
alt f7 = f7
alt f8 = f8
alt f9 = f9
alt f10 = f10
f1 = ctrl f4 1
f2 = ctrl f4 2
f3 = ctrl f4 3
f4 = ctrl f4 4
f5 = ctrl f4 5
f6 = ctrl f4 6
f7 = ctrl f4 7
f8 = ctrl f4 8
f9 = ctrl f4 9
f10 = ctrl f4 0
shft f1 = ctrl f4 -
shft f2 = ctrl f4 =
end = enter
enter = end
```

Press the Enter key.

Note: This does not apply if you are using the Enhanced PC Keyboard.

3. When finished with the remapping commands, press the EOF key (ctrl z), and then press the Enter key.

Now you have an input file that you can use as input to REMAPKEY.COM for Global Remap, or for 3270 Keyboard Remap. See "Step 2: Running Your Keyboard Remapping Program" on page C-23 for steps to execute both types of keyboard remapping.

Displaying the Input File

To display the input file, type on the IBM PC DOS prompt line:

TYPE filename.ext

and press the Enter key.

Printing the Input File

To print the input file, type on the IBM PC DOS prompt line:

PRINT filename.ext

and press the Enter key.

Step 2: Running Your Keyboard Remapping Program

Determine if you wish to use *Global Keyboard Remap* or *3270 Keyboard Remap*. For Global Remap, follow the steps listed below. For 3270 Keyboard Remap, see "3270 Keyboard Remap" on page C-27.

Global Remap

These are the quick steps to follow to remap keys globally, followed by details of the remapping process.

1. Create the input file. See "Step 1: Building Your Input File" on page C-6 and "Creating the Input File" on page C-20 for details of this process.

2. Run the input file against the REMAPKEY.COM program to check for errors. Do this by typing at the IBM PC DOS prompt:

   REMAPKEY filename

   and press the Enter key.

3. The valid remappings in the input file are active, and the copyright message displays followed by one or both of the following messages:

   Keys are remapped.

   This means that at least one key has been remapped, but errors are possible. If the next message does not display, then the remapping is completely successful.

   See REMAPKEY.ERR file for remapping errors.

This means that a Global Remap error has occurred.

4. Correct all errors listed in the REMAPKEY.ERR file. Commands containing errors are ignored; "Step 3: Responding To Keyboard Remapping Messages" on page C-31 of this chapter discusses associated error messages.

5. Determine if you want AUTOEXEC.BAT to execute REMAPKEY.COM and the input file *each time you start or restart IBM PC DOS.*

Each time you start IBM PC DOS, the command processor searches for the AUTOEXEC.BAT file. IBM PC DOS executes AUTOEXEC.BAT if it is in the root directory of the drive IBM PC DOS was started from.

If you wish to have Global Remap executed automatically, continue with step 6.

If you wish to manually execute Global Remap, continue with step 7.

6. To automatically execute Global Remap, add the input file and REMAPKEY.COM to the AUTOEXEC.BAT file.

7. To execute Global Remap manually, type at the IBM PC DOS prompt:

    REMAPKEY filename

    and press the Enter key. If REMAPKEY.COM is not in the active directory, then you must specify a path to access it.

Global Remap (Continued)

8. To remap the keys back to their original
    meanings, that is turn off Global Remap, type
    at the IBM PC DOS prompt:

    REMAPKEY

    When you see the message, "Keys are
    remapped to original definitions.", then the
    Global Remap is no longer active.

Notes:

1. IBM PC 3270 Emulation Program contains an
    example file (REMAPKEY.EXM) to aid you
    in building the input file. It includes
    examples of the types of commands that the
    remapping facilities handle, and you can run
    the file as input to REMAPKEY.COM or to
    the IBM PC 3270 Emulation Program.

2. The *original meaning* of a key is the key
    definition prior to remap becoming active.
    This could vary depending on what was
    loaded before keyboard remap. The main
    point to remember is that when in IBM PC
    DOS, typing REMAPKEY on the prompt line
    without specifying an input file and pressing
    the Enter key undoes any previous global
    remappings of keys.

3. After Global Keyboard Remap has been run,
    if you run another program that changes
    keyboard functions, *cumulative remappings*
    may occur. A cumulative remapping is when
    one remapping is in effect and another
    remapping is started. The second remapping
    definitions are built on top of the already
    active remapping definitions, not the original
    definitions of the keyboard.

4. Europe/Middle East, Africa (E/MEA)
    countries should add the keyboard support
    code (KEYBxx.COM) to the AUTOEXEC.BAT
    file. This allows support for alternate
    keyboard layouts. When using these
    alternate keyboard layouts, the
    KEYBxx.COM file should precede the
    REMAPKEY.COM statement in the
    AUTOEXEC.BAT file.

5. You cannot run Global Keyboard Remap as
    an IBM TopView 1.1 application. However,
    you can run Global Remap before IBM
    TopView 1.1 and remap all TopView windows,
    except for the special TopView keypad keys.

3270 Keyboard Remap

These are the quick steps to follow for 3270 Keyboard Remap, followed by details of the remapping process. To create the input file and check it for errors, follow steps one through five. If you do not need to create the input file nor check it for errors, go directly to step six.

1. Create the input file. See "Step 1: Building Your Input File" on page C-6 and "Creating the Input File" on page C-20 for details for this process.

2. Run the input file against the REMAPKEY.COM file to check for errors. Do this by typing at the IBM PC DOS prompt:

   `REMAPKEY filename`

   and press the Enter key.

3. The valid remappings in the input file are active, and the copyright message displays followed by one of the following messages:

   `Keys are remapped.`

   This means that the remapping is successful.

   `See REMAPKEY.ERR file for remapping errors.`

   This means that a Global Remap error has occurred.

4. Correct all errors listed in the REMAPKEY.ERR file. See "Step 3: Responding To Keyboard Remapping Messages" on page C-31 for associated error messages and their meanings.

5. Turn off Global Remap by typing:

   `REMAPKEY`

6. Load the IBM PC 3270 Emulation Program, and at the 3270 Task Selection menu, type **b** (Communication Profile Tasks).

7. Select "Yes" to the 3270 Keyboard Remap option in the Communication Profile Tasks menu.

8. Type in the input file name when the following prompt displays:

   `Type file name;  press ENTER:  ▯`

   This prompt does not have a default file name; you must specify the name of an existing input file before exiting the prompt if you want to execute 3270 Keyboard Remap. If you decide you do not want to execute Keyboard Remap, then press the ESC key to exit the prompt.

9. Type **z** to return to the 3270 Task Selection menu.

10. When the following message displays,

    `121  Return and reload 3270.`

    exit the program, and reload. The remapping is active when the program is loaded.

11. After reloading, one or both of the following displays:

   • A message

     140 Remapping is complete.

   This means that at least one key has been remapped, but errors are possible. If the blinking square does not display, then the remapping is completely successful.

   • A blinking square

     Press the Msg key, and the following message displays:

     142 See PSCREMAP.ERR file for remapping errors.

     This means that a 3270 Keyboard Remap error has occurred.

12. Correct all errors as listed in the error file before continuing with the remapping process. If you do not correct these errors, the remapping may not be what you want.

Your keys are now remapped, and they will remain remapped until you turn off 3270 Keyboard Remap. *(See the* **Notes** *on the following page).*

To remap the keys back to their original definitions, that is turn off the 3270 Keyboard Remap, select "No" to "3270 Keyboard Remap" in the Communication Profile Task menu.

Notes:

1. IBM PC 3270 Emulation contains an example file (REMAPKEY.EXM) to help you build the input file. It includes examples of the types of commands that REMAPKEY.COM handles, and you can run the file as input to REMAPKEY.COM or 3270 Keyboard Remap.

2. The *original meaning* of a key is the key definition prior to 3270 remap becoming active. This could vary depending on what was loaded before 3270 keyboard remap.

3. When you select "Yes" to "3270 Keyboard Remap" in the Communication Profile Tasks menu, the keys remap to the specifications in the input file. This prevents cumulative 3270 remappings.

4. Europe/Middle East, Africa (E/MEA) countries should add the keyboard support code (KEYBxx.COM) to the AUTOEXEC.BAT file. This allows support for alternate keyboard layouts. When using these alternate keyboard layouts, the KEYBxx.COM file should be the first entry in the AUTOEXEC.BAT file.

Step 3: Responding To Keyboard Remapping Messages

When you execute REMAPKEY.COM, and it finds errors in the input file you specified, REMAPKEY.COM creates the Global Keyboard Remap error file, REMAPKEY.ERR.

For 3270 Remap, when you reload the IBM PC 3270 Emulation Program after selecting the 3270 Remap option, the system creates the error file, PSCREMAP.ERR, if it finds errors in the input file.

Executing Global Keyboard Remap erases any existing REMAPKEY.ERR file on the current directory. Executing 3270 Keyboard Remap erases any existing PSCREMAP.ERR file on the current directory. Therefore, if you wish to retain either file, rename it before running the next respective remapping program. Multiple copies of error files can exist if you change the directory.

Beginning on the following page is a list of all Keyboard Remapping error messages that the error files and the screen may contain or display. Each message is followed by a cause and action.

> **Note:** The messages in all uppercase letters are those that are listed in the error files. The lowercase messages display on the screen like all other IBM PC 3270 Emulation messages and prompts.
>
> The three lowercase messages that begin with numbers are presented first in this listing. They are followed by an alphabetical listing of the remaining messages.

Keyboard Remapping Messages

Message: **140 Remapping is complete.**

Cause: You loaded IBM PC 3270 Emulation, and the keys have been remapped to the definitions in the input file that you specified. 3270 Keyboard Remap is now active.

Action: No action is required.

Message: **141 Remapping to original definitions is complete.**

Cause: You previously had an active remapping, but you selected "No" to the 3270 Keyboard Remap option, exited the Communication Profile Tasks menu, and the remapping has been turned off.

Action::   No action is required.

Message: **142 See PSCREMAP.ERR file for remapping errors.**

Cause: You specified "Yes" for the 3270 Keyboard Remap option, loaded IBM PC 3270 Emulation, and errors were found in the input file that you specified.

Action: Check the PSCREMAP.ERR file and correct the errors listed in it.

Message: **ERROR - KEY NOT REMAPPED: command**

Cause: Remap has detected a syntax error. The command not remapped is the one listed with the message.

Action: Correct the error, and re-run the input file to check for errors.

Message: **INPUT FILE NOT FOUND**

Cause: The Remap input filename you specified cannot be found in the directory or path you entered; therefore, the system has stopped processing the input file.

Action: Check your entry request for spelling errors, and if your entry was correct, check to see if your file needs a path.

Message: **Keys are remapped.**

Cause: You typed "REMAPKEY" with an input filename, and the keys have been remapped to the definitions in the input file that you specified. Global Remap is now active.

Action: No action is required.

Message: **Keys are remapped to original definitions.**

Cause: You typed "REMAPKEY" without specifying an input filename. The Global Remap has been turned off.

Action: No action is required.

Message: **NO KEYS REMAPPED**

Cause: You ran Remap, but the input file that you specified contained no valid remapping commands; therefore, the system has stopped processing the input file.

Action: Correct all errors found in the error file, and re-run the input file.

Message: **READ/WRITE ERROR TERMINATES REMAPPING**

Cause: You ran Remap with a filename, but a read or write from the input file that you specified is unsuccessful; therefore, the system has stopped processing the input file. The remapping program has remapped all keys back to their original definitions, and the "NO KEYS REMAPPED" message will be in the error file with this message.

Action: Re-run Remap. If the problem continues, you may have a damaged diskette.

Message: **REMAP BUFFER FULL - FIRST COMMAND NOT PROCESSED: command**

Cause: The remapping program has filled the remapping buffer, and the system has stopped processing the input file. The first command not processed is the one listed with this error message.

Action: Remap fewer keys, or use shorter key assignments.

Message: **REMAPKEY - Global Keyboard Remap (c) Copyright IBM Corp. 1984,1985**

Cause: You executed Global Remap, and this is the copyright message.

Action: No action is required.

Message: **REMAPPING COMMAND IS TOO LONG: command**

Cause: You specified a command or commands in your input file that exceed(s) the 80 character length limit. The first 80 characters of the message are listed with this message in the error file.

Action: Shorten the command or comment to 80 characters or less, and re-run the input file to check for errors. Remove any blank lines from the input file.

Message: See **REMAPKEY.ERR** file for remapping errors.

Cause: You typed "REMAPKEY" with a filename, but errors were found in the input file that you specified.

Action: Check the REMAPKEY.ERR file and correct the errors listed in it.

Message: **UNABLE TO CLOSE INPUT FILE - FILE MAY NEED RECOVERY**

Cause: An error or condition has occurred that makes closing the input file impossible, and the system has stopped processing the input file.

Action: If necessary, you must recover the input file.

Message: Unable to close **REMAPKEY.ERR** file.

Cause: An error or condition has occurred that makes closing the remap error file impossible.

Action: Use another disk or try removing the read-only status from the error file by using the IBM PC DOS ATTRIB command.

Message: **UNABLE TO OPEN INPUT FILE**

Cause: The system cannot open the remap input file you have specified, and the system has stopped processing the input file.

Action: Check to see if there is a problem with the input file.

Message: **UNABLE TO OPEN INPUT FILE - ACCESS DENIED**

Cause: The system cannot open the remap input file you have specified, and the system has stopped processing the input file.

Action: See the IBM PC DOS operating guide for the level of IBM PC DOS you are using, and use the CHKDSK command to determine if there is a file error condition.

Message: **UNABLE TO OPEN INPUT FILE - INVALID PATH**

Cause: You specified an invalid path with your input file, and the system has stopped processing the input file. The input file cannot be found.

Action: You need to correct the path before proceeding with remapping.

Message: **UNABLE TO OPEN INPUT FILE - TOO MANY FILES OPEN**

Cause: You have exceeded the limit for the number of open files, and the system has stopped processing the input file.

Action: Close an open file, or if you need more open files to complete your task, reconfigure your programmed maximum number of available open files.

Message: **Unable to open REMAPKEY.ERR file.**

Cause: Your disk is full, it is write-protected, or you exceeded the limit for the number of open files.

Action: Close an open file. If you need more open files to complete your task, reconfigure your programmed maximum number of available open files.

Message: **Unable to write in REMAPKEY.ERR file.**

Cause: You typed "REMAPKEY" with a filename, but a write to the error file is unsuccessful.

Action: Re-run REMAPKEY.COM. If the problem continues, you may have a damaged diskette, or your diskette may be full. Remove the read-only status from the error file by using the IBM PC DOS ATTRIB command.

Appendix D. Customization Worksheets

Notes:

About Your Worksheets

The Customization Worksheets in this appendix
should be used by IBM Network Coordinators to
prepare for customizing your IBM PC 3270
Emulation Program diskette.

Additional space is provided between the lines of
text on these worksheets for purposes of taking
notes. However, since a different set of
worksheets should be completed for each
workstation, you should **make copies of the
worksheets** in this appendix and leave the
originals blank in the event that more copies are
needed at a later time.

Once a sufficient number of copies have been
made, complete one set of worksheets for each
workstation, and submit the completed
worksheets to the individual who will customize
that workstation.

See "Customizing the Profile" on page 4-71 for
details of this procedure.

Communication Profile Tasks

Access this menu by typing **b** in the 3270 Tasks Selection menu.

ID ITEM   **YOUR CHOICE**

a   Configuration

b   Communication Attachment

c   Alternate Tasks

d   3270 Keyboard

e   3270 Keyboard Remap

f   See Worksheet D-5

g   See Worksheet D-9

h   See Worksheet D-11

When completed, type **z** to return to the 3270 Tasks Selection menu.

Communication Setup

Access this menu by typing **b** (Communication Profile Tasks) in the 3270 Tasks Selection menu. When the Communication Profile Tasks menu displays, type **f** (Create or Revise Communication Setup).

ID ITEM   **YOUR CHOICE**

a   3270 Numeric Lock

b   3270 Printer Use

c   File Transfer

d   API

e * Station Name

* For Network Stations only.

When completed, press the Enter key, and the 3270 Printer Setup menu displays if **Printer Use** is not set to **None**.

3270 Printer Setup

Access this menu by typing **b** (Communication Profile Tasks) in the 3270 Tasks Selection menu. When the Communication Profile Tasks menu displays, type **f** (Create or Revise Communication Setup). You must select one of the options other than 4 = **None** for Printer Use, and press the Enter key.

ID	ITEM	YOUR CHOICE
a	3270 Print Destination	
b	Lines Per Inch	
c	Line Spacing	
d	Maximum Page Length	
e	Maximum Print Position	
f	Compress Line Spacing	
g	Form Feed in Any Position	
h	Override Formatted Print	
i	Add Form Feed	
j	Printer Device Name	

When finished, press the Enter key, and the Communication Profile Tasks menu displays.

Modem and Line Description

Access this menu by typing **b** (Communication
Profile Tasks) in the 3270 Tasks Selection menu.
When the Communication Profile Tasks menu
displays, type **g** (Create or Revise Modem and
Line Description).

ID ITEM   YOUR CHOICE

a   Physical Unit ID

b   Network Facility

c   SDLC Station Address

d   Continuous Carrier

e   Half Speed

f   NRZI Encoding

g   Answer-Tone Generation

h   End With REQDISCONT

When finished, press the Enter key, and the
Communication Profile Tasks menu displays.

Gateway Setup

Access this menu by typing **b** (Communication Profile Tasks) in the 3270 Tasks Selection menu. When the Communication Profile Tasks menu displays, type **h** (Create or Revise Gateway Setup).

ID ITEM   YOUR CHOICE

a   Gateway Name

b   Maximum Number of Sessions

When finished, press the Enter key, and the List of Network Stations menu displays.

List of Network Stations

Access this menu by typing **b** (Communication Profile Tasks) in the 3270 Tasks Selection menu. When the Communication Profile Tasks menu displays, type **h** (Create or Revise Gateway Setup). Complete the Gateway Setup menu, and press the Enter key.

ID	ITEM	YOUR CHOICE
a	NS Name 02	
b	NS Name 03	
c	NS Name 04	
d	NS Name 05	
e	NS Name 06	
f	NS Name 07	
g	NS Name 08	
h	NS Name 09	
i	Display Sessions	
j	Printer Sessions	

List of Network Stations

Determine if your host personnel or Network Coordinator has given you *more than one sheet that says* **LIST OF NETWORK STATIONS**.

If you don't have any more sheets that say LIST OF NETWORK STATIONS, press the Enter key and the Communication Profile Tasks menu displays.

If you have more sheets that say LIST OF NETWORK STATIONS, cursor to the next screen.

List of Network Stations (Continued)

ID	ITEM	YOUR CHOICE
a	NS Name 10	
b	NS Name 11	
c	NS Name 12	
d	NS Name 13	
e	NS Name 14	
f	NS Name 15	
g	NS Name 16	
h	NS Name 17	
i	Display Sessions	
j	Printer Sessions	

List of Network Stations (Continued)

Determine if your host personnel or Network Coordinator has given you *more than one sheet that says* **LIST OF NETWORK STATIONS**.

If you don't have any more sheets that say LIST OF NETWORK STATIONS, press the Enter key and the Communication Profile Tasks menu displays.

If you have more sheets that say LIST OF NETWORK STATIONS, cursor to the next screen.

List of Network Stations

ID	ITEM	YOUR CHOICE
a	NS Name 18	
b	NS Name 19	
c	NS Name 20	
d	NS Name 21	
e	NS Name 22	
f	NS Name 23	
g	NS Name 24	
h	NS Name 25	
i	Display Sessions	
j	Printer Sessions	

List of Network Stations (Continued)

Determine if your host personnel or Network Coordinator has given you *more than one sheet that says* **LIST OF NETWORK STATIONS**.

If you don't have any more sheets that say LIST OF NETWORK STATIONS, press the Enter key and the Communication Profile Tasks menu displays.

If you have more sheets that say LIST OF NETWORK STATIONS, cursor to the next screen.

List of Network Stations

ID	ITEM	YOUR CHOICE
a	NS Name 26	
b	NS Name 27	
c	NS Name 28	
d	NS Name 29	
e	NS Name 30	
f	NS Name 31	
g	NS Name 32	
h	NS Name 33	
i	Display Sessions	
j	Printer Sessions	

Press the Enter key and the Communication
Profile Tasks menu displays.

Notes:

Appendix E. Technical Product Description and List of Compatible IBM PC DOS Application Programs

Notes:

About This Appendix

This appendix provides:

- An advanced technical product description.

  Some programming experience is required to
  understand this material. Less experienced or
  beginning IBM PC users can find a more
  elementary description of this product, its
  capabilities, and related concepts in Chapters
  2 through 5 of this book.

- A list of compatible IBM PC DOS application
  programs.

  The IBM PC DOS application programs listed
  in this appendix were tested with the suspend
  and resume functions of the IBM PC 3270
  Emulation Program and were found to be
  compatible with this product.

IBM PC 3270 Emulation Program Product Highlights

The IBM PC 3270 Emulation Program offers a wide variety of communication functions for IBM PCs, including support for several different workstation configurations.

When installed on an IBM PC (other than IBM PCjr) which can be attached to an IBM PC Network or IBM Token-Ring Network, the program provides a subset of full 3270-type terminal functions. These include the following capabilities:

- Emulation of a 3274-51C Control Unit when attached to a host via SDLC communications attach.

- Attachment to a 3274 Control Unit as a Distributed Function Terminal (DFT) Gateway. IBM PC 3270 Emulation uses the multiple interactive screen function to provide multiple display and printer sessions on the IBM PC Local Area Network or IBM Token-Ring Network. Each PC is allowed only one printer and one display session, and a DFT Gateway is allowed to support only five concurrent sessions on the Network Stations.

- Emulation of a 3278 Model 2 or 3279 Model S2A display and a 3287 Model 1 or 3287 Model 2 printer when using DFT or SDLC communications attachment.

- Sharing of SDLC or DFT communications facilities to IBM 43XX and 30XX computer systems with other users on the same IBM PC Network or IBM Token-Ring Network.

Product Highlights (Continued)

The IBM PC 3270 Emulation Program, when installed on either an IBM PC attached to an IBM PC Network or IBM Token-Ring Network or on an IBM PC serving as a remote 3270 display station to IBM host computers, provides the following functions to the user of IBM PCs:

• Host file transfer capability and screen save.

• Host or operator-initiated direct print to IBM PC printers attached to an IBM Personal Computer.

• A deferred print-to-disk feature which stores files on the PC disk or diskette and permits the appending of files to existing files on the disk or diskette (ASCII file creation).

• A key defining capability (*Keyboard Remapping*) which permits the user of the IBM PC 3270 Emulation Program to redefine keys on the PC keyboard.

• A suspend and resume feature *(Alternate Tasks)*, that allows the user to switch back and forth from an IBM PC DOS application to IBM PC 3270 Emulation without interrupting the 3270 session.

Product Highlights on A Network (Continued)

- 3279 Model S2A Four Color Support that enables an IBM PC 3270 Emulation operator to use an IBM Color Display or Enhanced Graphics Display.

- An Application Programming Interface (API) written to allow an application program running in either a TopView window or the IBM PC 3270 Emulation Alternate Field to interface with the IBM PC 3270 Emulation display session. Through this interface, the application program can send keystrokes to the display session and copy data to and from the display session.

IBM PC 3270 Emulation uses the Network Basic Input/Output System (NETBIOS) interface to the IBM Token-Ring Network PC Adapter or to the IBM PC Network Adapter for local network communication. NETBIOS is a software interface between the adapter and IBM Personal Computer programs. NETBIOS places the unique features of a local area network into a standard format.

The IBM Token-Ring Network PC Adapter card and the IBM Token-Ring Network NETBIOS Program emulate the NETBIOS interface of the IBM PC Network Adapter card.

New Functions Added to the IBM PC 3270 Emulation Program

A list of new IBM PC 3270 Emulation Program, Version 2 functions that were not available with the IBM PC Network SNA 3270 Emulation Program is presented here, along with a description of the upgrading requirements associated with each new function.

- DFT support:

    If a user wants to upgrade to this release of IBM PC 3270 Emulation and use DFT attachment, all workstations must be upgraded with the new IBM PC 3270 Emulation Program and the Gateway or Standalone must be upgraded with the associated hardware.

- API support:

    Any user wanting to use the API must upgrade to this release of IBM PC 3270 Emulation. Any configuration except the Gateway can use the API, and each IBM PC can be upgraded individually with no requirements for other IBM PC workstations.

- Reduced Memory Requirements for the Gateway:

    The Gateway can now support more than eight display and printer sessions without requiring additional memory. The Gateway or Gateway with Network Station may be upgraded individually without any requirements for other PC workstations.

New Functions (Continued)

- IBM TopView 1.1, and Virtual Device
  Interface (VDI) Graphics Development Tool
  Kit support:

    Each workstation can be upgraded
    individually to support any of these new
    products.

- Upgraded IBM PC Local Area Network 1.1
  Program Compatibility:

    An IBM PC 3270 Emulation Network
    Station is now compatible with more than
    just the Redirector configuration of the
    IBM PC LAN 1.1 Program. To take
    advantage of the enhanced compatibility
    between IBM PC 3270 Emulation Program
    and IBM PC Local Area Network 1.1
    Program, all machines that will be using
    the PC Local Area Network 1.1 Program
    must be upgraded to use the new release
    and version of both programs.

Upgrading Considerations Note:: For
release 1.0X of the IBM PC Network SNA 3270
Emulation Program, all network names are case
sensitive. This restriction has been removed for
IBM PC Network 3270 Emulation Program,
Version 2.

However, all stations running release 1.0X of
IBM PC Network SNA 3270 Emulation should
ensure proper function by entering any network
names (for example, Gateway name or Network
Station name) in all uppercase letters.

Supported Workstation Configurations

The IBM PC 3270 Emulation Program, when installed on an IBM PC, PC XT, Portable PC, or PC AT, provides capabilities in the following four configurations:

Standalone: is a single IBM PC attached to a host computer by way of an SNA/SDLC line or coaxial cable attached as a Distributed Function Terminal (DFT) to a 3274 Control Unit. The SNA/SDLC configuration emulates a subset of IBM 3274-51C Control Unit functions, 3278 Model 2 or 3279 S2A display station functions, and/or 3287 Model 1 or 3287 Model 2 printer functions.

Gateway: is an IBM PC functioning as a communications server for PCs that are attached to an IBM PC Network or IBM Token-Ring Network.

When the Gateway is attached to the host via SNA/SDLC, this configuration emulates a subset of IBM 3274-51C Control Unit functions.

When the Gateway is attached to the host via DFT, the Gateway attaches to the 3274 Control Unit and uses the DFT Multiple Interactive Screen capability.

The Gateway serves users as a connection to a host computer for up to 32 concurrent IBM PC 3270 Emulation sessions if you are using SDLC communications attach and five concurrent sessions for DFT communications attach.

Supported Workstations (Continued)

Multiple Gateways can be attached to the IBM PC Network or IBM Token-Ring Network, thereby providing communications with one or more IBM host computers.

Network Station: is a communications user that is attached to an IBM PC Network or IBM Token-Ring Network and uses a Gateway to access a host. This configuration emulates a subset of IBM 3278-2 or 3279-S2A display station functions and optional 3287-1 or 3287-2 printer functions.

Gateway with Network Station: is a Gateway that is also configured to function as a Network Station. This configuration emulates a subset of 3274-51C Control Unit functions, 3278 or 3279 display functions, and 3287 printer functions.

Prerequisites

Every IBM PC, PC XT, Portable PC, or PC AT with the IBM PC 3270 Emulation Program installed must have at least one dual-sided diskette drive. In addition, an IBM PC using the IBM PC 3270 Emulation Program requires the following:

- As a Standalone, remote 3270 display station:

  1. One of the following adapters:
     - IBM SDLC Adapter, P/N 1502090 for line speeds up to 4.8K bps
     - IBM SDLC Adapter, P/N 1501205 for line speeds up to 19.2K bps
     - IBM 3278/79 Emulation Adapter, P/N 1602507 or 8665789 for DFT attachment
  2. An IBM PC DOS Program, version 2.1 through 3.2.

- As a Gateway on an IBM PC Network or IBM Token-Ring Network:

  1. One of the following communications adapters:
     - IBM SDLC Adapter, P/N 1502090 for line speeds up to 4.8K bps
     - IBM SDLC Adapter, P/N 1501205 for line speeds up to 19.2K bps
     - IBM 3278/79 Emulation Adapter, P/N 1602507 or 8665789 for DFT attachment
  2. One of the following network adapters:
     - IBM PC Network Adapter, P/N 6540213
     - IBM Token-Ring Network PC Adapter, P/N 6339100
  3. IBM Token-Ring Network NETBIOS Program, P/N 6467037 (required only if using the Token-Ring Network PC Adapter)
  4. an IBM PC DOS Program, version 2.1 through 3.2 (3.2 is required if using the Token-Ring Network NETBIOS Program and Network PC Adapter).

Prerequisites (Continued)

- As a Network Station providing 3270 emulation:

  1. One of the following network adapters:
     - IBM PC Network Adapter, P/N 6540213
     - IBM Token-Ring Network PC Adapter, P/N 6339100
  2. IBM Token-Ring Network NETBIOS Program, P/N 6467037 (required only if using the Token-Ring Network PC Adapter)
  3. an IBM PC DOS Program, version 2.1 through 3.2 (3.2 is required if using the Token-Ring Network NETBIOS Program and Network PC Adapter).

- As a Gateway with Network Station:

  1. One of the following communications adapters:
     - IBM SDLC Adapter, P/N 1502090 for line speeds up to 4.8K bps
     - IBM SDLC Adapter, P/N 1501205 for line speeds up to 19.2K bps
     - IBM 3278/79 Emulation Adapter, P/N 1602507 or 8665789 for DFT attachment
  2. One of the following network adapters:
     - IBM PC Network Adapter, P/N 6540213
     - IBM Token-Ring Network PC Adapter, P/N 6339100
  3. IBM Token-Ring Network NETBIOS Program, P/N 6467037 (required only if using the Token-Ring Network PC Adapter)
  4. an IBM PC DOS Program, version 2.1 through 3.2 (3.2 is required if using the Token-Ring Network NETBIOS Program and Network PC Adapter).

  See "Hardware and Software Requirements" on page 3-4 for a complete listing of memory requirements for each configuration and for each IBM PC 3270 Emulation task.

Supported Hardware

Displays and Display Adapter Cards Supported

The displays and display adapter cards that are supported by IBM PC 3270 Emulation are:

5151-001 IBM Monochrome Display

4900 IBM Monochrome Display and Printer Adapter

5153-001 IBM Color Display

4910 IBM Color/Graphics Monitor Adapter

5154-001 IBM Enhanced Color Display

1200 IBM Enhanced Graphics Adapter

BIOS Video Modes 0 through 7 are fully supported for the IBM Monochrome Display and Printer Adapter and for the IBM Color/Graphics Monitor Adapter. BIOS Video modes 0 through 5 and 7 are supported for the IBM Enhanced Graphics Adapter. While an Alternate Task is using a BIOS Video Mode other than mentioned above, the Alt Task key is disabled and a beep will sound if you press the Alt Task key.

IBM PC 3270 Emulation provides no support for switching between displays by using the IBM PC DOS MODE command in the Alternate Field.

Refer to the appropriate Technical Reference Manual for further information on BIOS Video Modes.

Printers Supported

IBM PC 3270 Emulation supports the following
IBM printers:

- Graphics Printer

- Color Printer

- Quietwriter, Models 1 and 2

- Wheelprinter

- Wheelprinter E, Model 1

- Colorjet Printer

- Pageprinter

- Proprinter.

Printers that use the Asynchronous (Async) port
cannot be used on the Gateway, Gateway with
Network Station, and Standalone configurations
that are SNA attached using an SDLC Card.

To use these printers on the Network Station,
the Async port should be jumpered to use
interrupt level 4, and the IBM PC Network or
IBM Token-Ring Network PC Adapter should be
jumpered to use level 3.

DFT Attachment Protocols Supported

- Local/Remote SNA

Local SNA requires 3274 models 31A or above (31A, 41A and so on), configuration support D. Remote SNA requires 3274 models 31C or above, configuration support D. The maximum RU size is 1024.

- Local Channel Non-SNA

Local Channel Non-SNA requires 3274 model 31D or above, configuration support D. The 3278/79 Emulation Adapter (P/N 8665789) should be used.

- Remote BSC is not supported.

Note: 3274 Control Unit microcode (software), Release 65.0 or higher, is required with the IBM PC 3270 Emulation Program.

Exclusions: Features of Other Machines Not Supported

Unsupported Functions Common to IBM Models 3274, 3278, and 3287

- Configuration Support C features for:

    - Structured Field and Attribute Processing (SFAP) (EBCDIC only)
    - Programmed Symbols (PS) on attached terminals
    - Extended color on attached terminals
    - Extended highlighting on attached terminals
    - Decompression of PS load data
    - Binary Synchronous Communication Protocol
    - Attachment to local or remote R-Loop
    - X.21 communication protocol.

- Emulation of IBM 3278 Models 1, 3, 4, or 5

- Network Management Vector Transport (NMVT) alerts

- 3270 extended data stream (except for File Transfer)

- Magnetic stripe reader

- Mono/case switch

- Selector light pen

- Security keylock

- All IBM 3278 keyboard types except the 3278 Typewriter Keyboard. Specifically, Text, APL, and Data Entry Keyboards

- Entry Assist

Exclusions (Continued)

- The following 3278 keys:

  - Alternate cursor
  - Click
  - Cursor blink
  - Extended function keys
        Color
        Highlighting
        Programmed symbols
  - Ident.

- Certain IBM 3287 Printer capabilities

  - Mono/dual case switch/light
  - Test switch/light
  - Setup switch
  - Reset switch
  - Index switch
  - Control Unit signal light.

Unsupported IBM 3270 Control Unit Functions when DFT Attached

- Local copy
- Down stream load
- Dump facility
- Response-time monitor
- Patch facility
- Extended Data Stream
- Alerts.

Unsupported Features Common to IBM Models 3278, 3279, and 3287

- Audible alarm
- Underscore
- Programmed symbols
- SCS Data-Structured Fields
- X print error indication
- Response-time Monitor
- Extended highlighting.

Compatible IBM PC DOS Application Programs

List of Tested Programs

The IBM PC DOS applications programs listed below were tested with the suspend and resume functions of the IBM PC 3270 Emulation Program and were found to be compatible with this product.

Program Name	Part Number
DisplayWrite 1	6024188
DisplayWrite 3	6024177
DisplayWrite Legal Dictionary Support	6024190
DisplayWrite Medical Dictionary Support	6024197

Notes:

1. DisplayWrite 1, and 3 use DWx.BAT files which must be modified to remove KQE.COM.
2. If DisplayWrite programs exist in a subdirectory, you must edit DW3.BAT to include a PATH command.
3. DisplayWrite 3 requires the IBM PC DOS Background Print program (PRINT.COM) to be in memory before loading IBM PC 3270 Emulation.

Program Name	Part Number
Assistant Series	
Filing Assistant	6024145
Graphing Assistant	6024147
Reporting Assistant	6024146
Writing Assistant	6024144
Accounting Solutions	6024152
Executive Solutions	6024151
Home Solutions	6024150
Business Management Series	
Accounts Payable Edition	6410951
Accounts Receivable Edition	6410952
General Ledger Edition	6410950
Inventory Accounting Edition	6410955
Payroll Edition	6410953
Office Correspondence Retrieval System	6824160
Personal Decision Series	
Data Edition	6410936
VDI Graphics Develoment Tool Kit 1.1	6280076

Note: Other personal computer programs may run with IBM PC 3270 Emulation (see "Determining Compatibility" on page 7-8). The preceding list includes only those IBM programs that have been tested by IBM for compatibility.

Notes:

Glossary

The following terms are defined as they are used in this guide. If you do not find the term you are looking for, refer to the *IBM Data Processing Glossary*, GC20-1699. All terms marked with an asterisk (*) are from the *American National Directory for Information Processing*.

IBM is grateful to the American National Standards Institute (ANSI) for permission to reprint its definitions from the *American National Directory for Information Processing* (Copyright (c) 1975 by the American National Standards Institute, INC.), which was prepared by Subcommittee X3K5 on Terminology and Glossary of American National Standards Committee X3.

ABEND. Abnormal end of task.

Alternate Field. A partition in IBM PC 3270 Emulation that is accessed via the Alt Task key (Alt + ESC) while IBM PC

3270 Emulation is running. Compatible programs may be loaded while in this field.

answer tone. A tone generated on a switched line as soon as an incoming call is established.

application. The program that is being used in the host computer.

application area. The portion of the IBM Personal Computer screen that is controlled by the host computer program when the IBM Personal Computer is using IBM PC 3270 Emulation Program.

bit clocking. The synchronization timing pulses necessary for communications.

buffer. A data storage area in a business machine.

computer-controlled keys. The IBM Personal Computer keyboard keys whose function is determined by the

computer program when the IBM Personal Computer is using IBM PC 3270 Emulation Program.

configuration. The arrangement of a computer network as defined by the nature, number, and characteristics of the computers and other machines that are attached to the network.

data stream. All the data transmitted over a communication facility during a single operation.

dedicated. A mode for a telecommunications line within the network facility of IBM PC 3270 Emulation Program; dedicated mode allows you to establish communication to the host without dialing a number on the telephone.

deferred print. Allows your disk or diskette to be the print destination.

direct print. Allows your printer to be the print destination.

distributed function terminal (DFT). A terminal that provides the capability to process communication data streams and thus offload processing requirements

from the communication control unit.

downloading. Being able to obtain a file copy from the host for revision on your diskette.

DSR. An acronym that stands for data set ready. An indication that the modem is ready to receive.

DTR. An acronym that stands for data terminal ready. An indication that the terminal, or your IBM Personal Computer, is ready to receive.

emulation. Allowing your machine to imitate, or have the ability to act like another machine.

fixed function keys. The IBM Personal Computer keyboard keys whose function is not affected by the computer program when the IBM Personal Computer is using IBM PC 3270 Emulation Program.

full speed. The top-rated speed of transmission equipment, particularly modems.

gateway. Serves as a communications link between the Network Stations and a host computer. Sometimes

referred to as a *communications server*.

gateway with network station. When configured, lets an IBM PC perform both a Gateway's communications server functions for IBM PCs attached to it, and a Network Station's workstation functions for an operator sitting at it.

half speed. Half of the speed of communications.

host. The primary or controlling computer is a data communication system.

host application. See application.

host computer. Sometimes referred to as a host processor, or mainframe, the host is the primary and controlling computer in a network. It usually provides services such as computation, data base access, and advanced programming functions.

host-initiated screen print. See *screen print*.

host personnel. Refers to the people at the host computer site responsible for the connection of the IBM PC to the host computer network.

host print. Occurs when the host computer sends a file to print on your printer.

host processor. See *host computer*.

line. A physical link, such as a wire or a telephone circuit.

local area network. Commonly called LAN, refers to having your IBM PC connected to other computers that work together. See *networking*.

logical unit. See *LU*.

logoff. The procedure for ending a session with the computer.

logon. The procedure for beginning a session with the computer.

LU. An acronym for logical unit. An LU provides end users access to network resources and manages the transmission of information between end users. Every end user in a network has a logical unit that enables it to communicate with other end users.

LU-LU session. A session between two

logical units in an SNA network. An LU-LU session provides communication between two end users. CICS communicating with a workstation (LU) is an example of an LU-LU session.

mainframe. See *host computer*.

mode indicator. Symbols or abbreviations that indicate the operating mode of an IBM Personal Computer using IBM PC 3270 Emulation Program.

* modem. Modulator-demodulator. A device that modulates and demodulates signals transmitted over data communication facilities.

modem clock. The clock in the modem providing clocking for data transmission.

multidrop line. See *multipoint link*.

multipoint link. A link or circuit interconnecting several stations. Synonymous with multidrop line.

NCPGEN. The process on the host computer that creates a network control program load module that defines the network configuration and the operating parameters of a particular controller of the data communication network.

NETBIOS. A software interface between the network adapter and IBM Personal Computer programs.

network. A group of computers that are connected so that they can communicate together.

networking. Computers that work together, sharing resources, such as on a LAN.

network coordinator. The person who installs or supervises the installation of the IBM PC Network Adapter or Token-Ring Adapter, and the SDLC Adapter or the IBM 3278/79 Emulation Adapter for the IBM PC. The network coordinator also maintains or changes the network.

network facility. An option that determines whether the modem connected to the IBM Personal Computer is using a switched communication line or

nonswitched communication line.

network station. Allows your configured IBM PC to communicate or gain access to a host computer through another IBM PC that is configured to serve as a *Gateway*, or connection, to the host computer.

nonswitched line. A communication line that is permanently connected between two locations.

NRZI. An acronym for non-return-to-zero-inverted, a method of assuring correct synchronization of information in the data stream.

numeric lock. A keyboard condition in which the IBM Personal Computer locks the keyboard if a key other than a number, a decimal, a minus, or DUP is pressed.

operator-initiated screen print. See *screen print.*

physical unit. A location or device, such as IBM Personal Computer, that can have an address making it a part of a network. The host

computer in such a network identifies the location or device by the address.

PLU. See *primary logical unit.*

port. The location or device, such as a IBM Personal Computer Electronics Module, through which data can enter or leave the network.

primary logical unit. The logical unit that contains the primary half-session for a particular LU-LU session.

operator information line. A line on the IBM Personal Computer screen used to display information about status when the IBM Personal Computer is using IBM PC 3270 Emulation Program.

readiness indicator. Symbols that indicate the readiness or status of communications between an IBM Personal Computer using IBM PC 3270 Emulation Program and the host computer.

reqdiscont. Specifies how the IBM PC 3270 Emulation Program program terminates the

host connection when you end the 3270 task.

request to send. A mode that causes the modem to activate the carrier signal.

Run Book. A guide compiled by your host personnel that contains information specific to your host. Such information includes: log on procedures, file transfer command formats, and passwords or terminal IDs.

screen print. One of three print modes allowed when using the IBM PC 3270 Emulation Program. Screen print allows only the contents of the screen that is currently displaying to be printed. If the operator initiates screen print, then it is called *operator-initiated screen print.* If screen print is initiated by the host, it is called *host initiated screen print.*

SDLC. An acronym for Synchronous Data Link Control, a set of rules for managing the transfer of information over communication lines.

sessions. A connection between two stations that allows them to communicate.

standalone. Pertaining to operation that is independent of another device, program, or system. A single IBM PC attached to a host by an SNA/SDLC line or coaxial cable attached as a Distributed Function Terminal (DFT) to a 3274 Control Unit.

switched. A mode for a telecommunications line within the network facility of IBM PC 3270 Emulation Program; switched mode allows you to establish communication to the host by dialing a number on a telephone.

switched backup. A mode for a telecommunications line within the network facility of IBM PC 3270 Emulation Program; switched backup mode is a dial-up line you can choose in case your *dedicated* line goes down. See *dedicated.*

syntax. The rules for the construction of a command or program.

Terminal User's Guide. The book prepared by your host computer operator or IBM PC 3270 coordinator for emulating IBM 3270 functions.

uploading. To store back at the host the revisions you made on your disk or diskette after downloading.

Bibliography

For more information on additional products mentioned in this book, the following publications are recommended:

- *IBM PC DOS 2.1 User's Guide*, 6024120

- *IBM PC DOS 3.0 User's Guide*, 6024180

- *IBM PC DOS 3.1 User's Guide*, 6024211

- *IBM PC DOS 3.2 User's Guide*, 6280057

- *Application Programming Interface (API) and Host Reference for IBM PC 3270 Emulation*, SC23-0892-0

- *IBM Token-Ring Network NETBIOS Guide to Operations*, 6467037

- *IBM PC TopView 1.1 User's Guide*, 6024453

- *IBM PC Local Area Network Program 1.1 User's Guide*, 6280083

- *IBM Graphics Development Tool Kit User's Guide*, 6280076

- *IBM Personal Computer 3278/79 Emulation Adapter Technical Reference*, 1502336

- *IBM OS/VS2 TSO Terminal User's Guide*, GC28-0646

- *IBM OS/VS2 TSO Command Language Reference*, GC28-0646

- *CICS/VS 3270-PC File Transfer Program Descriptions/Operation Manual*, SH20-6306-0.

Notes:

IBM

The IBM
Personal Computer
Communication
Family

**Reader's Comment
Form**

IBM PC 3270   59X9951
**Emulation
Program, Version 2
User's Guide**

Your comments assist us in improving our
products. IBM may use and distribute any of
the information you supply in any way it
believes appropriate without incurring any
obligation whatever. You may, of course,
continue to use the information you supply.

For prompt resolution to questions regarding set
up, operation, program support, and new
program literature, contact the authorized IBM
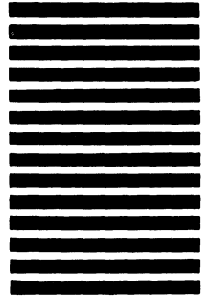Personal Computer dealer in your area.

Comments:

BUSINESS REPLY MAIL

FIRST CLASS   PERMIT NO. 40   ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

IBM Personal Computer
11400 Burnet Road.
Department 95H, Building 998
Austin, Texas, U.S.A. 78759

. . . .

Fold here

Tape   Please do not staple   Tape

IBM