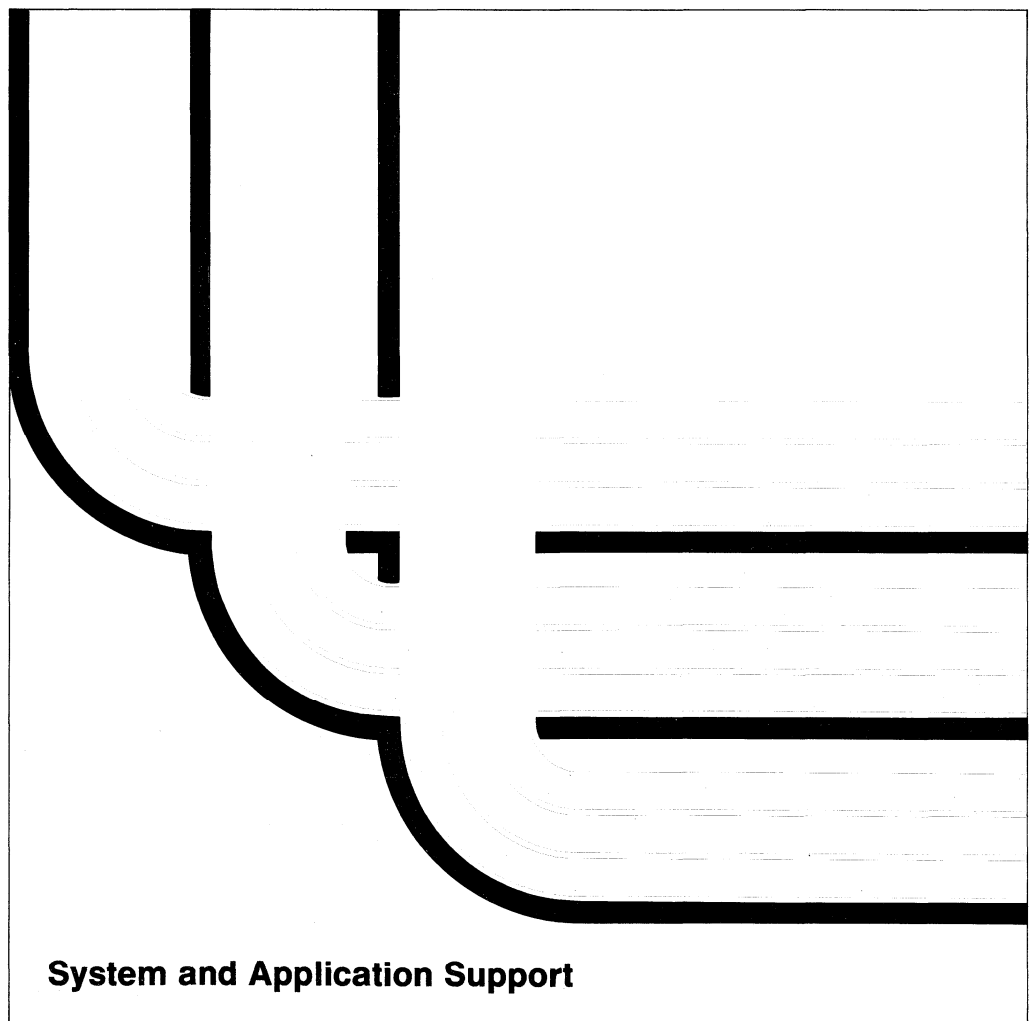


Application System/400

SC41-0006-01

**PC Support/400:
DOS Installation and Administration Guide**

Version 2





Application System/400

SC41-0006-01

**PC Support/400:
DOS Installation and Administration Guide**

Version 2

Take Note!

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

Second Edition (September 1992)

This edition applies to the licensed programs IBM PC Support/400 (Program 5738-PC1) and IBM Operating System/400 (Program 5738-SS1), Version 2 Release 2 Modification 0, and to all subsequent releases and modifications until otherwise indicated in new editions. This major revision makes obsolete SC41-0006-00. Make sure you are using the proper edition for the level of the product.

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Contents

Notices	ix
Trademarks and Service Marks	ix
About This Guide	xi
Who Should Use This Guide	xi
PC Support/400 Information	xii
Summary of Changes	xiii

Part 1. Planning for PC Support/400

Chapter 1. Planning to Install PC Support/400	1-1
Overview of Installing PC Support/400	1-2
Packaging	1-3
AS/400 System Requirements	1-5
Personal Computer Requirements	1-6
Considerations for Installing and Using PC Support/400	1-12
Migrating from a System/36 or System/38	1-16
Using PC Support/400 with System/36s and AS/400 Systems	1-18
Functions Available with PC Support/400	1-19

Part 2. Administering PC Support/400

Chapter 2. Enrolling PC Support/400 Users on the AS/400 System	2-1
Verifying the Installation of the PC Support/400 Licensed Program	2-2
Enrolling PC Support/400 Users	2-3
Chapter 3. Using the PC Support/400 Administration Function	3-1
PC Support Administration – An Overview	3-2
Setting Up Administration	3-4
Starting the Administration Function on the Personal Computer	3-6
Changing the Host System	3-7
Working with Model Configurations	3-8
Administering to Users	3-10
Creating Installation Diskettes	3-15
Controlling Updates	3-18
Restrictions for Administration	3-19

Part 3. Installing PC Support/400

Chapter 4. Installing and Using PC Support/400 with Microsoft Windows	4-1
Considerations for Using PC Support/400 with Microsoft Windows	4-2
Installing PC Support/400 to Run with Microsoft Windows	4-2
PC Support/400 Setup Program for Windows (PCSETUPW)	4-4
Creating the PC Support/400 Group	4-5
Working with the Network Driver	4-5
Working with the Printer Driver	4-6
Using PC Support/400 Functions with Microsoft Windows	4-6
Files Supplied for Using PC Support/400 with Microsoft Windows	4-9

Installing and Using RUMBA/400	4-10
Chapter 5. Installing PC Support/400 for Twinaxial Data Link Control (TDLC)	
Connections	5-1
DOS: Installation Work Sheet for TDLC	5-2
Before You Begin	5-2
Configuring Twinaxial Connections on the AS/400 System	5-4
Preparing to Install PC Support/400 on the Personal Computer	5-5
Installing PC Support/400 on Each Personal Computer	5-6
Starting PC Support/400	5-11
Chapter 6. Installing PC Support/400 for Token-Ring Connections	
DOS: Installation Work Sheet for Token-Ring	6-2
Configuring Token-Ring Connections on the AS/400 System	6-2
Preparing to Install PC Support/400 on the Personal Computer	6-5
Installing PC Support/400 on Each Personal Computer	6-7
Starting PC Support/400	6-12
Chapter 7. Installing PC Support/400 for Ethernet Connections	
DOS: Installation Work Sheet for Ethernet	7-2
Before You Begin – Ethernet Addresses	7-2
Configuring Ethernet Connections on the AS/400 System	7-3
Preparing to Install PC Support/400 on the Personal Computer	7-6
Installing PC Support/400 on Each Personal Computer	7-8
Starting PC Support/400	7-13
Chapter 8. Installing PC Support/400 for Synchronous Data Link Control (SDLC) Connections	
DOS: Installation Work Sheet for SDLC	8-2
Configuring SDLC Connections on the AS/400 System	8-2
Preparing to Install PC Support/400 on the Personal Computer	8-5
Installing PC Support/400 on Each Personal Computer	8-6
Starting PC Support/400	8-12
Copying the PC Support Functions to the Personal Computer	8-12
Chapter 9. Installing PC Support/400 for Asynchronous Connections	
DOS: Installation Work Sheet for Asynchronous Communications	9-2
Configuring Asynchronous Communications Connections on the AS/400 System	9-2
Preparing to Install PC Support/400 on the Personal Computer	9-4
Installing PC Support/400 on Each Personal Computer	9-5
Starting PC Support/400	9-11
Copying the PC Support Functions to the Personal Computer	9-11
Considerations for Using PC Support/400 in an Asynchronous Environment	9-12
Chapter 10. Installing PC Support/400 for 5394 Remote Communications	
DOS Installation Work Sheet for 5394 Remote Communications or Remote 5250 Adapter	10-2
Configuring 5394 Connections on the AS/400 System	10-2
Configuring 5394 (SDLC) Connections	10-2
Configuring 5394 (X.25) Connections	10-6
Preparing to Install PC Support/400 on the Personal Computer	10-7
Installing PC Support/400 on Each Personal Computer	10-8
Starting PC Support/400	10-13
Copying the PC Support Functions to the Personal Computer	10-13

Chapter 11. Installing PC Support/400 for 5494 Remote Communications	11-1
DOS: Installation Work Sheet for 5494 Remote Communications	11-2
Configuring 5494 Remote Control Units	11-2
Configuring the 5494 Remote Control Unit on the AS/400 System	11-4
Configuring 5494 (SDLC) Connections	11-4
Configuring 5494 (X.25) Connections	11-13
Configuring 5494 (Token-Ring) Connections	11-21
Preparing to Install PC Support/400 on the Personal Computer	11-27
Installing PC Support/400 on Each Personal Computer	11-28
Starting PC Support/400	11-33
Copying the PC Support Functions to the Personal Computer	11-33

Part 4. Configuring PC Support/400

Chapter 12. Configuring PC Support with the Configuration Program	12-1
An Overview of the Configuration Process	12-2
Introducing the PC Support Configuration Program	12-2
Starting the PC Support/400 Configuration Program	12-2
Using the PC Support Configuration Menu	12-3
Ending the Configuration Program	12-6
Chapter 13. Managing PC Support/400 with Microsoft Windows	13-1
Configuring PC Support/400 to Run with Microsoft Windows	13-2
Introducing the IBM AFPDS Printer Driver for Microsoft Windows	13-4
Chapter 14. Managing Information in Folders	14-1
Introducing the Concept of Folders	14-2
Managing Folders Using the Configuration Program	14-2
Securing Folders	14-4
Improving Performance	14-7
Chapter 15. Managing Virtual Printers	15-1
Introducing the Concept of Virtual Printers	15-2
Setting Up a Printer with the Configuration Program	15-2
Starting the Resident Virtual Printer Function	15-5
Setting Up a Printer with the Interactive Virtual Printer Program	15-6
Setting Up a Printer with the Automatic Virtual Printer Program	15-13
Understanding the Differences between Virtual Printers and PC Printers	15-14
Chapter 16. Managing Your Work Station Function Sessions	16-1
Introducing the Work Station Function	16-3
Preparing to Use a Graphics Session	16-6
Setting Up a Master Profile	16-9
Setting Up a Session Profile	16-13
Setting Up a Keyboard Profile	16-26
Organizing Your Work Station Function Sessions	16-35
Coloring Your Work Station Function Sessions	16-39
Starting the Work Station Function	16-41
Using Graphics Sessions	16-45
Using Work Station Function Printer Sessions	16-49
Printing the Display	16-52
Removing the Work Station Function from Memory	16-52
Identifying Batch Error Level Codes	16-52
Introducing Bidirectional Support	16-53

Chapter 17. Managing the Organizer	17-1
Introducing the PC Support Organizer	17-2
Preparing to Use the Organizer	17-2
Using the Configuration Program to Change the Organizer	17-3
Changing the Organizer with Command Line Parameters	17-5
Selecting a Text Editor	17-6
Understanding How the Organizer Functions	17-7
Personalizing Your PC Support/400 Organizer Menu	17-9
Ending the PC Support Organizer	17-10
Chapter 18. Managing Your Messages	18-1
Introducing the Message Function	18-2
Configuring the Message Function	18-2
Improving the Performance of the Message Function	18-4
Recognizing Incompatible Programs	18-4
Chapter 19. Managing Access to Data Queues	19-1
Introducing the Data Queues Function	19-2
Starting the Data Queues Function	19-2
Configuring the Data Queues Function	19-3
Removing the Data Queues Function from Memory	19-4
Chapter 20. Connecting Your Personal Computer to the AS/400 System	20-1
Understanding the Concepts of Routers	20-2
Using the PC Support LAN Router	20-6
Using the PC Support Twinaxial (TDLC) Router	20-18
Using the SDLC Router	20-22
Using the Asynchronous Router	20-30
Chapter 21. Managing the Update Function	21-1
Introducing the PC Support/400 Update Function	21-2
How PC Support/400 Uses the Update Function	21-2
Using the Update Function to Update Other Files	21-3
Examples of Using the Update Function	21-6
Parameters for the PC Support/400 Update Command	21-8
Batch Error Level Codes	21-9
Considerations for Using the Update Function	21-9
Chapter 22. Printing with PC Support: Example	22-1
Introducing the PC Support Printing Functions	22-2
Setting Up a Virtual Printer: Example	22-2
Setting Up a Work Station Function Printer: Example	22-8
Changing Printer Function Table Typestyle Definitions: Example	22-12
Sharing an IBM 4029 LaserPrinter with Other Users: Example	22-16
Chapter 23. Configuring PC Support Using the Editor	23-1
Understanding the Configuration Process	23-2
Starting the PC Support Editor	23-2
Editing a File	23-3
Adding an Identifier to a Configuration File: Examples	23-6
Chapter 24. Configuration Identifiers and Work Sheets	24-1
Planning PC Support Configuration	24-2
Router Identifiers	24-3
Shared Folders Function Identifiers	24-19

Virtual Printer Identifiers	24-21
Message Function Identifiers	24-26
Organizer Identifiers	24-27
Update Identifiers	24-28
Application Program Interface Support Identifiers	24-29
Other PC Support Identifiers	24-29
Example of Completed Configuration Work Sheet	24-30
Work Sheets for PC Support Configuration	24-40
Chapter 25. Work Station Function Configuration Information and Work Sheets	25-1
Planning Work Station Function Configuration	25-2
Completed Work Station Function Work Sheet	25-2
Work Sheets for Basic Work Station Function Configuration	25-5
Work Sheets for Advanced Work Station Function Configuration	25-8

Part 5. Analyzing Problems with PC Support/400

Chapter 26. Personal Computer Messages	26-1
DOS Messages	26-2
Chapter 27. AS/400 Messages	27-1
Displaying and Printing Messages	27-2
Chapter 28. Getting Help for PC Support/400 Messages and Commands	28-1
Introducing the PCSHELP Command	28-2
Using the PCSHELP Command—Examples	28-2
Chapter 29. The PC Support/400 Error Logging Function	29-1
Introducing the PC Support/400 Error Logging Function	29-2
Displaying the PC Support/400 Error Log	29-2
Clearing the Message Log	29-3
Configuring the Error Logging Function	29-3
Chapter 30. Personal Computer or PC Support/400 Problems	30-1
Identifying Installation Problems	30-3
Identifying Message Function Problems	30-3
Identifying Organizer Problems	30-5
Identifying Original Equipment Manufacturer (OEM) Card Problems	30-6
Identifying Shared Folders Problems	30-7
Identifying Transfer Function Problems	30-9
Identifying Virtual Printer Problems	30-15
Identifying Work Station Function Problems	30-21
Chapter 31. Communications Problems	31-1
Identifying Communications Connections Problems	31-2
Stopping and Starting the PC Support/400 Router	31-5
Starting the PC Operating System	31-6
Chapter 32. Service Procedures	32-1
Running the DOS DEBUG Program	32-2
Preparing an Authorized Program Analysis Report (APAR)	32-3
Applying or Removing a Program Temporary Fix (PTF)	32-7

Part 6. Appendixes

Appendix A. Using Expanded or Extended Memory with PC Support/400 . . .	A-1
Types of Personal Computer Memory	A-2
DOS 5.0 Expanded Memory Device Drivers	A-5
PC Support Expanded Memory Device Driver	A-8
Using Extended Memory with PC Support	A-12
Appendix B. PC Support Memory Requirements	B-1
PC Support Memory Requirements	B-2
Memory Requirements Work Sheet	B-11
Appendix C. PC Support/400 Installation Program	C-1
Personal Computer Files	C-2
Files Created or Changed for PC Support/400	C-2
AS/400 Objects	C-4
Keyboard Language Types in Device Descriptions	C-5
Appendix D. Installing PC Support/400 on Diskettes	D-1
General Considerations for Installing on Diskettes	D-2
Preparing Diskettes for Installation	D-2
Backing Up Your Diskettes	D-2
Appendix E. The PC Support/400 Tools Folder	E-1
Using the Tools Folder	E-2
Appendix F. National Language Support for PC Support/400	F-1
Using PC Support/400 Language Options	F-2
Changing the Default Keyboard Codes and Code Pages	F-3
Using the Thai Language	F-6
Appendix G. Ethernet Address Considerations	G-1
Whether Reverse Addressing Affects You	G-2
Why Addresses are Reversed	G-2
How to Convert an Address	G-3
When to Use the Converted Address	G-4
Appendix H. Using PC Support/400 with the IBM PC LAN Program	H-1
Using PC Support/400 with the PC LAN Program	H-2
Appendix I. Using PC Support/400 with the IBM OS/2 LAN Program and DLR	I-1
Appendix J. PC Support/400 and Novell NetWare 386 Coexistence	J-1
Configuring Network Drives	J-2
Configuring Network Printers	J-2
Other Restrictions	J-3
Index	X-1

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Operating System/400	OS/2
OS/400	PC/XT
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About This Guide

This guide contains planning, installation, and configuration information for PC Support/400. The installation diskettes for PC Support/400 are shipped with the PC Support/400 licensed program, or can be created by the PC Support administrator using the PC Support/400 administration function.

You may need to refer to other IBM manuals for more specific information about a particular topic. The *Publications Guide*, GC41-9678, provides information on all the manuals in the AS/400 library.

Who Should Use This Guide

This guide is intended for the individual who, generally, has personal computer expertise, is responsible for installation and maintenance of personal computers, and is the focal point for questions on the personal computer.

You must have a general knowledge of the Disk Operating System (DOS) and know how to copy and format diskettes. You should also be able to sign on to an AS/400 system and use the AS/400 displays.

This guide explains how to install and configure the PC Support/400 functions; it does not discuss the uses or basic operations of these functions. You must be familiar with these PC Support/400 operations as discussed in *PC Support/400 User's Guide for DOS*.

PC Support/400 Information

The following is a summary of the documentation available for PC Support/400. For a complete overview of the AS/400 system documentation, see the *Publications Guide*, GC41-9678.

Tasks	Environment	Look in
Planning, Installation, Administration, Problem Analysis, and Customization.	DOS	<i>PC Support/400: DOS Installation and Administration Guide</i> , SC41-0006
	DOS (DBCS)	<i>PC Support/400: DOS Installation and Administration Guide (PS/55)</i> , SC41-0008
	OS/2	<i>PC Support/400: OS/2 Installation and Administration Guide</i> , SC41-0007
	OS/2 (DBCS)	<i>PC Support/400: OS/2 Installation and Administration Guide (PS/55)</i> , SC41-0009
	OS/2 2.0 DOS	<i>Running DOS PC Support/400 in OS/2 Version 2.0 VDM</i> , GG24-3865 ¹
Using PC Support Functions	DOS	<i>PC Support/400: DOS User's Guide</i> , SC41-8199
	DOS (DBCS)	<i>PC Support/400: DOS User's Guide (PS/55)</i> , SC41-2414
	OS/2	<i>PC Support/400: OS/2 User's Guide</i> , SC41-8200
	OS/2 (DBCS)	<i>PC Support/400: OS/2 User's Guide (PS/55)</i> , SC41-2415
Education	All	<ul style="list-style-type: none"> • Tutorial System Support² • PC Support Introduction (PCSINTRO)³
Problem Analysis	All	<ul style="list-style-type: none"> • Online message help (PCSHELP) and extended help³ • The PC Support error log (PCSLOG)³ • The PC Support Installation and Administration Guide for your environment
Technical Information and Programming	All	<ul style="list-style-type: none"> • <i>PC Support/400: DOS and OS/2 Technical Reference</i>, SC41-8091 • <i>PC Support/400: Application Program Interface Reference</i>, SC41-8254

Notes:

1. This manual contains information about using the DOS version of PC Support on a personal computer with OS/2 Version 2.0. The manual is a redbook published by the International Technical Support Center, and is provided on an "as is" basis without any warranty either expressed or implied.
2. To start online education, enter STREDU at the AS/400 command line.
3. For information about using these PC Support help features, see the chapter on "Getting Help When You Need It" in the *PC Support User's Guide*.

Summary of Changes

This guide has been updated to include several new topics related to the installation and administration of PC Support/400.

- **Enrolling users on the AS/400 system**

A new chapter on this topic has been added: Chapter 2, "Enrolling PC Support/400 Users on the AS/400 System."

- **Using PC Support/400 with Microsoft Windows**

Two new chapters on this topic have been added: Chapter 4, "Installing and Using PC Support/400 with Microsoft Windows" and Chapter 13, "Managing PC Support/400 with Microsoft Windows." These chapters also contain information about RUMBA/400.

- **5394 remote communications chapters combined**

Previously there were two chapters on 5394 remote communications:

- "Installing PC Support for 5394 Remote Communications Using SDLC Connections"
- "Installing PC Support for 5394 Remote Communications Using X.25"

These chapters have been combined into Chapter 10, "Installing PC Support/400 for 5394 Remote Communications."

- **5494 remote communications**

A chapter describing the use of PC Support/400 with 5494 remote communications has been added: Chapter 11, "Installing PC Support/400 for 5494 Remote Communications."

- **Data queues support**

A chapter on this topic has been added: Chapter 19, "Managing Access to Data Queues."

- **Installing on diskettes**

An appendix on this topic has been added: Appendix D, "Installing PC Support/400 on Diskettes."

Part 1. Planning for PC Support/400

Chapter 1. Planning to Install PC Support/400 1-1

Chapter 1. Planning to Install PC Support/400

	Overview of Installing PC Support/400	1-2
	Packaging	1-3
	PC Support/400 Options, Libraries, and Folders	1-3
	AS/400 System Requirements	1-5
	Subsystems	1-5
	Disk Storage Requirements	1-6
	Personal Computer Requirements	1-6
	Adapter Cards	1-7
	Considerations for Installing and Using PC Support/400	1-12
	Installing PC Support/400 for the First Time	1-12
	Upgrading to a New Release of PC Support/400	1-12
	Creating Custom Installation Diskettes	1-13
	Creating Standard Installation Diskettes	1-13
	Installing PC Support/400 on Diskettes	1-13
	Using the Extended DOS Option of PC Support/400	1-13
	Changing the PC Support/400 Option You Use	1-14
	Using PC Support/400 with the DOS 5.0 Shell	1-15
	Using PC Support/400 in an OS/2 2.0 Virtual DOS Machine	1-15
	Implications of Overriding the CCSID Default of 65535	1-15
	Migrating from a System/36 or System/38	1-16
	Understanding File and Program Compatibility	1-16
	Recognizing Changed Configuration File Identifiers	1-17
	Understanding Virtual Disk Support with PC Support	1-18
	Using PC Support/400 with System/36s and AS/400 Systems	1-18
	Functions Available with PC Support/400	1-19

This guide provides instructions for completing the installation and the necessary configuration on both the AS/400* system and the personal computer.

Overview of Installing PC Support/400

To install and configure PC Support/400, you need to do the following:

1. Plan your PC Support/400 setup.
 - Use this chapter for general planning considerations.
 - If you plan to use PC Support/400 with Microsoft Windows** 3.0, read Chapter 4, "Installing and Using PC Support/400 with Microsoft Windows."
 - Use Part 6, "Appendixes" for memory requirements and other considerations.
2. Verify that the licensed program is installed on the AS/400 system. Use "Verifying the Installation of the PC Support/400 Licensed Program" on page 2-2.
3. Add each PC Support/400 user on the AS/400 system. Use "Enrolling PC Support/400 Users" on page 2-3.
4. Set up administration if needed. Use Chapter 3, "Using the PC Support/400 Administration Function." The administration function can help make installation on the personal computer easier by allowing you to:
 - Create model configurations and user configurations
 - Create customized installation diskettes
5. Configure each PC connection on the AS/400 system. Use Part 3, "Installing PC Support/400" for details you will need for each connection type. Refer to Table 1-1 on page 1-3 to determine the appropriate chapter to use.
6. Install the PC Support/400 programs on each personal computer. Refer to Table 1-1 on page 1-3 to determine the appropriate chapter to use based on the connection type you are using. Each chapter contains:
 - A work sheet for recording the information you need
 - Instructions for installing on the personal computer
 - Information about starting PC Support/400
 - For those connection types where it is recommended, instructions for copying PC Support functions to the personal computer
7. Administer users as required. Use Chapter 3, "Using the PC Support/400 Administration Function."
8. Configure functions on each personal computer if needed. Use Part 4, "Configuring PC Support/400."
 - Chapter 12, "Configuring PC Support with the Configuration Program" contains general information on how to use the PC Support/400 configuration program for configuring all functions.
 - The other chapters in Part 4 contain details for configuring specific functions.

Table 1-1. Chapters for PC Support/400 Connection Types

For this connection type	Refer to
Twinaxial (TDLC)	Chapter 5
Token-ring (LAN)	Chapter 6
Ethernet (LAN)	Chapter 7
Synchronous data link control (SDLC)	Chapter 8
Asynchronous communications (ASYNC)	Chapter 9
5394 remote using SDLC	Chapter 10
5394 remote using X.25	Chapter 10
5494 remote	Chapter 11

Packaging

The PC Support/400 program is packaged in the following parts:

- The PC Support/400 programs required for the AS/400 system are shipped on tape, unless you have ordered a Total System Package system or a pre-loaded system. In these cases, the PC Support/400 program should already be loaded on your system.
- The PC Support/400 programs required for installation on the personal computer are shipped on diskettes, or diskettes containing these programs may be created using the administration function. For more information on creating these diskettes, see "Creating Installation Diskettes" on page 3-15.

PC Support/400 Options, Libraries, and Folders

The following table shows the options that PC Support/400 provides for installing the licensed program on the AS/400 system. When you install an option, the necessary libraries and folders are created on the AS/400 system.

Planning

Table 1-2. Options for Installing PC Support/400 on the AS/400 System

Option	Library	Folder	Description
PC Support/400	QIWS	QIWSADM QIWSADM/MODEL QIWSADM/USER	Base PC Support/400 files
PC DOS Programs	QIWSFS	QIWSFLR	Basic DOS PC files for SBCS ¹
DBCS (DOS)	QIWSFD	QIWSFLRD	Basic DOS PC files for DBCS ²
OS/2 Programs	QIWS2S	QIWSOS2	OS/2 PC files for SBCS ¹
DBCS (OS/2)	QIWS2D	QIWSOS2D	OS/2 PC files for DBCS ²
Extended DOS Programs	QIWSPS	QIWSFL2	Extended DOS PC files for SBCS ¹
DBCS (Extended DOS)	QIWSPD	QIWSFL2D	Extended DOS PC files for DBCS ²
PC Tools Folder	QIWSTL	QIWSTOOL	PC Support/400 utilities and sample programs
RUMBA/400 SBCS option	QRUMBA	QRUMBA	RUMBA/400 files for SBCS ¹
RUMBA/400 DBCS option	QRUMBAD	QRUMBAD	RUMBA/400 files for DBCS ²

Notes:

- ¹ For language groups that use the single-byte character set (SBCS), such as most English-speaking countries.
- ² For language groups that use the double-byte character set (DBCS), such as Traditional Chinese, Japanese, and Korean.

When you install the licensed program on the system, you need to install the following:

- PC Support/400 base option
- At least one of the options for PC files
- Any of the other options you want to use

The PC tools folder is optional. For more information about the tools folder, see Appendix E, "The PC Support/400 Tools Folder."

The RUMBA/400 option is ordered as a separate feature of PC Support/400 and must be installed separately on the system. For information about installing RUMBA/400 on the personal computer, see "Installing and Using RUMBA/400" on page 4-10.

For information about installing the licensed program on the system, see "Verifying the Installation of the PC Support/400 Licensed Program" on page 2-2.

The QIWS library created by installing the base option contains the programs for running PC Support/400 on the AS/400 system. The libraries created by each of the other options contain programs and data for installing the option and for applying program temporary fixes (PTFs).

The folders contain PC files (programs and data files) for running PC Support/400 on a personal computer. When you install PC Support/400 on the personal computer, all functions except those necessary for making an initial connection are set up to run from the appropriate folder on the system.

The programs necessary for making a connection to the AS/400 system are copied to the hard disk or diskette on the personal computer by the PC Support/400 installation program. The installation program also allows you to select certain PC Support/400 functions to start automatically each time PC

Support/400 is started. These functions are set up to run from the folder on the system.

After installation, you can use the PC Support/400 configuration program to:

- Change the list of functions that start automatically.
- Copy the programs for a function from the folder to the personal computer and run the function from the personal computer. For instructions on how to do this, see “Changing PC Support/400 General Options” on page 12-3.
- Specify other information for changing PC Support/400 functions to meet your needs.

The language-specific PC Support/400 files are stored in the MRI29nn folder within these folders. The nn represents the last 2 digits of the language feature code for the language. For information about how to use the PC Support language options, see Appendix F, “National Language Support for PC Support/400.”

AS/400 System Requirements

The AS/400 system has the following requirements when using PC Support/400:

- A 5394 remote control unit is required if you are using remotely attached personal computers in a twinaxial data link control (TDLC) environment. A 5294 controller cannot be used.
- PC Support/400 cannot be used on a personal computer attached to port 0, address 0 on the AS/400 system, because this is reserved for the system console.

Subsystems

PC Support/400 runs in a subsystem on the AS/400 system. The subsystem must be active for PC Support/400 to work. Which subsystem PC Support/400 uses depends on what subsystem on the AS/400 system is the controlling subsystem:

- If the controlling subsystem is QBASE, PC Support/400 runs in QBASE.
- If the controlling subsystem is QCTL, PC Support/400 runs in QCMN.

To determine your controlling subsystem, type

```
DSPSYSVAL QCTLSBSD
```

on the AS/400 command line and press the Enter key. Then, use the Work with Subsystems (WRKSBS) command to see if the necessary subsystem is active. If not, you can start it using the Start Subsystem (STRSBS) command.

The following list shows the routing entries used by the various PC Support/400 functions in the QBASE and QCMN subsystems:

Routing Entry	PC Support/400 Function
QCNPCSUP	Router function
QMFRCLR	Shared folder function
QMFSNDR	Shared folder function
QPGMEVOKE	Program initialization
QTFDWNLD	File transfer function
QVPPRINT	Virtual print function

If you use the shared folders function type 2 (the default shared folders function type) or the extended DOS shared folders function type, the QXFPCS subsystem becomes active when the first drive is assigned. For more information about this subsystem, see "Working with the Shared Folders Function Subsystem" on page 14-12.

For more information about controlling subsystems, see the *Programming: Work Management Guide*, SC41-8078.

Disk Storage Requirements

The following list shows the approximate amount of disk storage needed on the AS/400 system to hold the PC Support/400 options:

Options	Disk Storage in Megabytes
QIWS (base PC Support/400 code)	4.5
PC DOS (first single-byte version)	8.5
Each additional single-byte version	3.5
PC DOS (first double-byte version)	5.5
Each additional double-byte version	2.5
Extended DOS (first single-byte version)	10.0
Each additional single-byte version	3.5
Extended DOS (first double-byte version)	6.5
Each additional double-byte version	2.5
The OS/2 program (first single-byte version)	6.5
Each additional single-byte version	3.0
The OS/2 program (first double-byte version)	6.0
Each additional double-byte version	2.5
PC Support/400 tools folder	5.0
The RUMBA/400 program (single-byte version)	4.0
The RUMBA/400 program (double-byte version)	4.5

Personal Computer Requirements

To install and run PC Support/400 you will need the following:

- An IBM* personal computer or Personal System/2* (PS/2*) with at least one diskette drive.

Note: The PC Support/400 installation program cannot be used on a personal computer that has only single-sided, double-density (180K) diskette drives.

- To use the extended DOS option of PC Support/400, you need the following:
 - A personal computer with an 80286 microprocessor or higher (such as the PS/2 model 30-286 or above)
 - At least 384KB of extended memory
 - A hard disk
- An 80-column display. (If using Thai support, the display must be VGA-capable.)
- Although most PC Support functions will work with DOS versions 3.3 and 4.0, these versions of DOS are not officially supported. Therefore, it is recommended that you install DOS version 5.0 or later on the personal computer.
- You must have a general knowledge of DOS and know how to copy and format diskettes.

- To use a token-ring local area network connection, you need the Local Area Network Support Program (Program 5601-075 or 5871-AAA).
- To use an Ethernet local area network connection, you need the Local Area Network Support Program Version 1.2 (Program 5871-AAA).
- The necessary amount of hard disk space to store the PC Support/400 programs. You need at least 1.3MB available on your hard disk to install PC Support/400.

Notes:

1. The amount of hard disk space required to install PC Support/400 includes only the space needed to install those functions necessary for making a connection to the AS/400 system. When you install PC Support/400, you may choose to have several functions start up automatically each time you use PC Support/400. These functions are stored in a folder on the I drive. They are not copied to your hard disk, so extra space is not required. If you choose to configure other PC Support/400 functions to run from the personal computer, you will need additional space depending on which functions you choose.
 2. If you do not have a hard disk, you must use the basic DOS option of PC Support/400 and install PC Support/400 onto diskettes. See Appendix D, "Installing PC Support/400 on Diskettes" for other requirements.
 3. Additional disk space could be required when running the update function to obtain changes after installing a new release of PC Support/400 or after applying a program temporary fix (PTF) on the AS/400 system.
- The necessary amount of memory to run PC Support/400. This amount can vary depending on the functions selected, the DOS support option used (basic or extended), and whether or not you use expanded memory support (EMS). See Appendix B, "PC Support Memory Requirements" to determine how much memory you require.

Adapter Cards

For every environment in which you are installing PC Support/400, an adapter card must be installed in the personal computer. The adapter card used depends on the type of environment.

Use the following chart to help you determine which adapter you need to install:

Planning

Table 1-3 (Page 1 of 3). Adapter Cards

Environment	Adapter Card	Description
Twinaxial data link control (TDLC)	<p>One of the following emulation adapters:</p> <ul style="list-style-type: none"> • IBM System/36 and System/38 Work Station Emulation Adapter • IBM Enhanced 5250 Emulation Adapter 	<p>The work station emulation adapter is used when an IBM Personal System/2 Model 50 or above is connected to the AS/400 system with a twinaxial cable.</p> <p>The program (WSE.COM) that comes with this adapter is not used. PC Support/400 supplies the adapter handler program (WSEAH.EXE) that allows you to run PC Support/400.</p> <p>The enhanced 5250 emulation adapter is used when a personal computer or Personal System/2 Model 25 or 30 is connected to the AS/400 system with a twinaxial cable. See "Using the Enhanced 5250 Emulation Adapter" on page 1-11 for information about setting the switches on this adapter card.</p> <p>The emulation programs (DE5250.COM and DP5250.COM) are not used. PC Support/400 supplies the adapter handler program (E5250AH.COM) that allows you to run PC Support/400.</p>
Token-ring network	<p>One of the following token-ring adapters:</p> <ul style="list-style-type: none"> • IBM Token-Ring Network Adapter • IBM Token-Ring PC Adapter II • IBM Token-Ring Network Adapter/A 	<p>The token-ring network adapter or token-ring PC Adapter II is used when a personal computer or Personal System/2 Model 25 or 30 is connected to a local area network.</p> <p>The token-ring network adapter/A is used when an IBM Personal System/2 Model 50 or above is connected to a local area network.</p> <p>Installing PC Support/400 will set up a connection with only one system in the local area network. After the installation is complete, you can set up connections for additional systems.</p> <p>The IBM Local Area Network Support Program (Program 5601-075 or 5871-AAA) must be installed on the personal computer before you can use PC Support/400.</p>

Table 1-3 (Page 2 of 3). Adapter Cards

Environment	Adapter Card	Description
Ethernet network	<p>One of the following Ethernet adapters:</p> <ul style="list-style-type: none"> • 3Com** Etherlink II** • The PS/2 Adapter/A for Ethernet Networks • Western Digital** EtherCard PLUS** • 3Com Etherlink/MC** • Western Digital EtherCard PLUS/A** 	<p>The 3Com Etherlink II and Western Digital EtherCard PLUS adapters are used when a PC AT or Personal System/2 Model 30–286 is connected to a local area network.</p> <p>The 3Com Etherlink/MC and Western Digital EtherCard PLUS/A adapters are used when a PS/2 Model 50 or above is connected to a local area network.</p> <p>Installing PC Support/400 will set up a connection with only one system in the local area network. After the installation is complete, you can set up connections for additional systems.</p> <p>The IBM Local Area Network Support Program Version 1.2 (Program 5871-AAA) must be installed on the personal computer before you can use PC Support/400.</p>
Synchronous data link control (SDLC)	<p>One of the following synchronous data link control communications adapters:</p> <ul style="list-style-type: none"> • Personal System/2 Multi-Protocol Adapter/A • IBM SDLC Communications Adapter <p>The following modems are supported:</p> <ul style="list-style-type: none"> • IBM 3864 (Models 1 and 2) • IBM 5841, 5842, and 5853 (including autodial capability) • IBM 7855 V.32 Modem <p>Connectivity to the ROLM** 8000, 9000, and IBM CBX 9751 through a ROLM DataCom Module (DCM) is also supported.</p>	<p>The PS/2 Multi-Protocol Adapter/A is used when a Personal System/2 Model 50 or above is connected to the AS/400 system with SDLC.</p> <p>The synchronous data link control (SDLC) communications adapter is used when a personal computer or Personal System/2 Model 25 or 30 is connected to the AS/400 system with SDLC.</p> <p>The Remote 5250 Emulation programs (RE5250.COM and RP5250.COM) are not used.</p> <p>If you plan to use a modem with SDLC that supports V.25bis automatic dialing, and you want to use the automatic dial function, the modem should meet the following requirements:</p> <ul style="list-style-type: none"> • Unless you use the Personal System Multi-Protocol Adapter/A with V.25bis capability, the modem should have the ability to drive the Data Set Ready (DSR) signal active all the time or drive this signal active while Data Terminal Ready (DTR) is active. • The modem should be able to accept V.25bis automatic dial commands with the same NRZI data coding as your regular data transfers (NRZI or non-NRZI).

Table 1-3 (Page 3 of 3). Adapter Cards

Environment	Adapter Card	Description
PC Support/400 asynchronous communications	<p>One of the following asynchronous communications adapters:</p> <ul style="list-style-type: none"> • IBM Asynchronous Communications Adapter (PC, PC/XT*) • IBM PC AT Serial/Parallel Adapter • IBM Personal System/2 Dual Port Asynchronous Adapter/A • IBM Personal System/2 Multi-Protocol Adapter/A • Serial port on Personal System/2 <p>The following modems are supported:</p> <ul style="list-style-type: none"> • IBM 5811 Leased Line modem • IBM 5841, 5842, and 5853 (switched) • Hayes** Smartmodem 1200**, Smartmodem 2400** • Racal-Vadic** 2400PA modem • Concord Data Systems 224** Autodial modem • Spectrum 9600** modem (switched line, 9600 bps full-duplex only) • IBM 7855 V.32 modem • Hayes V-series 9600 modem • Hayes Ultra 9600 modem • Microcom AX/2400-C modem • Telebit Trailblazer modem <p>Connectivity to the ROLM CBX 8000, 9000, and IBM CBX 9751 is also supported.</p>	<p>The asynchronous adapter is used when a personal computer is connected to the AS/400 system using the ASCII work station controller.</p> <p>The following shows the maximum baud rates you can use:</p> <ul style="list-style-type: none"> • 2400 bps <ul style="list-style-type: none"> — Any personal computer using EMS • 4800 bps <ul style="list-style-type: none"> — PC — PC/XT — PC AT using the extended DOS option of PC Support/400 — PC Convertible • 9600 bps <ul style="list-style-type: none"> — PC AT — PS/2 models 25 and 30 — PS/2 models 50 and 60 (with 80286 processor and running at 10 MHZ) using the extended DOS option of PC Support/400 • 19200 bps <ul style="list-style-type: none"> — PS/2 models 50 and above

Using More than One Adapter

If you want to use more than one adapter with PC Support/400, you must run the PC Support/400 installation program for each adapter used with PC Support/400. Although you can use PC Support/400 with more than one adapter, PC Support/400 uses only one adapter at a time.

The PC Support/400 installation program creates the files CONFIG.PCS and STARTPCS.BAT in a directory called PCS. If you run the installation program a second time, backup copies of these files, called CFGPCS.BAK and STARTPCS.BAK, are made.

Running the Installation Program More Than Twice

If you run the installation program more than twice, be sure that you rename existing .BAK files or copy these files to another directory or diskette so that you do not lose them by way of copying over them during additional installations.

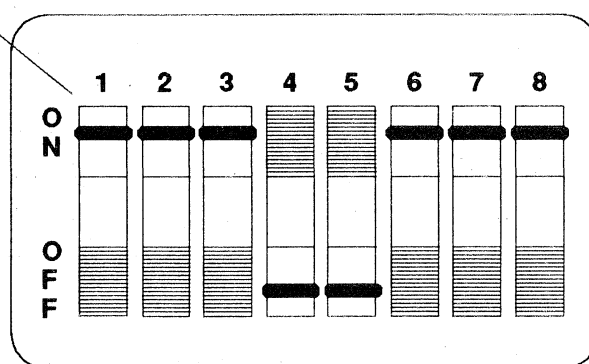
Using the Work Station Emulation Adapter: If you are using the System/36 and System/38 Work Station Emulation Adapter, the interrupt level and the memory range used by the adapter are changed by using the reference diskette. The WSEAH command in the STARTPCS.BAT file automatically detects this information.

Using the Enhanced 5250 Emulation Adapter: The switches on the enhanced 5250 emulation adapter determine the I/O adapter address used by programs to communicate with the adapter card.

Table 1-4 on page 1-12 lists the switch settings you can use with PC Support/400. First, you need to find a device I/O address that does not conflict with any of the other adapter cards in your personal computer. Then, you need to change the */I* parameter for the E5250AH command in the STARTPCS.BAT file to match the address you used.

In order to determine what the device I/O address of the card is, examine the first six switches on the card and consult Table 1-4 on page 1-12. Switches 7 and 8 are not used.

Push down on this end to turn the switch **ON**.



Switches 1-3 and 6-8 are shown in the raised **OFF** position.
RV2Q000-1

Figure 1-1. Switch Settings for the Enhanced 5250 Emulation Adapter

In Figure 1-1, switches 6,3,2, and 1 are in the OFF position, while switches 5 and 4 are in the ON position. Therefore, the switch setting is 011000. According to the table, you should change the E5250AH command in the STARTPCS.BAT file to read as follows:

E5250AH /I48

Table 1-4. Table of Adapter Switch Settings

Switch Setting 654321	E5250AH / I Parameter	Switch Setting 654321	E5250AH / I Parameter
010000	40	110000	60
010001	41	110001	61
010010	42	110010	62
010011	43	110011	63
010100	44	110100	64
010101	45	110101	65
010110	46	110110	66
010111	47	110111	67
011000	48	111000	68
011001	49	111001	69
011010	4A	111010	6A
011011	4B	111011	6B
011100	4C	111100	6C
011101	4D	111101	6D
011110	4E	111110	6E
011111	4F	111111	6F
000000	50	100000	70
000001	51	100001	71
000010	52	100010	72
000011	53	100011	73
000100	54	100100	74
000101	55	100101	75
000110	56	100110	76
000111	57	100111	77
001000	58	101000	78
001001	59	101001	79
001010	5A	101010	7A
001011	5B	101011	7B
001100	5C	101100	7C
001101	5D	101101	7D
001110	5E	101110	7E
001111	5F	101111	7F

Considerations for Installing and Using PC Support/400

This section contains information on some of the things you should consider as you install and begin to use PC Support/400.

Installing PC Support/400 for the First Time

If you are installing PC Support/400 for the first time, you should follow the instructions from "Overview of Installing PC Support/400" on page 1-2.

Upgrading to a New Release of PC Support/400

If you are upgrading to a new release of PC Support/400, you do not need to install the new level of PC Support/400 on the personal computers.

Install the PC Support/400 licensed program on the system using the instructions in the *Licensed Programs and New Release Installation Guide*, SC41-9878. When PC Support/400 is started on each personal computer, the PC Support/400 update function automatically updates the personal computer to the new release. If you have removed the PCSUPDT command from the STARTPCS.BAT file, you need to run the update function from the command line:

```
I:PCSUPDT I: d:\PCS /S
```

where *d* is your PC Support/400 directory drive.

See “Considerations for Using the Update Function” on page 21-9 for other factors to consider when using the update function.

Creating Custom Installation Diskettes

Creating customized installation diskettes makes the installation of PC Support/400 on the personal computer an automatic task. If you intend to have the PC Support/400 users configured from a central location as provided by the PC Support/400 administration function, you should use this method to install PC Support/400 for new users. Even if you do not plan to use the other features of the administration function, you can still create custom installation diskettes.

See Chapter 3, “Using the PC Support/400 Administration Function” for instructions on how to set up the administration function and create custom installation diskettes.

Creating Standard Installation Diskettes

Standard installation diskettes are the same as the installation diskettes shipped with the PC Support/400 licensed program and can be used in the same way. You can create your own set of standard installation diskettes to install new PC Support/400 users if you did not receive diskettes with your release upgrade.

See “Creating Standard Installation Diskettes” on page 3-17 for instructions on how to create standard installation diskettes.

Installing PC Support/400 on Diskettes

The PC Support/400 installation program allows you to install PC Support/400 on diskettes only if you are using the basic DOS option of PC Support/400. If you intend to install PC Support/400 on diskettes instead of on a hard disk on the personal computer, you should follow the instructions in Appendix D, “Installing PC Support/400 on Diskettes.”

Using the Extended DOS Option of PC Support/400

When you install PC Support/400 on the AS/400 system, you can install either the basic DOS or the extended DOS option of PC Support/400. To install the extended DOS option of PC Support/400 on the personal computer, use the PC Support/400 installation diskettes for the extended DOS option.

Note: If you used the PC Support/400 update function to replace a previous release of PC Support/400, the update function will not automatically configure appropriate personal computers to use the extended DOS option of PC Support/400. To use the extended DOS option, you need to configure PC Support/400 to use this option, as described in “Changing the PC Support/400 Option You Use” on page 1-14.

You cannot use the extended DOS option of PC Support/400 unless your personal computer uses an 80286 microprocessor or higher (such as the PS/2 model 30-286 or above), and you have at least 384KB of extended memory available. The extended DOS option of PC Support/400 is not compatible with the DOS 4.0 expanded memory device driver XMAEM.

When you use the extended DOS option of PC Support/400 some PC Support/400 functions are loaded and run in extended memory, leaving more of the conventional memory for other programs. Several other programs, such as Microsoft** Windows 3.0 and Lotus** 1-2-3** versions 3 and 3.1, also run in extended memory.

The following PC Support/400 functions can use extended memory:

- TDLC router
- Token-ring router
- Asynchronous router
- SDLC router
- Shared folders
- Work station function display functions
- Work station function bidirectional support (WSFBIDI)
- PC Organizer
- Text assist
- Data queues
- Virtual printer
- Remote SQL

Note: When you use the extended DOS option of PC Support/400, only one shared folders function type is available. This type is similar to shared folders function type 2 supplied with the basic DOS option.

The PCSXI.EXE program loads the extended DOS interface. The statement to run the PCSXI program is added to your STARTPCS.BAT file when you choose to use the extended DOS option of PC Support/400. PCSXI must be loaded before the router starts.

For specific information about the memory requirements of these functions in an extended DOS environment, see Appendix B, "PC Support Memory Requirements."

If you want to use the extended DOS option of PC Support/400 with a twinaxial connection, you must change the interrupt level for the twinaxial adapter handler. The default interrupt level 5 interferes with the protection exceptions of the extended DOS option. Use level 3 or level 7 instead. For WSEAH.EXE, the interrupt level is specified using the reference diskette. For E5250AH.COM, the interrupt level is specified using the /Ln option, where *n* is a number between 2 and 7. For more information about the E5250AH command line parameters, see "Using the PC Support Twinaxial (TDL) Router" on page 20-18.

Changing the PC Support/400 Option You Use

You can use the configuration program to specify whether the personal computer uses the basic DOS or the extended DOS option of PC Support/400. To change these defaults, do the following:

1. Either select PC Support configuration from the PC Support/400 Menu, or enter the CFGPCS command at the DOS prompt. The PC Support Configuration display appears.
2. Select General options. The General Options for PC Support/400 display appears.
3. Select the Select DOS Support option. The Select DOS Support Option display appears.

This display allows you to specify whether to use the basic DOS or the extended DOS option of PC Support/400.

Using PC Support/400 with the DOS 5.0 Shell

You must start PC Support/400 before you run the DOS 5.0 shell. DOS 5.0 task switching is not compatible with PC Support/400.

Using PC Support/400 in an OS/2 2.0 Virtual DOS Machine

If you have OS/2 version 2.0 installed on your personal computer, it is recommended that you use the OS/2 version of PC Support/400. Using the DOS version of PC Support/400 is supported only if you use a virtual DOS machine (VDM) that uses IBM DOS version 5.0. The following restrictions apply when running in a VDM:

- PC Support/400 can run in only one VDM.
- DOS and OS/2 applications outside the VDM cannot access PC Support/400 functions.
- No program other than PC Support/400 can attempt to use the communications adapter card. Because installing the OS/2 Extended Services adds device drivers that access the adapter card, Extended Services cannot be installed.
- The extended DOS version of PC Support/400 cannot be used; you must use the basic DOS version of PC Support/400.
- RUMBA/400 is not supported; PC Support/400 work station function should be used for work station emulation.
- For local area network connections, the LAN Support Program Version 1.22 or later must be installed on the startup diskette.
- For SDLC connections, the modem speed is limited to 1200 bps.
- For asynchronous connections, the modem speed cannot be higher than 9600 bps. You must change the router configuration after installing PC Support/400.

For information about installing PC Support/400 in an OS/2 2.0 VDM, see *Running DOS PC Support/400 in OS/2 Version 2 Virtual DOS Machines*, GG24-3685. This manual contains additional restrictions, and also discusses the environments that are not supported.

Implications of Overriding the CCSID Default of 65535

This section contains specific information about using coded character set identifier (CCSID) values with PC Support/400. For more information about CCSID values on the system, see *National Language Support Planning Guide*, GC41-9877.

When you sign on to the PC Support router, you must ensure that the coded character set identifier (CCSID) for the user profile you use matches the default of the personal computer and the language option chosen from the Language Option for PC Support display. This ensures the data is converted correctly.

If you override the CCSID default value (65535), be aware of the following:

- Multiple AS/400 systems with different CCSID settings

IBM recommends that the user profile you use when signing on to the PC Support router use the same CCSID as the AS/400 system from which the PC Support programs were originally downloaded. This ensures that the user

profile and the personal computer translation tables are created from the same values.

Note: If you used the Initialize PC Support (INZPCS) command to change the default values for the system, the user profile must be modified to match the CCSID that would have created the values you used for the INZPCS command.

You may need to use a different user profile for your router sign-on than the one you use to sign on to your work station function sessions.

- AS/400 systems with multiple languages installed

If your AS/400 system has multiple languages installed and you use a *secondary* language when downloading PC Support files to the personal computer, the default settings for the *primary* language are used. In this case, the CCSID for the user profile you use when signing on to the PC Support router must be changed. Use the value that matches the parameters used when you ran the INZPCS command for the secondary language selected.

- Copying files between folders and AS/400 databases

When copying PC files stored in a folder to an AS/400 database (using the CPYFRMPCD command), the command cannot identify the CCSID used to create the PC file. Therefore, the conversion of that file is unpredictable. If you know the code page used on the personal computer when the file was created, you can select the appropriate ASCII translation table when using the CPYFRMPCD command.

When copying AS/400 database files to the personal computer, you must specify the code page you are using on the personal computer. If you do not specify the code page, the translation table uses the code page specified on the INZPCS command.

Migrating from a System/36 or System/38

This section contains information on the differences among the System/36, System/38, and AS/400 systems. It shows the changes to the file names, identifiers, shared virtual disk, and programs between the System/36 or System/38 and the AS/400 system.

Understanding File and Program Compatibility

There are some differences in the names of the files used with PC Support/400 depending on your host system. This list shows how the names of the PC files differ when you connect to different host systems.

Note: System/36 and System/38 transfer requests do not work with the AS/400 system.

Description	File Name for AS/400 System Connection	File Name for System/36 Connection	File Name for System/38 Connection
DOS startup batch file	AUTOEXEC.BAT	AUTOEXEC.BAT	AUTOEXEC.BAT
PC Support configuration file	CONFIG.PCS	CONFIG.S36	CONFIG.S38

Description	File Name for AS/400 System Connection	File Name for System/36 Connection	File Name for System/38 Connection
Personal computer configuration file	CONFIG.SYS	CONFIG.SYS	CONFIG.SYS
PC Support startup batch file	STARTPCS.BAT	LINK36.BAT	LINK38.BAT

The following files, in their present form, cannot be used with PC Support/400:

- System/36 and System/38 configuration files and batch files.
- PC Support/36 work station feature session profiles, keyboard profiles, and master profiles.

To make these files and profiles usable by PC Support/400, you must change them using the configuration program. You change these files and profiles with the configuration program and the work station function configuration program.

If you are migrating from a System/36 or System/38, the following files and programs are not needed to run PC Support/400:

System/38	System/36
PCROUTER.EXE	COPYVDSK.BAT
BEGINRTR.EXE	ISETVDSK.BAT
ENDRTR.EXE	SETVDSK.COM
VDSK.SYS	CFGVDSK.COM
SETVDSK.COM	VDSK.SYS
CFGVDSK.COM	WFCONFIG.EXE
PCROUTER.CES	WFGCNFG.EXE
PCRTCES.EXE	LINK36.BAT
LINK38.BAT	5250 Emulation programs
COPYVDSK.BAT	TOKREUI.COM
ISETVDSK.BAT	
5250 Emulation programs	

If you issue a command that uses one of these files or programs, PC Support/400 may issue an error message.

Recognizing Changed Configuration File Identifiers

If you are moving existing files from the System/36 or System/38, those identifiers not supported on the AS/400 system are highlighted when you run the PC Support/400 configuration file support.

When you run PC Support and the files contain identifiers that are not supported, those identifiers are ignored.

The following identifiers are not supported on the AS/400 system:

- VDSK
- EMSN
- HPRC
- OFFP

The following identifiers have been changed for the AS/400 system:

TRLN identifier is now RTLN.

TRDL identifier is now RTDN.

TRLI identifier: the remote system name parameter has been changed to identifier RTDN.

EMLI identifier: the link name, work station address, and user ID parameters have been added to this identifier.

VPRT identifier is now PRNT.

Many identifiers have been added for the AS/400 system. See Chapter 24, "Configuration Identifiers and Work Sheets" for the list of supported identifiers.

Understanding Virtual Disk Support with PC Support

The virtual disk function is not supported by the AS/400 system. Any virtual disks that are being moved to the AS/400 system must be changed to folders. Refer to the *System/36 to AS/400 Migration Aid User's Guide and Reference* or the *System/38 to AS/400 Migration Aid User's Guide and Reference* for detailed information on how to make the change.

The DEVICE=VDSK.SYS entry is deleted from CONFIG.SYS by the installation program.

VDSK entries in configuration files are ignored.

The Convert to Folder (CVTTOFLR) command converts a virtual disk into a folder and personal computer documents. The specified folder becomes the root directory into which all the directories and files on the virtual disk are copied. This folder is created if it does not already exist. Personal computer files from the virtual disk are copied into personal computer documents, and other directories on the virtual disk are converted into folders nested inside the specified folder.

Using PC Support/400 with System/36s and AS/400 Systems

A programming request for price quotation (PRPQ), called PC Support Coexistence, is available. This PRPQ allows PC Support/400 to be used in an environment consisting of both System/36s and AS/400 systems. You must have both System/36s and AS/400 systems in order to use this PRPQ.

Support Available to System/36 with the PRPQ: All functions currently available with PC Support/400 are available with the PRPQ except the submit remote command function, data queues, and the administration function. In addition, all environments currently provided for PC Support/400 are provided for the PRPQ.

Documentation on how to install and use the PC Support/400 Coexistence PRPQ is provided with the PRPQ. The PRPQ number is 5799-DAK for the 5360/5362 system units or 5799-DAL for the 5363/5364 system units. See your IBM representative for more information.

You may need to refer to the PC Support/36 Coexistence PRPQ documentation for further information if you use any of the following connections:

- PC Support/400 twinaxial data link control
- PC Support/400 asynchronous communications

Support Available to System/36 without the PRPQ:

- Work station function
- Organizer
- Note:** DisplayWrite/36* must be the editor of choice. This editor uses the text-assist function.
- Session manager

The above functions are available without the PRPQ with the following restrictions:

- The work station function is not supported with PC Support/36 in a twinaxial connection.
- The PC Support/400 twinaxial router cannot be used on a personal computer attached to a System/36. You must use the PC Support/36 twinaxial router.
- The PC Support/400 asynchronous router cannot be used on a personal computer attached to a System/36.
- Advanced program-to-program communications (APPC) is required on the System/36.
- For the organizer and text-assist function, PC Support/36 is needed on the System/36.
- In order for the System/36 to communicate with the AS/400 system, Display Station Pass-Through, Feature 6090, is needed.

Functions Available with PC Support/400

The following table shows the functions that are available with PC Support/400 and the PC commands that you can use with each function. You can use the PCSHELP command to display the online documentation and the parameters for each of these commands. See Chapter 28, "Getting Help for PC Support/400 Messages and Commands" for instructions on how to use the PCSHELP command.

Table 1-5 (Page 1 of 3). Functions Available with PC Support/400

PC Support/400 Function	Description
Administration function	Allows a PC administrator to create PC Support/400 installation diskettes and to control groups of PC Support/400 users by making configuration changes from a central location. Associated command: PCSADM.
Configuration program	Allows you to set up the default PC Support configuration on your personal computer or create an alternative configuration. Associated command: CFGPCS.
Data queues function	Allows you to work with data queues on the AS/400 system. Associated commands: LOADDQ, CLRDTAQ, CRTDTAQ, DLTDTAQ, QRYDTAQ, RCVDTAQ, SNDDTAQ, STPDTAQ. This function is available only if you are using the Extended DOS option of PC Support/400.
Message function	Allows you to send messages to and receive messages from other personal computers and work stations. If you use this function, you do not need to be signed on to an AS/400 system to send and receive messages. Associated commands: MSG, STARTMSG, RCVMSG, STOPMSG.
Organizer	Allows you to run both PC functions and AS/400 functions from a single menu on the AS/400 system. Before you can use the organizer, you must start the PC Support/400 work station function. If you select the organizer during installation, the work station function is automatically selected as well. Associated command: PCO.

Planning

Table 1-5 (Page 2 of 3). Functions Available with PC Support/400

PC Support/400 Function	Description
PC Support error log	Allows you to view online help information for any PC Support/400 error messages logged for your personal computer. Associated command: PCSLOG.
PC Support help	Allows you to view online help information for PC Support/400 commands and error messages. Associated command: PCSHELP.
PC Support introduction	Allows you to view the PC Support/400 online introduction. Associated command: PCSINTRO.
PC Support Menu	Allows you to run certain PC Support/400 functions from a menu on the personal computer. Associated command: PCSMENU.
Remove PC Support	Allows you to remove certain PC Support/400 functions from memory so that the memory can be used for other DOS applications. Associated command: RMVPCS.
Router	Controls the communications connection from the personal computer to the AS/400 system. Associated commands: STARTRTR, STOPRTR.
RUMBA/400	Provides an alternative method for display and printer emulation when using PC Support/400 with the Microsoft Windows program. Associated commands: RUMBA, RUMBADEM, RUMBAFP, RUMBAWSF, RUMBAPRN, RUMBAFIL.
Session manager	Allows you to set up a window for each work station function session and easily switch active sessions using a mouse or keyboard. Each window can be changed to fit your needs. This function requires the work station function. Associated command: SM5250.
Shared folders function	Allows you to access personal computer information stored in folders on the AS/400 system. The information on the AS/400 system is accessed by assigning personal computer drives to folders. The shared folders function replaces the virtual disk function that is used in PC Support/36 and PC Support/38. Associated commands: STARTFLR, FSPC, CFGFLR, CHKFIL.
Submit remote command	Allows you to submit AS/400 commands to an AS/400 system from the personal computer. Associated command: RMTCMD.
Text-assist function	Allows you to use the personal computer text-assist function with OfficeVision/400* when you are using the organizer. This function is installed automatically if you select to install the Organizer function. Associated command: PCO.
Transfer function	Allows you to transfer data from an AS/400 database to the personal computer or from the personal computer to an AS/400 database. Associated commands: RTOPC, RTOPCB, RFROMPC, RFROMPCB, STF.
Update function	Allows you to update programs on the personal computer. This function automatically updates PC Support/400 when you start PC Support/400 using the STARTPCS command. Associated commands: PCSUPDT.
Virtual printer	Allows you to use printers attached to the host system as though they were directly attached to your personal computer. The personal computer data can be printed on any printer that is connected to the AS/400 system. Associated commands: VPRT, SETVPRT, CFGVPRT.
Work station function	Allows you to combine up to five AS/400 and S/36 sessions. Work station function provides the following types of sessions: <ul style="list-style-type: none">• Standard display session• Printer session• Graphics display session• 132-column display session Associated commands: WSF, STARTWSF, STOPWSF, WSFKEYS, PFTSETUP, WSFBIDI.

Table 1-5 (Page 3 of 3). Functions Available with PC Support/400

PC Support/400 Function	Description
Work station function coloring utility	Allows you to specify the colors you want to use on selected areas of each of your work station function display sessions. Associated command: WSFCOLOR.
Work station function configuration program	Allows you to change your work station function configuration. Associated command: CFGWSF.

The *PC Support/400 User's Guide for DOS* describes how to use the functions. Part 4, "Configuring PC Support/400" describes how each of the functions can be changed to tailor the functions to your specific needs. For more information on the details of the installation program, refer to Appendix C, "PC Support/400 Installation Program."

Part 2. Administering PC Support/400

Chapter 2. Enrolling PC Support/400 Users on the AS/400 System	2-1
Chapter 3. Using the PC Support/400 Administration Function	3-1

Chapter 2. Enrolling PC Support/400 Users on the AS/400 System

Verifying the Installation of the PC Support/400 Licensed Program	2-2
Enrolling PC Support/400 Users	2-3

Enrolling on the System

This chapter contains instructions for:

- Verifying the installation of the PC Support/400 licensed program on the AS/400 system
- Enrolling PC Support/400 users on the AS/400 system

For a complete list of the tasks necessary for setting up your PC Support/400 configuration, see "Overview of Installing PC Support/400" on page 1-2.

Verifying the Installation of the PC Support/400 Licensed Program

PC Support/400 is normally installed along with the other licensed programs on the AS/400 system. To make sure PC Support/400 is installed on the AS/400 system, look at the list of installed licensed programs. To display this list, do the following:

1. On the AS/400 command line, type

```
GO LICPGM
```

and press the Enter key. The following display appears:

```
LICPGM                      Work with Licensed Programs                      System:  RCH38342
Select one of the following:

Manual Install
  1. Install all

Licensed Programs
  10. Display installed licensed programs
  11. Install licensed programs
  12. Delete licensed programs
  13. Save licensed programs

Secondary Languages
  20. Display installed secondary languages
  21. Install secondary languages
  22. Delete secondary languages

Selection or command
==> 10

-----
F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F13=User support
F16=AS/400 Main Menu
(C) COPYRIGHT IBM CORP. 1980, 1992.
```

2. Select option 10 (Display installed licensed programs). A display similar to the following appears:

Display Installed Licensed Programs			System: RCH38342
Licensed Program	Description	Installed Release	
5738CB1	COBOL/400 - *PRV Base Support	V2R2M0	
5738CB1	COBOL/400 - *PRV System/36-compatible COBOL	V2R2M0	
5738CM1	AS/400 Communications Utilities	V2R2M0	
5738DB1	AS/400 System/38 Utilities	V2R2M0	
5738DS1	AS/400 Business Graphics Utility	V2R2M0	
5738FT1	SAA FORTRAN/400	V2R2M0	
5738PC1	PC Support/400	V2R2M0	
5738PC1	PC Support/400 - PC DOS Programs	V2R2M0	
5738PC1	PC Support/400 - DBCS (DOS)	V2R2M0	
5738PC1	PC Support/400 - OS/2 Programs	V2R2M0	
5738PC1	PC Support/400 - DBCS (OS/2)	V2R2M0	
5738PC1	PC Support/400 - Extended DOS Programs	V2R2M0	
5738PC1	PC Support/400 - DBCS (Extended DOS)	V2R2M0	
5738PC1	PC Support/400 - PC Tools Folder	V2R2M0	
5738PC1	PC Support/400 - RUMBA/400	V2R2M0	

Press Enter to continue.

F3=Exit F12=Cancel

More...

This list shows you the licensed programs that are installed on the system. You may need to page up and down to see everything on the list.

The following options must appear on the list:

- PC Support/400 (base option)
- Each of the PC options you need to use

Only the base support and at least one of the options for PC files are required; all other options are optional.

For a description of the options available with PC Support/400, see "PC Support/400 Options, Libraries, and Folders" on page 1-3.

If the PC Support/400 licensed program is not already installed on the system, you must install it from tape. For information about how to do this, see the *Licensed Programs and New Release Installation Guide*, SC41-9878.

If you are using automatic installation to install a new release of PC Support/400 over a previous release, any option that was not installed on the previous release is not automatically installed. Use the instructions in *Licensed Programs and New Release Installation Guide*, SC41-9878, to install the option.

Enrolling PC Support/400 Users

To use PC Support/400, each user must be added to the system as a PC Support/400 user. In addition, if your system uses level 10 security, you need to add the user profile QUSER to the system directory using the Add Directory Entry (ADDIRE) command.

Note: In order to do some of these tasks, you must have security administrator authority or higher.

To add a PC Support/400 user:

1. Either type the command GO PCSTSK on the AS/400 command line, or select option 11 (PC Support tasks) from the AS/400 Main Menu. The following display appears:

Enrolling on the System

```
PCSTSK                                PC Support Tasks                                System:  RCH38342
Select one of the following:

User Tasks
  1. Copy PC document to database
  2. Copy database to PC document
  3. Work with documents in folders
  4. Work with folders
  5. PC Support Organizer

Administrator Tasks
  20. Work with PC Support administrators
  21. Enroll PC Support users
  22. Configure PC connections

  30. Change keyboard and conversion tables

Selection or command
===> 21

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F13=User support
F16=AS/400 Main Menu
```

2. Select option 21 (Enroll PC Support users). The following display appears:

```
                                Enroll PC Support Users
Type choices, press Enter.

User profile . . . . . joe          Name
User identifier:
  User ID . . . . . joe            Character value
  Address . . . . . AS400SYS       Character value
  User description . . . . . joe taylor 117

F3=Exit  F5=Refresh  F12=Cancel
```

3. Supply the following for the remaining fields:

User profile

This is the name of the user profile to be created on the system. This is the name that the user types when signing on to the system. Although you can use up to 10 characters for this name, it is recommended that you use only 8. Using 8 characters allows you to make the user ID (see below) the same as the user profile name.

User ID

This is the name that is used to identify this user when sending files in a distribution network. For convenience, you should make this the same as the user profile name.

Address

This is the name by which the AS/400 system is known on the network.
You should accept the default.

User description

Type a description for this user.

4. When you finish, press the Enter key.

Enrolling a PC Support user on the system creates the following:

- A user profile (if one does not already exist) with:
 - An entry in the system distribution directory
 - A password the same as the name of the user profile
 - *USER authority
- A job description
- An output queue
- A message queue

Enrolling on the System

Chapter 3. Using the PC Support/400 Administration Function

PC Support Administration – An Overview	3-2
Setting Up Administration	3-4
Adding or Removing an Administrator	3-4
Starting the Administration Function on the Personal Computer	3-6
Changing the Host System	3-7
Working with Model Configurations	3-8
Adding Model Configurations	3-8
Changing Model Configurations	3-9
Administering to Users	3-10
Adding User Configurations	3-10
Allowing Administration	3-12
Changing User Configurations	3-13
Creating Installation Diskettes	3-15
Creating Custom Installation Diskettes	3-16
Creating Standard Installation Diskettes	3-17
Controlling Updates	3-18
Considerations for Controlling Updates	3-19
Restrictions for Administration	3-19

PC Support Administration – An Overview

In many organizations, the end users who use personal computers to perform their daily tasks may not even realize they are taking advantage of AS/400 system functions by using PC Support/400. These users may not understand how to install or configure PC Support/400. In environments like these, a personal computer “expert” is usually assigned the task of installing PC Support/400 for each end user and tailoring each configuration to fit the user’s needs. In many cases, the same basic configuration is used for groups of users performing similar tasks.

We call this “expert” the PC Support/400 administrator. The PC Support/400 administration function helps this person control, on a regular basis, diverse sets of PC Support/400 users by making personal computer configuration changes from a central location. The administration function is not intended for making occasional changes to user configurations, nor is it a required function.

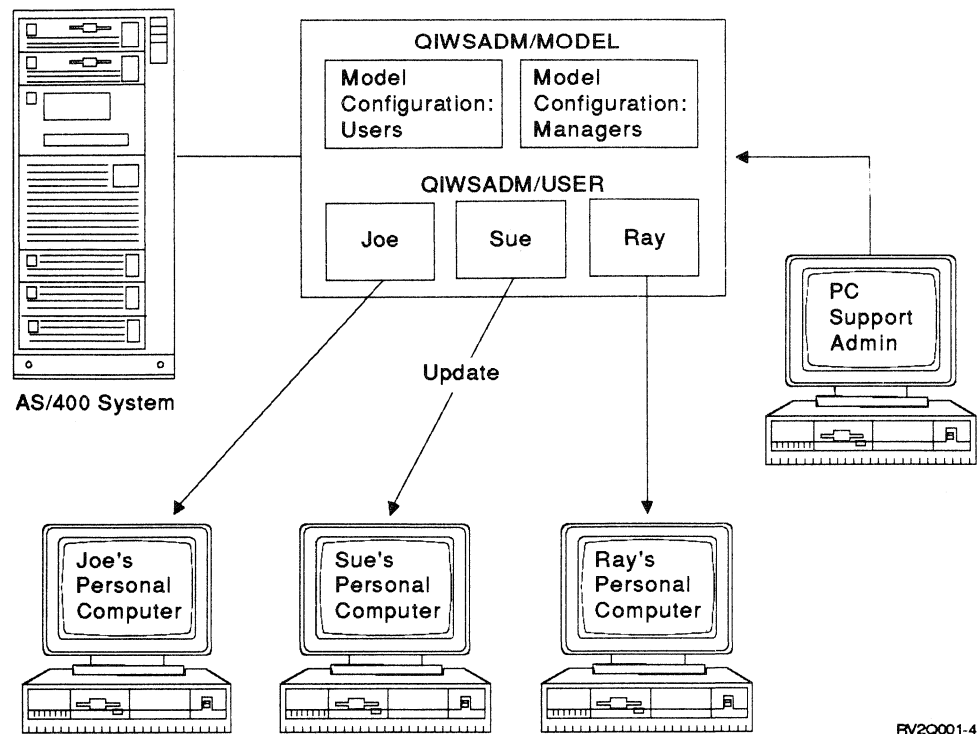
In simple terms, the PC Support/400 administration function allows a designated administrator to control the configurations of all PC Support/400 users from the administrator’s own personal computer. Master copies of each user’s configuration files are stored on the AS/400 system in folders.

When the PC Support/400 product is installed on the AS/400 system, a folder named QIWSADM is created. If you decide to use the administration function, you create a user configuration for each PC Support/400 user to be administered. These user configurations are actually folders that reside in the QIWSADM/USER folder. Any files in these folders are copied to the user’s personal computer.

To make the creation of these configuration files easier, the administrator can create model configurations that define how a specific set of end users want their personal computers configured. The administrator creating the configuration files for a user has the option of basing the configuration files on one of these model configurations.

If the end user already has PC Support installed and configured, the user can copy the configuration files to the appropriate folder on the AS/400 system. If the end user does not yet have PC Support installed, the administrator can set up the user’s configuration using the administration function, then create custom installation diskettes. The end user can then easily install PC Support/400 using the custom installation diskettes.

The following diagram shows how the PC Support/400 administration function allows the administrator to control end user configurations.



The following individual PC Support/400 configuration files are examples of the files that may be stored in a user configuration:

Table 3-1. Configuration Files Contained in a User Configuration

Description	Sample Name
PC Support command file	STARTPCS.BAT
PC Support configuration file	CONFIG.PCS
Work station function master profile	WSF.DAT
Work station function session profiles	SESS1.DAT
Work station function keyboard profiles	KEYBD.KBD
Session manager profile	SM5250.PRO

In summary, the PC Support/400 administration function allows the administrator to perform the following activities:

- Define model configurations on which to base user configurations.
- Define the configuration files needed to run PC Support/400.
- Add, change, and delete the configuration files for each individual user.
- Create PC Support/400 installation diskettes that can be customized for each user's personal computer.
- Create PC Support/400 installation diskettes that are the same as the installation diskettes shipped with the PC Support/400 product.
- Administer end users on more than one AS/400 system from the same personal computer.

Setting Up Administration

The following chart shows the tasks you need to complete in order to be able to administer PC Support/400 to other PC Support/400 users. **Follow the steps as outlined on this chart.** Depending on the process you use, not all the steps detailed in this chapter will be necessary.

TASK 1	Verify that PC Support/400 has been installed on the AS/400 system. The steps for this task are described in "Verifying the Installation of the PC Support/400 Licensed Program" on page 2-2.	
TASK 2	Someone with security administrator authority or higher must add each new PC Support/400 administrator on the AS/400 system. The steps for this task are described in "Adding or Removing an Administrator."	
TASK 3	In order to make the creation of user configurations easier, you should create some model configurations. The steps for this task are described in "Working with Model Configurations" on page 3-8.	
TASK 4	<p>If the user already has PC Support/400 installed</p> <ol style="list-style-type: none"> 1. Create the user configurations. The steps for this task are described in "Adding User Configurations" on page 3-10. 2. Each user to be administered must specify to accept configuration changes from the PC Support/400 administrator. Optionally, you can also have the user's existing configuration files copied to the AS/400 folder during this step. The steps for this task are described in "Allowing Administration" on page 3-12. 	<p>If the user does not yet have PC Support/400 installed</p> <ol style="list-style-type: none"> 1. Use the appropriate chapter in Part 3, "Installing PC Support/400" to complete the host installation for the user. 2. Using the completed work sheet from the installation chapter, create the user configuration. The steps for this task are described in "Adding User Configurations" on page 3-10. 3. Either complete the installation of PC Support/400 on the personal computer as discussed in the appropriate chapter in Part 3, "Installing PC Support/400," or create a custom installation diskette for the user as described in "Creating Installation Diskettes" on page 3-15.

Adding or Removing an Administrator

To be a PC Support/400 administrator, you should be:

- Familiar with PC Support/400
- Familiar with the various methods of PC Support/400 configuration
- Using PC Support/400 on your personal computer

Note: Any PC Support/400 administrator can add or delete other PC Support/400 administrators. If you need to create a new user profile and add an entry

to the system directory, you need to have at least security administrator authority.

To add or remove a PC Support/400 administrator, do the following:

1. From the AS/400 Main Menu, select option 11 (PC Support tasks).
2. From the PC Support Tasks menu, select option 20 (Work with PC Support administrators). The following display appears:

Work with PC Support Administrators

Type options, press Enter.
1=Add 4=Remove

Opt	Administrator	Enrollment Authority	Description
<u>1</u>	<u>Joe</u>		
-	QSECOFR	Y	Security Officer
-	ARNIE	N	Arnold Friend
-	TONY	Y	Tony Bologna
-	JSW	N	Jane Wright

Bottom

F3=Exit F5=Refresh F12=Cancel

This display shows you the list of current PC Support/400 administrators. A Y in the Enrollment Authority column indicates that the administrator has the authority (security administrator or higher) to create user profiles and add directory entries.

3. To remove an administrator, type a 4 (Remove) in the option column next to the name of the administrator you want to remove.
4. To add a new administrator, type a 1 (Add) in the option column, and type the user profile name for the user you want to enroll as an administrator. Although this field accepts up to 10 characters, it is recommended that you use 8 characters or less. This is because the Document Interchange Architecture (DIA) used by the shared folders function restricts folder names to 8 characters.
5. If the user profile you specified does not exist, or if the user profile exists but the user is not in the system directory, the following display appears:

Administration Function

```

                                Enroll PC Support Users
User profile . . . . . : JOE

Type choices, press Enter.

User identifier:
  User ID . . . . . JOE           Character value
  Address . . . . . AS400SYS      Character value
  User description . . . . . Joe Taylor 117
_____

F3=Exit  F5=Refresh  F12=Cancel
JOE needs to enroll in PC Support.  Press Enter to enroll.
```

On this display, you need to fill out the following fields:

User ID

This is the name that is identified with this user when sending files in a distribution network. You may find it convenient to make this the same as the user profile name.

Address

This is the name by which the AS/400 system is known on the network. You should accept the default.

User description

You can type any description you want in this field.

When you are finished, press the Enter key.

6. The Work with PC Support/400 Administrators display appears again, with the user added as an administrator. The Enrollment Authority column is filled in automatically showing whether or not the user has security administrator authority or higher.

Starting the Administration Function on the Personal Computer

To start the PC Support/400 administration function on the personal computer, you can do one of the following:

- Select the Administer PC Support/400 option from the PC Support/400 Menu.
- Use the PCSADM command at the DOS prompt.

The PC Support/400 Administration Menu is displayed as follows:

```
PC Support Administration Menu

Host System.....: AS400SYS

Select one of the following.

Work with user configurations
Work with model configurations
Create install diskettes
Change host system

Enter  Esc=Cancel  F1=Help  F3=Exit
```

This display shows you the name of the system for which you are currently making administration changes. You can use the Change Host System option to work with a different system.

To use either of the options for working with configurations, you must be an authorized PC Support/400 administrator on the system listed.

Any PC Support/400 user can use the Create Install Diskettes option to create standard installation diskettes. To use this option to create custom installation diskettes, you must be an authorized PC Support/400 administrator on the system listed.

Changing the Host System

PC Support/400 administration allows those administrators who are in charge of PC Support/400 users connected to more than one AS/400 system to select the host system containing the PC Support/400 configuration structure they want to work with.

To change to a different host system, do the following:

1. From the PC Support/400 Administration Menu, select the Change host system option. The Change Host System display appears.
2. To select the system, move the cursor to the system you want to use and press the Enter key.
3. You return to the PC Support/400 Administration Menu. The current host system name at the top of the menu has changed. You can now make changes to model and user configurations on this system.

Working with Model Configurations

The PC Support/400 administrator can create model configurations for each group of users that require similar PC Support/400 configurations. Each model configuration contains the various configuration files (STARTPCS.BAT, CONFIG.PCS, and so on) that define how PC Support/400 is used by that particular group. In simpler terms, model configurations are configuration files that are used as a base for defining new user configurations. You should create model profiles before you create the individual user configuration profiles.

The functions available when you work with model configurations are very similar to those when you work with user configurations. The major difference is that the model configurations cannot be accessed by specific user IDs to allow them to update the configuration in the PC Support/400 configuration structure. Another difference with model configurations is that model configurations do not contain the information concerning whether or not a user is administered. This information is not needed in the model. It is requested for each user configuration that is created.

To create a model configuration, do the following:

1. Decide what groups of users you have – those with similar needs, settings, and so on, such as secretarial, managerial, or programmer groups.
2. Add a model configuration for each group.

Adding Model Configurations

To add model configurations, do the following:

1. From the PC Support/400 Administration Menu, select the Work with model configurations option. The Work with Model Configurations display appears.
2. Press the Enter key to select the Options action. The Options menu appears.
3. Select Add model configuration from the Options menu. The following display appears:

Add Model Configuration

Type the following information for the model configuration being added, press Enter.

Model configuration name [MANAGER]

Description . . [Typical setup for managers]

Model configuration to copy []

or

User configuration to copy []

User's operating system environment ▶ 1. Basic DOS
2. Extended DOS

Enter Esc=Cancel F1=Help F3=Exit F4=Prompt F7=Change working set
Spacebar

4. Enter the desired information on this display.

Model configuration name

Decide on a name for the model you want to create.

Description

Enter a description of the model you are creating.

Model configuration or User configuration to copy

Enter the name of an existing model or user configuration to use as a base when creating the new model configuration. These are both optional fields, and you may enter a name in only one of these two fields. You can use F4 (Prompt) to select from a list of existing configuration files.

User's operating system environment

Select the personal computer operating system used by those users associated with the model configuration being added.

5. When you are finished typing this information, press the Enter key. The PC Support Configuration menu appears, allowing you to configure the PC Support functions for this model configuration. See Part 4, "Configuring PC Support/400" for information about configuring the different PC Support/400 functions.

Note: The information you supply does not have to apply to every user configuration you intend to create using this model. Each time you create a specific user configuration, you are allowed to specify options that are unique for the user. When creating the model configuration, try to specify values that apply to the greatest number of users you will create using this model.

6. When you are finished making the configuration changes, the Work with Model Configurations display appears again.

Changing Model Configurations

Changing a *model* configuration does not have any effect on *user* configurations you have already created based on this model. To change a model configuration that you have already created, do the following:

1. From the PC Support/400 Administration Menu, select the Work with model configurations option. The Work with Model Configurations display appears.
2. Position the cursor to the model configuration you want to change.
3. Press the Enter key. The Options menu appears.
4. Select the Change model configuration option. The Change Model Configuration display appears.
5. Press the Enter key. The PC Support/400 Configuration menu appears, allowing you to configure the PC Support/400 functions for this model configuration. See Part 4, "Configuring PC Support/400" for information about configuring the different PC Support/400 functions.

If your personal computer does not have enough memory to run the workstation function configuration program from within the administration function, you can do the following:

- a. Exit the administration program.
- b. Enter the following command:

```
CFGWSF MODEL=xx [DRIVE=y]
```

Administration Function

where xx is the name of the configuration you want to change and y is the letter of the drive where the user configuration is stored. The DRIVE parameter is optional. If not specified, the I drive is used.

Administering to Users

After you have set up the administration function and have created any model configurations you want to use, you can:

- Add user configurations.
- Change user configurations.
- Create installation diskettes for users.

Adding User Configurations

A user configuration needs to be created for each PC Support/400 user to be administered. A user configuration is actually an AS/400 folder that will contain the user's PC Support/400 configuration files.

Besides the common settings that are included in your model configurations, user configurations also include those settings that are unique for a particular user.

To add a user configuration:

1. From the PC Support/400 Administration Menu, select the Work with user configurations option. The Work with User Configurations display appears.
2. Press the Enter key to select the Options action. The Options menu appears.
3. Select Add user configuration from the Options menu. The following display appears:

Add User Configuration

Type the following information for the user configuration being added, press Enter.

User configuration name [SALLY] More: ↓

Description [Sally Smith - Manager dept. 11]

Model configuration to copy [MANAGER]
or
User configuration to copy. []

User's PC Support directory drive [C]

Is user configuration to be administered? ▶ 1. Yes
2. No

User's operating system environment ▶ 1. Basic DOS

Enter Esc=Cancel F1=Help F3=Exit F7=Change working set

4. On this display, you need to enter the following:

User configuration name

Decide on a name for the user configuration you want to create. To make this easier to remember, you can enter the user ID the user types when signing on to the AS/400 system.

Description

Enter a description for the user configuration you are creating.

Model configuration or User configuration to copy

Enter the name of an existing model or user configuration to use as a base when creating the new configuration. These are both optional fields, and you may enter a name in only one of these two fields. You can use F4 (Prompt) to select from a list of existing configurations.

User's PC Support directory drive

This is the drive letter on which the user has PC Support/400 installed or will have PC Support/400 installed. The PC Support/400 program assumes that the configuration files are in the PC Support/400 directory on this drive. This field may not be changed once it has been set. If you need to change a user's PC Support directory drive, you must create a new user configuration for the user and specify the new drive letter.

Is user configuration to be administered?

Decide whether or not this user configuration is to be administered.

- Yes indicates that the user configuration is to be administered. Each time the user starts PC Support/400 on the personal computer, the PC Support/400 update function will ensure that the configuration on the personal computer matches the configuration on the AS/400 system.
- No indicates that configuration changes will not be copied from the master configuration files to the personal computer. You should select this option if you want to create custom installation diskettes, but do not want to be responsible for the user's configuration after installation.

Operating system environment

Select the personal computer operating system used by this user.

Allow user to change configuration?

This field indicates whether or not the user should be able to change the configuration on the AS/400 system. If you specify Yes, the user will be granted *CHANGE authority to the folder in which the user's master configuration files are stored.

Note: If the user currently has PC Support/400 installed on the personal computer, and you want to copy the configuration from the personal computer to the AS/400 system as described in "Allowing Administration" on page 3-12, you must specify Yes in this field. Otherwise, the user will not have the proper authority to copy these files to the AS/400 system.

User ID

If you specified Yes on the *Allow user to change configuration?* field, this is the user profile to which *CHANGE authority will be granted. If you specified No on the *Allow user to change configuration?* field, this is the user profile from which *CHANGE authority will be revoked if it currently has *CHANGE authority.

5. When you are finished typing this information, press the Enter key. The following window appears:

User Connection Information

Type in the values and press Enter.

PC to AS/400 connection type
Press spacebar to select

- ▶ 1. Twinaxial
- 2. Local Area Network
- 3. Synchronous Data Link Control
- 4. Asynchronous Communications

User's PC is microchannel
Press spacebar to select

- 1. Yes
- ▶ 2. No

PC location name []

System name. []

Workstation address (0-6). []

Enter Esc=Cancel F1=Help Spacebar

6. The User Connection Information window is similar to the display you see when you install PC Support/400 on a personal computer. You should have already completed the host installation of PC Support/400 for this user. The information for these fields can be found on the completed installation work sheet.

Note: If a user currently has PC Support/400 installed on the personal computer, and you want to copy that user's configuration files from the personal computer to the AS/400 system as described in "Allowing Administration," you do not need to specify this information accurately. When you copy the user's configuration files to the AS/400 system, the information in these configuration files replaces any information you enter on this display.

7. When you are finished typing the information on this display, press the Enter key. A display appears asking you if you want to perform additional configuration for the user. If you select Yes, the PC Support/400 Configuration menu appears, allowing you to configure the PC Support/400 functions for this user configuration. See Part 4, "Configuring PC Support/400" for information about configuring the different PC Support/400 functions.
8. When you are finished making configuration changes, or if you chose not to perform additional configuration, you will return to the Work with User Configurations display. The user configuration you added appears on the display.

Allowing Administration

If users already have PC Support/400 installed on their personal computers, changes to their PC Support/400 configuration need to be made before they can begin receiving changes from the administrator.

Note: The following task must be performed on the personal computer that is to be administered. You cannot perform this task from another personal computer.

1. Start the PC Support/400 configuration program. You can either enter the CFGPCS command at the DOS prompt, or do the following:

- a. From the PC Support/400 menu, select the Configuration option. A window appears.
- b. Select the PC Support/400 configuration option.

The PC Support/400 Configuration menu appears.

2. Select General options. The General Options display appears.
3. Select Administration options from the General Options display. The following window appears:

Administration Options

Select options with the spacebar, then press Enter.

Accept configuration changes
from PC Support administrator ▶ 1. Yes
2. No

User configuration on the AS/400 []

Copy current configuration files
to user configuration on the AS/400 1. Yes
▶ 2. No

Enter Esc=Cancel F1=Help Spacebar

4. Specify Yes for the *Accept configuration changes from the PC Support administrator* prompt. The following fields appear on the display:

User configuration on the AS/400

This is the name of the user configuration created in step 4 on page 3-10.

Copy current configuration files

Specify whether or not your current configuration files should be copied to the user configuration on the AS/400 system. If you want to copy the configuration files, you must have authority to the appropriate user configuration folder on the AS/400 system.

If you specify Yes, the PC Support/400 configuration files you are currently using are copied to the user configuration on the AS/400 system.

5. When you are finished typing this information, press the Enter key.
6. Press F3 (Exit) to leave PC Support/400 configuration.

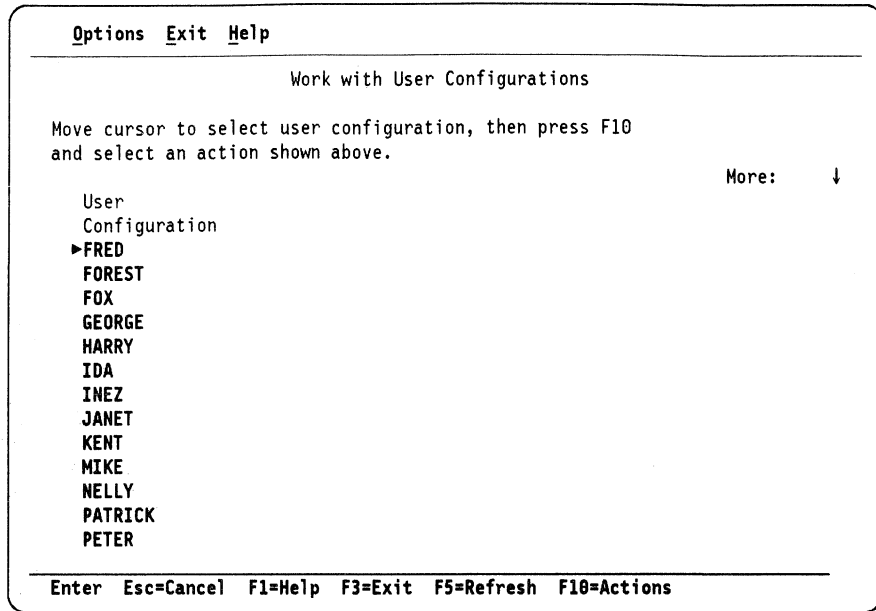
Any changes made to the configuration files on the AS/400 system are now copied to the user's personal computer.

Changing User Configurations

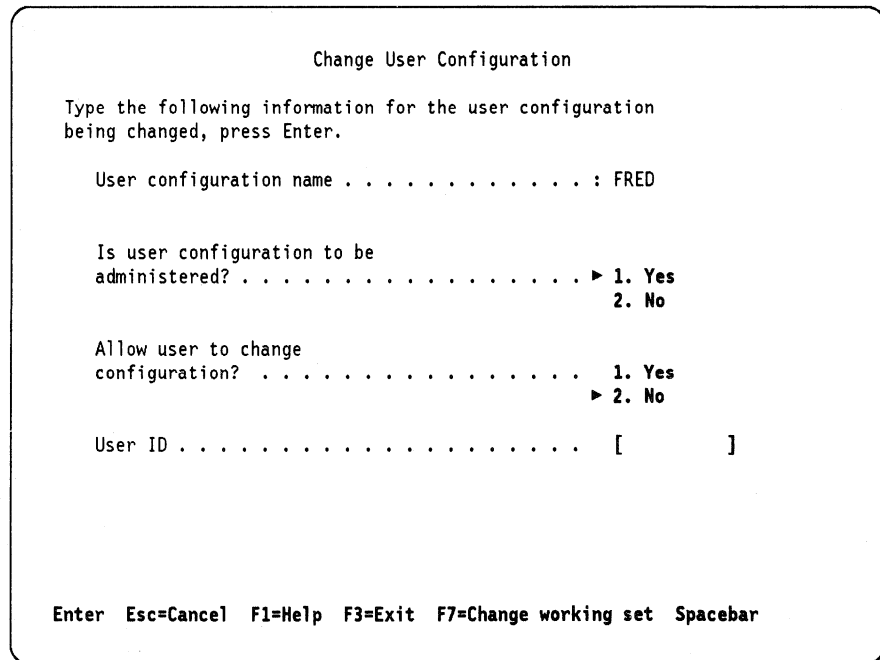
After you have PC Support/400 administration set up, you can change the master configuration files on the AS/400 system. These changes will automatically be copied to the user's personal computer the next time the user starts PC Support/400.

To change a user's master configuration files:

1. Select Work with user configurations from the PC Support/400 Administration Menu. The following display appears:



2. Select one of the user configurations to work with by moving the cursor to the user name and pressing the Enter key. From the Options window that appears, select Change user configuration. The following display appears:



3. You can change any of the following information. If you do not want to change any of this information, leave the fields as they are and press the Enter key.

Is user configuration to be administered?

Decide whether or not this user configuration is to be administered.

- Yes indicates that the user configuration is to be administered. Each time the user starts PC Support/400 on the personal computer, the update function will ensure that the configuration on the personal computer matches the configuration on the AS/400 system.

- No indicates that configuration changes will not be copied from the master configuration files to the personal computer.

Allow user to change configuration?

This field states whether or not the user (specified in the user ID field) should be able to change the configuration. If you specify Yes, the user will be granted authority to the folder on which the user's master configuration files are stored.

User ID

Enter the user ID that the user types when signing on to the AS/400 system. This is the profile for which authority to the folder will be granted or revoked.

4. Press the Enter key. The PC Support/400 Configuration menu appears, allowing you to configure the PC Support/400 functions for this user configuration. See Part 4, "Configuring PC Support/400" for information about configuring the different PC Support/400 functions.

If your personal computer does not have enough memory to run the workstation function configuration program within the administration function, you can do the following:

- a. Exit the administration program.
- b. Enter the following command:

```
CFGWSF USER=xx [DRIVE=y]
```

where xx is the name of the configuration you want to change and y is the letter of the drive where the user configuration is stored. The DRIVE parameter is optional. If not specified, the I drive is used.

Overriding User's Changes to Configurations:

1. If the administrator decides to make changes to the configuration, the administrator's changes will override any changes made on the personal computer by the user. The PC Support/400 user will only be allowed to make changes when the administrator has given the user authorization to make changes to the configuration files in the user's configuration folder.
2. Individual users can make as many changes as they want in the configuration at their own personal computers, but the changes will not be reflected on the host system. Changes made by the individual user are overridden unless the administrator makes the changes on the host system also. A warning message will be displayed if the user tries to change the local copy of the configuration.

Creating Installation Diskettes

You can use the PC Support/400 administration function to create the following kinds of installation diskettes for the personal computer:

Custom These diskettes contain programs and configuration files set up specifically for the user. You must be a PC Support/400 administrator to create custom installation diskettes.

Standard These diskettes are the same as the installation diskettes shipped with the PC Support/400 licensed program. Any PC Support/400 user can create standard installation diskettes.

Creating Custom Installation Diskettes

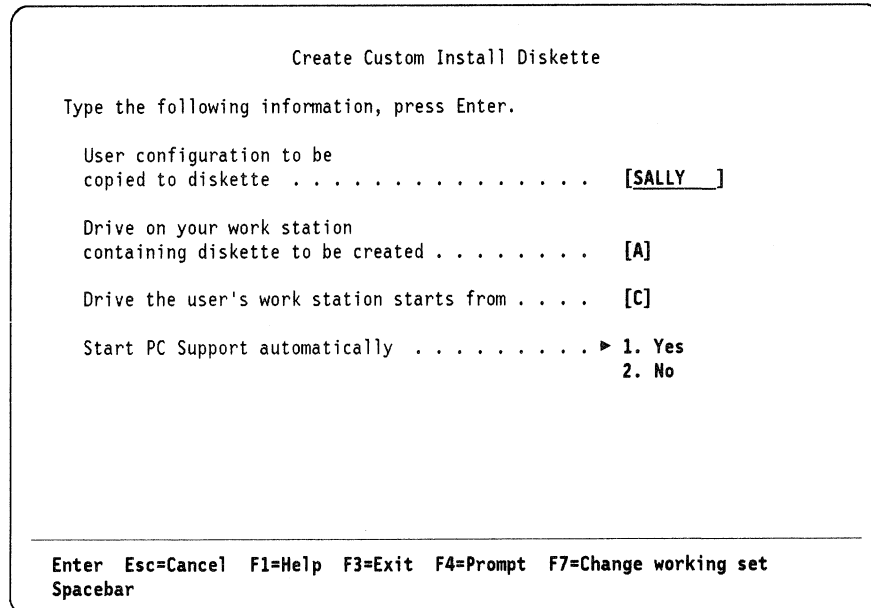
The PC Support/400 administrator can create custom installation diskettes that contain all of the programs and configuration files necessary for installing PC Support/400 on a particular personal computer. The user can then use the custom installation diskettes to install PC Support/400 on the personal computer without having to supply any additional information.

In order to create custom installation diskettes:

- The host configuration for the personal computer must have been completed. These steps are discussed in the appropriate chapter in Part 3, "Installing PC Support/400."
- You must have created a user configuration for this user. These steps are discussed in "Adding User Configurations" on page 3-10.
- The diskettes you use on your personal computer must be the same size and format as those used on the user's personal computer.

To create custom installation diskettes, do the following:

1. Make sure you have a supply of formatted, nonsystem diskettes available. (Nonsystem diskettes are those formatted without using the /s option.) Insert the first diskette into your diskette drive.
2. From PC Support/400 Administration Menu, select the Create install diskettes option. The Create Install Diskettes window appears.
3. Select Custom for the type of diskettes to create. The following display appears:



4. You need to supply the following information:

User configuration to be copied to diskette

Enter the name of the user configuration for whom you are creating the custom installation diskette.

Drive on your work station containing diskette to be created

Enter the drive letter of the diskette drive on your personal computer.

Drive the user's work station starts from

Enter the drive letter from which the user's personal computer is initially started.

Start PC Support automatically

Specify whether or not the user you are creating this installation diskette for wants to have PC Support/400 started automatically when the personal computer is started.

- If Yes is chosen, PC Support/400 will start automatically.
- If No is chosen, PC Support/400 will not start automatically.

Note: After completing the required information on the Create Custom Install Diskette display, you can choose to press F7 (Change working set) to enter the file name of your PC Support/400 configuration file and the file name of the user's file used to start PC Support/400. Normally, you do not need to change a working set since most users have the same names for the configuration file and the file used to start PC Support/400.

5. Press the Enter key. A window appears asking whether you want to copy the PC Support/400 programs to the diskette now or have it done at installation time on the user's personal computer.
 - If you choose No, only the files necessary to establish a connection with the AS/400 system are copied to the personal computer. All other files are copied to the personal computer from the appropriate folder on the AS/400 system when PC Support/400 is started on the personal computer. This option requires fewer diskettes, but the copy process may take longer to complete if the personal computer is remotely attached. This is the recommended option for locally attached personal computers.
 - If you choose Yes, all the files used for PC Support/400 are copied to the diskettes.

When copying of the files to the diskettes completes, the diskettes can be used to install PC Support/400 on the personal computer.

Creating Standard Installation Diskettes

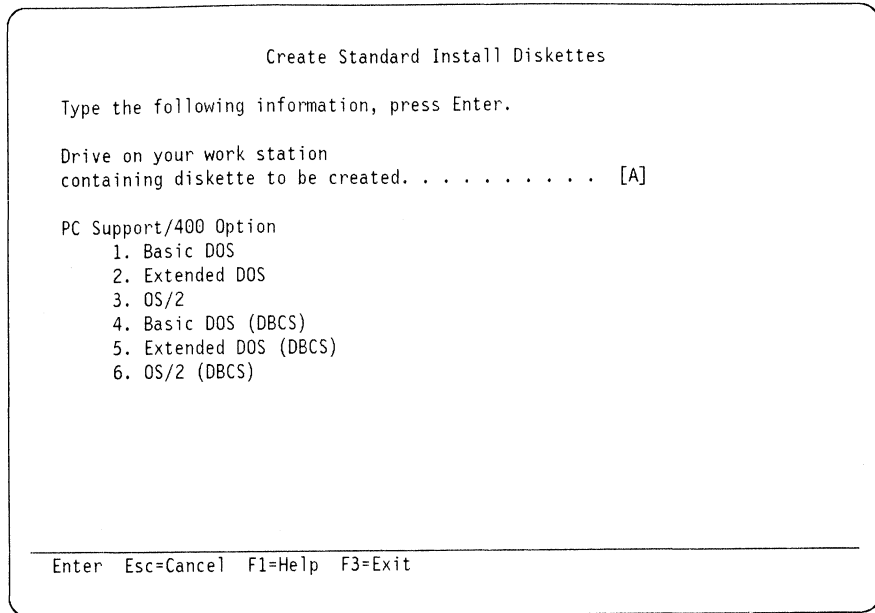
Any PC Support/400 user can create standard installation diskettes for any of the PC Support/400 options and languages that are installed on the host system. (It is not necessary to be a PC Support/400 administrator.) Standard installation diskettes created using this method are the same as the installation diskettes shipped with the PC Support/400 licensed program and can be used in the same way.

To create standard installation diskettes, do the following:

1. Insert a formatted, nonsystem diskette in the diskette drive. (Nonsystem diskettes are those formatted without using the /s option.)

Note: Make sure you have a supply of formatted, nonsystem diskettes available to use when the system prompts you to insert another diskette.

2. From the PC Support/400 Administration Menu, select the Create install diskettes option. The Create Install Diskettes window appears.
3. Select Standard for the type of diskettes to create. The following display appears:



4. Specify the following:

Drive on your work station containing diskette to be created

Enter the letter of the diskette drive on your personal computer where you want to create the diskettes.

PC Support/400 option

Select the PC Support/400 option to use on the diskettes you are creating. You can only select those options that were installed with PC Support/400 on the AS/400 system you are using. The option you are currently using is shown as the default. For more information about the PC Support/400 options, see "PC Support/400 Options, Libraries, and Folders" on page 1-3.

5. Press the Enter key.

If more than one language is available on the system for the option you have selected, a list is displayed. Select the language to be used on the diskette, then press the Enter key again.

The necessary files are copied to the diskettes from the appropriate folder on the AS/400 system. The new diskettes can now be used to install PC Support/400 on a personal computer.

Controlling Updates

When you install a new release of PC Support/400 or apply program temporary fixes to the PC Support/400 files on the AS/400 system, the PC Support/400 update function automatically copies the new files to the personal computers attached to the system. Copying the new files to the personal computer can take a significant amount of time if you are using a remote connection (such as SDLC, asynchronous, or 5394 remote).

You can use the administration function to limit updates, then use custom installation diskettes to distribute the new PC Support/400 files to each personal computer. To use this method, do the following:

1. From the PC Support/400 Administration menu, select *Work with user configurations*. (You can do this while either adding a new user configuration or changing an existing configuration.)
2. Specify that the user configuration is to be administered. Supply any other information desired, then press the Enter key.

If you are adding a new user configuration, you are asked if you want to do additional configuration. Select *Yes*, then select *PC Support Configuration*. The *PC Support Configuration* menu is displayed. If you are changing an existing user configuration, this menu is automatically displayed.
3. Select *General options*. The *General Options for PC Support* menu is displayed.
4. Select *Update personal computer applications*. The *Update Personal Computer Applications* menu is displayed.
5. Delete the PC Support/400 line from the list of applications by doing the following:
 - a. Select *PC Support/400*, then press the Enter key.
 - b. Select *Delete update control information*. A message is displayed informing you that you are about to change PC Support/400 information.
 - c. Press the Enter key to confirm the request.
6. Exit the administration function and save the new configuration.
7. After the new files are installed on the AS/400 system, create a custom installation diskette for the user. See "Creating Custom Installation Diskettes" on page 3-16 for instructions.
8. Use the custom installation diskette to install the new files on the personal computer.

Considerations for Controlling Updates

- When deciding whether or not to use this method, you need to compare the time it takes to create, distribute, and use the new installation diskettes with the time it would take to allow the updates to occur as part of the PC Support/400 startup process.
- Using this method only prevents updates to the files for the PC Support/400 functions. Some minimal updates will still occur for maintaining the configuration files on the personal computer.
- Using this method limits some of the functions of the administrator. For example, if the administrator selects additional entries from the *Location of PC Support Functions* menu, those changes do not take effect until the next time the custom installation diskettes are distributed.

Restrictions for Administration

The following are restrictions you may encounter when administering PC Support/400 for other users:

- If you use the configuration program, you can only work with configuration files that are for the DOS version of PC Support/400. You must also be using the same character set as the users you are administering for. The only options you will be allowed to select are those that apply to DOS.

Administration Function

- To administer PC Support/400 for those users who are under a different operating system on the personal computer, you can use the configuration editor. To select the configuration editor, press F9 (PC Support/400 configuration editor) from the PC Support/400 Configuration menu.
- If you need to perform administration functions on multiple host systems that are at different release levels, you should run the PC Support Administration program from the appropriate folder on the host system on which you want to perform administration functions.
- If you want to change a user's work station function configuration, you must be using the same language and code page as the user. This is necessary because the work station function configuration program (CFGWSF) modifies language and code-page dependent information for the user, using the language and code page currently assigned to the MRI29xx directory. This value is specified by the EHNL environment value.
- You cannot make changes to the user's CONFIG.SYS, AUTOEXEC.BAT, or WIN.INI files because you do not have access to these files. For example, you cannot change the type of DOS support for a user since this requires changes to the user's CONFIG.SYS file.
- You cannot change the user's work station function colors.
- Even though the AS/400 system supports user IDs up to 10 characters in length, the length of the user ID of any users authorized to files within the PC Support/400 configuration structure is recommended to be 8 characters in length. This is because the Document Interchange Architecture (DIA) used by the shared folders function restricts folder names to 8 characters.

Part 3. Installing PC Support/400

Chapter 4. Installing and Using PC Support/400 with Microsoft Windows . . .	4-1
Chapter 5. Installing PC Support/400 for Twinaxial Data Link Control (TDLC) Connections	5-1
Chapter 6. Installing PC Support/400 for Token-Ring Connections	6-1
Chapter 7. Installing PC Support/400 for Ethernet Connections	7-1
Chapter 8. Installing PC Support/400 for Synchronous Data Link Control (SDLC) Connections	8-1
Chapter 9. Installing PC Support/400 for Asynchronous Connections	9-1
Chapter 10. Installing PC Support/400 for 5394 Remote Communications	10-1
Chapter 11. Installing PC Support/400 for 5494 Remote Communications	11-1

Chapter 4. Installing and Using PC Support/400 with Microsoft Windows

Considerations for Using PC Support/400 with Microsoft Windows	4-2
Installing PC Support/400 to Run with Microsoft Windows	4-2
Using the PCSWIN Program	4-4
PC Support/400 Setup Program for Windows (PCSETUPW)	4-4
Starting the PC Support/400 Setup Program for Windows	4-5
Creating the PC Support/400 Group	4-5
Working with the Network Driver	4-5
Using the Setup Window	4-5
Using the Setup Dialog	4-6
Working with the Printer Driver	4-6
Using the Setup Window	4-6
Using the Setup Dialog	4-6
Using PC Support/400 Functions with Microsoft Windows	4-6
General Considerations	4-6
Router Function	4-7
Shared Folders Function	4-7
Work Station Function	4-7
Transfer Function	4-8
Virtual Printer Function	4-8
Message Function	4-8
Data Queues Function	4-9
Files Supplied for Using PC Support/400 with Microsoft Windows	4-9
Installing and Using RUMBA/400	4-10
Installing RUMBA/400 on the Personal Computer	4-10
Using RUMBA/400 Session Profiles with Icons	4-12
Creating a RUMBA/400 Icon	4-12
Assigning a RUMBA/400 Session Profile to an Icon	4-12
Controlling RUMBA/400 Updates	4-13

Installing with Windows

This chapter contains instructions and considerations for installing PC Support/400 when you intend to use PC Support/400 with the Microsoft Windows 3.0 program.

Using PC Support/400 with the Microsoft Windows program gives you:

- A graphical user interface with icons
- The ability to run multiple DOS applications (including PC Support/400 functions) concurrently

Considerations for Using PC Support/400 with Microsoft Windows

You should consider the following when you use PC Support/400 with the Microsoft Windows program:

- You need at least 1MB of space available on your hard disk to use PC Support/400 with Microsoft Windows.
- You should be using the extended DOS option of PC Support/400 to make use of all of the available functions and memory.
- PC Support/400 must be started before starting the Microsoft Windows program.
- You must be using either standard mode or 386** enhanced mode. Running PC Support/400 in Windows real mode is not supported.
- Running the PC Support/400 SDLC Extended DOS router is not supported when running Microsoft Windows in 386 enhanced mode. You must use Microsoft Windows standard mode.
- Running the PC Support/400 asynchronous router is not supported when running Microsoft Windows in 386 enhanced mode. You must use Microsoft Windows standard mode.
- You can choose any of the following for providing work station emulation:
 - Use PC Support/400 work station function in a DOS session within Microsoft Windows.
 - Use RUMBA/400 if it is installed on the AS/400 system and on the personal computer. For more information on RUMBA/400, see "Installing and Using RUMBA/400" on page 4-10.
- PC Support/400 runs as a non-Windows application. Non-Windows applications are displayed in a full screen rather than in a window, if you are using the standard mode of Microsoft Windows.
- There is a set of dynamic link libraries (DLLs) available for use in Microsoft Windows applications. See the *PC Support/400: Application Program Interface Reference*, SC41-8254, for more information.

Installing PC Support/400 to Run with Microsoft Windows

If you already have PC Support/400 and the Microsoft Windows programs installed separately on the personal computer, you should use the PC Support/400 configuration program to set up your PC Support/400 configuration to run with Microsoft Windows. Refer to Chapter 13, "Managing PC Support/400 with Microsoft Windows" for instructions.

To install PC Support/400 on a personal computer that already has the Microsoft Windows program installed, do the following:

1. Start the Microsoft Windows program.
2. Select the File menu on either the Program Manager or the File Manager, then choose Run.
3. Insert the PC Support/400 installation diskette in drive A. Use the standard installation diskettes provided for the extended DOS option or customized installation diskettes that have been created for the extended DOS option.
4. Run the PC Support/400 installation program (INSTALL). In the Run dialog box, enter the command:
A:INSTALL
5. Use the instructions in the appropriate chapter in Part 3, "Installing PC Support/400" to complete the installation for the connection type you are using.

Note: The PC Support/400 Installation Startup Options screen is different for Microsoft Windows. It looks like the following:

**PC Support/400 Installation
(Startup Options)**

Select options with the spacebar. Press Enter when finished.

Start PC Support automatically . . ▶ 1. Yes
2. No

Reduce messages displayed
when starting PC Support ▶ 1. Yes
2. No

PC Support functions to be
started automatically. Virtual Printer
Message Function
Data Queues

Options to use with
Work Station Function. Organizer
Session Manager

Enter ESC=Cancel F1=Help F3=Exit Spacebar

The initial menu prompt is not shown because you will be in the Windows environment.

The list of available functions to start automatically are the functions that should start before Microsoft Windows. All other functions are started within Windows.

The last prompt determines how work station function will run (alone, with the organizer, with the session manager, or with both the organizer and the session manager.)

The PC Support/400 installation program detects that it is being run in a Microsoft Windows environment and does the following:

- Sets up the necessary PC Support/400 files on the personal computer.

Installing with Windows

- Creates the batch files for the PC Support/400 group and stores them in the PCS subdirectory.
- Adds an entry to the Windows initialization file (WIN.INI) to start the PC Support/400 setup program for Windows (PCSETUPW) automatically the next time you start the Microsoft Windows program.
- Completes the installation on the personal computer without attempting to verify the connection.

Using the PCSWIN Program

The PCSWIN program is a PC Support/400 program that protects the PC Support/400 router from the multitasking activities of the Microsoft Windows program.

The PCSWIN program must be installed and active on your personal computer before you can run PC Support/400 with the Microsoft Windows program. The PCSWIN command is automatically added to the STARTPCS.BAT file when you use the PC Support/400 installation program or the PC Support/400 configuration program to set up PC Support/400 to run with Microsoft Windows.

The format of the PCSWIN command is:

```
PCSWIN [/B=nn] [/Z]
```

The *nn* value on the /B parameter specifies the number of kilobytes to allocate in conventional memory for communications buffers. For instructions on determining the buffer size, see "Configuring PC Support/400 to Run with Microsoft Windows" on page 13-2. The /Z parameter prevents the IBM logo from being displayed when the PCSWIN command is run.

The PCSWIN program is automatically removed from memory when you use the Remove PC Support/400 Function (RMVPCS) command to remove the router from memory.

PC Support/400 Setup Program for Windows (PCSETUPW)

The PC Support/400 setup program for Windows (PCSETUPW) is a Microsoft Windows application that sets up the necessary files on the personal computer to allow PC Support/400 functions to run with Microsoft Windows.

If you start the setup program using the Setup icon, or if you use the PCSETUPW command with the /I parameter, the PC Support/400 Setup window is displayed. The Setup window contains options that allow you to do the following:

- Create the PC Support/400 group and add it to the Program Manager group.
- Install or remove the IBM AS/400 network driver.
- Install or remove the IBM AFPDS printer driver.
- Install RUMBA/400 on the personal computer (if available on the AS/400 system) for display and printer emulation.

If the setup program is started automatically, or if you use the PCSETUPW command without the /I parameter, the PC Support/400 Setup dialog box is displayed. The dialog box allows you to install the same options as the PC Support/400 Setup window. The dialog box does not allow you to remove any options.

Starting the PC Support/400 Setup Program for Windows

The setup program can be run in the following ways:

- Automatically

The setup program runs automatically after either of the following:

- Using the PC Support/400 installation program to install PC Support/400 to run with the Microsoft Windows program.
- Using the PC Support/400 configuration program to configure PC Support/400 to run with the Microsoft Windows program.

These PC Support/400 programs add an entry in the Windows initialization file (WIN.INI) so that the setup program runs automatically the next time you start the Microsoft Windows program.

- Using the Setup Icon

Select the Setup icon in the PC Support/400 group. This runs the setup program interactively (in a window).

- Using the PCSETUPW command

Select the File menu on either the Program Manager or the File Manager, then choose *Run*. Specify the following command:

```
d:<path>PCSETUPW [/I]
```

where d:< path > is the name of the drive and path where the PC Support/400 programs are stored (for example, C:\PCS). The optional /I parameter runs the program interactively in the PC Support/400 Setup window. If you omit the /I parameter, the PC Support/400 Setup dialog box is displayed.

Creating the PC Support/400 Group

You can use the PC Support/400 setup program for Windows (PCSETUPW) to create the PC Support/400 group. To create the group, select the Group option either on the Setup window or on the Setup dialog box.

Working with the Network Driver

You can work with the IBM AS/400 network driver using either the Setup window or the Setup dialog box.

Using the Setup Window

The Setup window allows you to install or remove the network driver. To use the Setup window, do the following:

1. Start the PC Support/400 setup program. Either use the Setup icon in the PC Support/400 group or use the PCSETUPW command with the /I parameter.
2. Select Network. The Network Driver dialog box is displayed. If a network driver is currently installed, the name of the driver is displayed.
3. Select the option for the action you want to perform. The options are:
 - Install IBM AS/400 network driver
 - Remove IBM AS/400 network driver

If the network driver is already installed, you can select only the remove option. If the driver is not installed, you can select only the install option.

Using the Setup Dialog

The Setup dialog box allows you to install the network driver, but does not allow you to remove the driver. The dialog box is displayed when the setup program is started automatically or when you use the PCSETUPW command without the /I parameter. From the dialog box, do the following:

1. Select Network. If the IBM AS/400 network driver is not installed, this option is automatically selected for you.
2. Choose OK.

Working with the Printer Driver

You can work with the IBM AFPDS printer driver using either the Setup window or the Setup dialog box.

Using the Setup Window

The Setup window allows you to install or remove the printer driver. To use the Setup window, do the following:

1. Start the PC Support/400 setup program. Either use the Setup icon in the PC Support/400 group or use the PCSETUPW command with the /I parameter.
2. Select Printer. The Printer Driver dialog box is displayed.
3. Select the option for the action you want to perform. The options are:
 - Install IBM AFPDS Printer Driver
 - Remove IBM AFPDS Printer Driver

If the printer driver is already installed, you can select only the remove option. If the driver is not installed, you can select only the install option.

Using the Setup Dialog

The Setup dialog box allows you to install the printer driver, but does not allow you to remove the driver. The dialog box is displayed when the setup program is started automatically or when you use the PCSETUPW command without the /I parameter. From the dialog box, do the following:

1. Select Printer. If the IBM AFPDS printer driver is not installed, this option is automatically selected for you.
2. Choose OK.

Using PC Support/400 Functions with Microsoft Windows

This section contains special considerations for using selected PC Support/400 functions with the Microsoft Windows program.

General Considerations

- Starting a PC Support/400 function after starting the Microsoft Windows program makes the function available only within the session in which it is started. In general, if you start a function after starting the Microsoft Windows program, the Microsoft Windows program manages the functions so that only a minimum of conventional memory is used.
- If you want to make a function available to all Microsoft Windows sessions, you should start the function before you start the Microsoft Windows program. Depending on how much of the function can run in extended

memory, the remaining portion of the function stays resident in conventional memory while the Microsoft Windows program is active.

- PC Support/400 functions, such as the router, shared folders function, and virtual printer function, started before the Microsoft Windows program cannot be removed from memory using the Remove PC Support/400 Function (RMVPCS) command while the Microsoft Windows program is active.
- PC Support/400 resident functions, such as the work station function, message function, and the transfer function API, started in a Microsoft Windows DOS session must be removed from memory before ending the session. To remove the function, use the RMVPCS command in the session from which the function was started. If you start the function using an icon provided by PC Support/400, the function is automatically removed when it completes.

Router Function

- The router function must be started before the Windows program is started.
- The PC Support/400 SDLC Extended DOS router and the PC Support/400 asynchronous router are supported only in Microsoft Windows standard mode.

Shared Folders Function

- The shared folders function (STARTFLR) must be started before the Microsoft Windows program is started.
- The shared folders function is accessible from Microsoft Windows applications as well as from non-windows applications running in a DOS session.
- The shared folders function programs FSPC and CFGFLR must not be run from multiple DOS sessions at the same time. That is, you cannot assign or remove drives from more than one session at a time.
- The DOS utilities APPEND, JOIN, and SUBST should not be used while the Microsoft Windows program is active. These may cause unpredictable results when running the shared folders function in multiple DOS sessions.

Work Station Function

- Work station function should be started after the Microsoft Windows program is started.
- If you are using Version 2 Release 2 or later versions of the extended DOS option of PC Support/400, only one copy of work station function will be allowed to run when it is started through Microsoft Windows.
- Work station function can be started in a DOS session running under Microsoft Windows. Both display and printer sessions can be started in this DOS session.
- The PC Support/400 Organizer menu is available when using the work station function.
- The PC Support/400 session manager should not be used if the work station function is started within a window in 386 enhanced mode. You can use the session manager if you are using the work station function in a full-screen session.
- The Microsoft Windows program normally uses Alt+Esc as one of the hot-key sequences for switching between Microsoft Windows applications. The work station function also uses Alt+Esc for switching between sessions.

To avoid conflicts, the PC Support/400 setup program for Windows (PCSETUPW) disables the Alt+Esc sequence in the Microsoft Windows sessions in which the work station function is running. If you want to change the definitions for the hot-key sequences you use, you can:

- Use the work station function configuration program (CFGWSF) to configure your work station function keyboard profile to use a hot-key sequence other than the ones used by Microsoft Windows.
- Change the program information file for the work station function (PCSWWSF.PIF).
- Work station function graphics are not supported.
- 27 X 132 column sessions are not supported.
- The work station function master profile should not be configured to use the graphics buffer as a save area when running in the Windows 386 enhanced mode. Specifying this option limits your session to run only in a full-screen session.
- Work station function is supported only in full screen mode.

Transfer Function

- The transfer function can be run in its own DOS session.
- The transfer function application programming interface (API), STF.EXE, can be run in a DOS session where it can be accessed by other programs.
- If the transfer function API (STF.EXE) is started before the Microsoft Windows program, only one transfer request can be run at one time while the Microsoft Windows program is active. Use the transfer function dynamic link library (DLL) for Windows applications.

Virtual Printer Function

- The basic DOS version of the virtual printer function can be run in its own DOS session. Any virtual printer assigned can be accessed only from within this session. If you want to make the virtual printer function available to all Windows sessions, start the virtual printer function before starting the Windows program. You can do either of the following:
 - Specify to have the virtual printer function started automatically when PC Support/400 is started.
 - Run the VPRT command and assign any virtual printers using the SETVPRT or CFGVPRT commands before starting the Microsoft Windows program.
- The extended DOS version of the virtual printer function must be started before the Microsoft Windows program. The virtual printer function will then be available to all Windows sessions.

Message Function

- The message function can be run in its own DOS session. The message function is then available only within this session.
- If you want to make the message function available to all Microsoft Windows sessions, start the message function before starting the Microsoft Windows program. You can do either of the following:
 - Specify to have the message function started automatically when PC Support/400 is started.

- Run the STARTMSG command before starting the Microsoft Windows program.
- If the message function is configured to run in immediate mode, it is automatically changed to run in notify mode while the Microsoft Windows program is active.

Data Queues Function

- The data queues function must be started before the Microsoft Windows program is started if you are using print manager.
- The data queues function can be run in its own DOS session. The data queues function is then available only within this session.
- If you want to make the data queues function available to all Microsoft Windows sessions, start the function before starting the Microsoft Windows program. You can do either of the following:
 - Specify to have the data queues function started automatically when PC Support/400 is started.
 - Run the LOADDQ command before starting the Microsoft Windows program.

Files Supplied for Using PC Support/400 with Microsoft Windows

PC Support/400 supplies the program information (PIF) files (with extension .PIF) and the batch files (with extension .BAT) for use with the icons in the PC Support/400 group. These files are stored in the PCS subdirectory after PC Support/400 is installed on the personal computer. Some of the PC Support/400 functions that can be started from an icon have a PIF file and a batch file associated with them. The file name of the PIF file and the file name of the batch file are the same for a given PC Support/400 function.

File Name	Associated Function
PCSWWSF	Work Station Function (optionally with the organizer and session manager)
PCSWVP	Work with Virtual Printers
PCSWFLR	Work with Folders
PCSWMSG	Work with Messages
PCSWRCV	Store Messages in PC File
PCSWTRFT	Transfer Data to the Personal Computer
PCSWTRFF	Transfer Data from the Personal Computer
PCSWCMD	Submit Host System Command
PCSWCFGP	Configure PC Support/400
PCSWCFGW	Configure Work Station Function
PCSWADM	Administer PC Support/400
PCSWLOG	View Error Log

Installing and Using RUMBA/400

RUMBA/400 is a separately ordered feature of PC Support/400 that provides display and printer emulation for users who run PC Support/400 functions with the Microsoft Windows program. The RUMBA/400 programs provide emulation functions similar to those provided by the PC Support/400 work station function.

To install and use RUMBA/400 with PC Support/400 and the Microsoft Windows program, the following conditions must be met:

- The RUMBA/400 option must be installed on the AS/400 system. To verify that it has been installed, see "Verifying the Installation of the PC Support/400 Licensed Program" on page 2-2.
- Microsoft Windows 3.0 must be installed on the personal computer.
- You must be using the extended DOS option of PC Support/400 on the personal computer.
- The personal computer hard disk must have at least 2MB of free disk space for storing the RUMBA/400 files.

Installing RUMBA/400 on the Personal Computer

To install RUMBA/400 on the personal computer, do the following:

1. Start PC Support/400.
2. Start the Microsoft Windows program.
3. Start the RUMBA/400 installation program in one of the following ways:
 - Start the PC Support/400 setup program (PCSETUPW) if it has not already been started automatically. For information on starting this program, see "Starting the PC Support/400 Setup Program for Windows" on page 4-5. Do one of the following:
 - Select the RUMBA/400 Install icon from the PC Support/400 Setup window.
 - Select the RUMBA/400 Install option from the Settings menu on the PC Support/400 Setup window.
 - Select the RUMBA/400 Install option from the PC Support/400 Setup dialog box.
 - Select the File option from either the Program Manager or the File Manager, then choose Run. Run the following command:
`d:\QRUMBA\INSTALL`
where d is the shared folders function drive (usually the I drive) containing the QRUMBA folder. This drive was assigned when PC Support/400 was installed on the AS/400 system.

The RUMBA/400 installation program displays a dialog box containing several buttons and an entry field for the destination for installing RUMBA/400.

Notes:

- a. To display information on installing and running RUMBA/400, you can select the button labeled `View Readme`.
 - b. To print this information, select the `File` menu while viewing the `Readme` file, then choose `Print`.
4. Select the option for which you are installing:
- | | |
|------------------|---|
| Single user | Use this option if you are installing RUMBA/400 on the personal computer. This option copies the necessary files to the specified directory on the personal computer and creates a RUMBA/400 program group with icons. |
| LAN work station | Use this option if you intend to run RUMBA/400 from the folder on the system. This option copies the <code>README.WRI</code> file to the personal computer. The rest of the installation process is completed manually. |
| LAN server | Use this option if you are installing RUMBA/400 on a LAN server. This option copies the necessary files to the LAN server. The RUMBA/400 program group is not created. |
5. Enter the name of the drive on your personal computer where you want RUMBA/400 installed. The default `C:\RUMBAPCS` is displayed. You can use the default or change it to meet your needs.
 6. Select the button labeled `Install`. This starts the installation process and copies the necessary files from the folder on the system to the specified directory on your personal computer.

A dialog box is displayed allowing you to specify whether you want your RUMBA/400 drive added to the `PATH` statement in your `AUTOEXEC.BAT` file.
 7. Specify `Yes` or `No` depending on your needs.

A dialog box is displayed informing you that the installation is complete and a prompt is displayed allowing you to specify whether you want to run RUMBA/400.
 8. Select `Yes`.

A dialog box is displayed containing several options.
 9. Select the `Fastpath` option, then choose `OK`.

Notes:

- a. The `Fastpath` program provides a quick method for configuring RUMBA/400 and connecting to the `AS/400` system.
 - b. While the `Fastpath` program is running, the mouse appears to move by itself. There is no action you need to take during this time.

A dialog box is displayed.
10. Select the `Configure and Connect` option, then choose `OK`.

The `Communications Interface` dialog box is displayed.
 11. Select the `PC Support/400` option, then choose `OK`. (Do not choose the `Configure` option. This will make installing other `PC Support/400` functions more difficult.)

A host sign-on display is shown along with a dialog box asking if you want to connect automatically.

12. Select Yes if you want to automatically connect to the AS/400 system each time you start a work station session using the profile you are now creating.
13. Save your session profile so you can later assign it to specific sessions. Depending on what you specified for the Autoconnect option, you are prompted to save the session profile either now or when you exit the INSTALL program.
14. Exit the INSTALL program. Select the File menu, then choose Exit.

The installation process creates a Windows group for RUMBA/400 applications. You can assign a session profile to use with the work station and printer icons in the group.

Using RUMBA/400 Session Profiles with Icons

You can select each work station or printer icon in the RUMBA/400 group and assign a session profile to use with the icon. The session profile defines how the session operates when you start the session using the icon. If you use multiple work station or printer sessions, you need to create a separate icon for each session.

Creating a RUMBA/400 Icon

1. Select an icon to copy from the RUMBA/400 group window.
2. Select the File menu, then choose Copy. The Copy Program Item window is displayed.
3. Page forward to select RUMBA/400 Applications as the group where you want the new icon located, then choose OK. The new icon is displayed in the RUMBA/400 Applications group.
4. Specify a profile and command to use with the icon. Use the directions from "Assigning a RUMBA/400 Session Profile to an Icon."

Assigning a RUMBA/400 Session Profile to an Icon

1. Select the icon from the RUMBA/400 group window.
2. Select the File menu, then choose Properties. The Program Item Properties window is displayed.
3. Enter a description for the session. This description will be displayed below the icon in the group, so it should be meaningful and fairly short. For example, the description for your first connection to a local AS/400 system could be LOCAL 1. A second connection to the same system could be LOCAL 2.
4. Specify the name of the profile to use with the session. This profile must be one that was previously created and saved. The command line contains the name of the command run by the icon. Add the name of the profile as a parameter at the end of the command. For example, if the session profile you want to use is called LOCAL2.WSF, the command line would be:

```
C:\RUMBAPCS\RUMBAWSF.EXE LOCAL2.WSF
```

5. Choose OK.

Controlling RUMBA/400 Updates

If you select the option to install RUMBA/400 for a single user, the RUMBA/400 installation program copies all of the RUMBA/400 files from the folder on the AS/400 system to the personal computer. In addition, a UPDT entry is added to the PC Support/400 configuration file on the personal computer to ensure that updates made to the RUMBA/400 files on the system are copied to the personal computer.

If the user is an administered user, the RUMBA/400 installation program cannot add the UPDT entry to the configuration file on the AS/400 system. To prevent the UPDT entry from being lost the next time the user configuration file is updated, the administrator must add the entry to the configuration file on the system. You can also add a UPDT entry to model configurations used for creating RUMBA/400 users.

You can add the entry in one of the following ways:

- Use the administration function to change the user configuration. From the PC Support/400 Configuration menu, select General options, then select Update personal computer applications. For more information, see “Using the Update Function to Update Other Files” on page 21-3.
- Use the PC Support/400 configuration editor to add the following line to the configuration file:

```
UPDT I:\QRUMBA,C:\RUMBAPCS,S,,,RUMBA/400
```

For more information, see Chapter 23, “Configuring PC Support Using the Editor.”

Installing with Windows

Chapter 5. Installing PC Support/400 for Twinaxial Data Link Control (TDLC) Connections

DOS: Installation Work Sheet for TDLC	5-2
Before You Begin	5-2
Configuring Twinaxial Connections on the AS/400 System	5-4
Preparing to Install PC Support/400 on the Personal Computer	5-5
Completing the Installation Work Sheet	5-6
Installing PC Support/400 on Each Personal Computer	5-6
Using Custom Installation Diskettes	5-6
Using Standard Installation Diskettes	5-6
Starting PC Support/400	5-11

DOS: Installation Work Sheet for TDLC

Before you install PC Support/400 on the personal computer, you must configure the AS/400 system for communications. While you configure the AS/400 system, fill out one copy of this work sheet for each personal computer as instructed. You will need this information when you install PC Support/400 on the personal computer.

Note: Reference numbers are listed on the work sheet to assist you in finding the correct parameter.

<i>TDLC (Twinaxial Connection)</i>		
<i>PC Support/400: Installation Work Sheet</i>		
Refer- ence Number	Configuration Parameter	Fill In Your Information
1	PC location name	
2	Name of system to connect to	
3	Work station address	

Before You Begin

When a personal computer is attached to the AS/400 system using twinaxial data link control (TDLC), the physical connection determines which port on the AS/400 twinaxial card is used by the connection. However, each port is divided into seven addresses, and you must determine which address you will assign to each personal computer. Each personal computer must be assigned a unique address for the port. **You cannot assign a personal computer using PC Support/400 to address 0 of port 0, as this is reserved for the system console.**

The following steps show you how to determine which addresses are available on a particular port of a particular card:

1. Determine which controller is associated with the particular twinaxial work station controller card on the AS/400 system. Using the Work with Controller Description (WRKCTLD) command, you can view a list of all the controllers on your system. Controllers of the following types are associated with a twinaxial card:

2638
6040
6140

```

Work with Controller Descriptions
System: RCH38330
Position to . . . . . Starting characters
Type options, press Enter.
  2=Change  3=Copy  4=Delete  5=Display  6=Print  7=Rename
  8=Work with status  9=Retrieve source  12=Print device addresses

Opt  Controller  Type  Text
---  ---        ---  ---
---  CTL01       6040  CREATED BY AUTO-CONFIGURATION
---  CTL02       6040  CREATED BY AUTO-CONFIGURATION
---  CTL04       6140  CREATED BY AUTO-CONFIGURATION
---  CTL05       6140  CREATED BY AUTO-CONFIGURATION
---  CTL5394     5394  5394 controller
---  C2HCTL     *APPC  CREATED BY AUTO-CONFIGURATION
---  C323CTL    *APPC  CREATED BY AUTO-CONFIGURATION
---  D#WCTL     *APPC  Joe Smith
---  DAPCTL     *APPC  Tom Allen

Parameters or command
====>
F3=Exit  F4=Prompt  F5=Refresh  F6=Create  F9=Retrieve  F12=Cancel
F14=Work with status
More...

```

2. Type the Print Device Address (PRTDEVADR) command on the AS/400 command line and press F4 (Prompt). The following display appears:

```

Print Device Addresses (PRTDEVADR)
Type choices, press Enter.
Controller description . . . . . Name

Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys

```

3. In the *Controller description* field, type the name of the controller associated with the twinaxial card. Then, press the Enter key.

The Print Device Address (PRTDEVADR) command creates a spooled file that you should print. This will produce a table showing you the available addresses for each port of the twinaxial card.

Configuring Twinaxial Connections on the AS/400 System

To configure a PC connection:

1. Display the Configure PC Connections menu. Either type the command GO CFGPCS at the AS/400 command prompt, or use the menus starting from the AS/400 Main Menu.
2. Select option 1, Twinaxial (local). The following display appears:

Add PC to Twinaxial (Local) Connection

Type choices, press Enter.

Use automatic configuration Y Y=Yes, N=No

F3=Exit F4=Prompt F12=Cancel

3. In the *Use automatic configuration* field, you should accept the default. This default depends on how the QAUTOCFG system value is set for your system. If you used a Y for yes, press the Enter key to complete the host system installation. Then, go to "Completing the Installation Work Sheet" on page 5-6. If you used an N for no, you need to supply some additional information; continue with step 4.
4. If you are not using automatic configuration, you need to supply the following information:

Device description

This is the name of the device associated with the personal computer. The name you enter here will be the name by which the personal computer is known on the network. To make this easier to remember, you can type the user's user ID. Write this name in the *PC location name* (**1**) field of the work sheet on page 5-2.

PC model

This indicates whether or not the personal computer uses MicroChannel* architecture (such as the PS/2 models 50 and above). If the personal computer uses Micro Channel architecture, type a 2. Otherwise, type a 1.

Port number

This is the AS/400 port number that the twinaxial line is connected to. This can only be determined by looking at where the line is physically connected to the AS/400 system.

Address of PC

This is an available address on the twinaxial port. For information about what addresses are available, see "Before You Begin" on page 5-2. Write this number in the *Work station address* (**3**) field of the work sheet.

Attached controller

This is the name of the controller associated with the twinaxial card. The first available controller name is shown as the default. Press F4 (Prompt) for a list of the other controller names.

Text

This is an optional description of the device.

5. When you are finished typing this information, press the Enter key. A message appears at the bottom of the display:

Add PC to Twinaxial (Local) Connection

Type choices, press Enter.

Use automatic configuration	N	Y=Yes, N=No
Device description	JOE	Name
PC model	2	1, 2
Port number	3	0-7
PC address	2	0-6
Attached controller	CTL01	Name, F4 for list
Text	joe taylor 117	

F3=Exit F4=Prompt F12=Cancel
PC added. Add another or press F3 to exit.

The AS/400 configuration for this personal computer is finished.

Preparing to Install PC Support/400 on the Personal Computer

To prepare for installing PC Support/400 on the personal computer:

1. Complete the necessary tasks on the AS/400 system as described in the following sections:
 - "Verifying the Installation of the PC Support/400 Licensed Program" on page 2-2
 - "Enrolling PC Support/400 Users" on page 2-3
 - Chapter 3, "Using the PC Support/400 Administration Function" (if required)
2. Complete the work sheet on page 5-2.

Completing the Installation Work Sheet

Record the following information on the work sheet on page 5-2, then use the information to install PC Support/400 on the personal computer.

PC location name (1)

If you used automatic configuration in step 3 on page 5-4, the PC location name is the AS/400 user ID of the user. If you did not use automatic configuration, you should have already filled in this field with the name of the device description in step 4 on page 5-4.

Name of system to connect to (2)

This is the name by which the AS/400 system is known on the network. You can determine the system name by using the Display Network Attributes (DSPNETA) command. Use the value in the *Default local location name* field.

Work station address (3)

See "Before You Begin" on page 5-2 to determine a unique work station address. If you did not use automatic configuration, you should have already filled in this field with the name of the PC address in step 4 on page 5-4.

Installing PC Support/400 on Each Personal Computer

Before you install PC Support/400 on the personal computer, be sure you have completed the tasks as described in "Preparing to Install PC Support/400 on the Personal Computer" on page 5-5.

Note: If you are installing onto diskettes instead of onto a hard disk, see Appendix D, "Installing PC Support/400 on Diskettes" for additional information.

Using Custom Installation Diskettes

To install PC Support/400 using custom installation diskettes, do the following:

1. Insert the installation diskette in the A: drive.
2. At the DOS prompt, type A:INSTALL and press the Enter key. The installation program automatically sets up the necessary files on the personal computer and copies the PC Support/400 programs and files to the PCS subdirectory.
3. When the installation program has completed, start the personal computer again.

Using Standard Installation Diskettes

To install PC Support/400 using standard installation diskettes, do the following:

1. Use the DOS DISKCOPY command to create a backup copy of the DOS PC Support/400 installation diskette (volume 1) and label this diskette PCS01. You may have additional DOS PC Support/400 installation diskettes labeled volume 2, volume 3, and so on. Copy these diskettes, and label the backup copies PCS02, PCS03, and so on. Use the backup copies to install PC Support/400, and store the original diskettes in a safe place. You do not need to do this for each personal computer; you can install PC Support/400 on many personal computers using the same backup copies of the installation diskettes.
2. Insert the installation diskette PCS01 in the A: drive.
3. At the DOS prompt, type A:INSTALL and press the Enter key.

4. When the display with the IBM logo is shown, press the Enter key to continue. The following display appears:

PC Support/400 Installation

For information about using this program, refer to the PC Support/400: DOS Installation and Administration Guide.

Select choices, press Enter.

Drive to contain PC Support directory [C]

Drive your personal computer starts from [C]

Enter Esc=Cancel F1=Help F3=Exit

5. Enter the following information:

Drive to contain PC Support directory

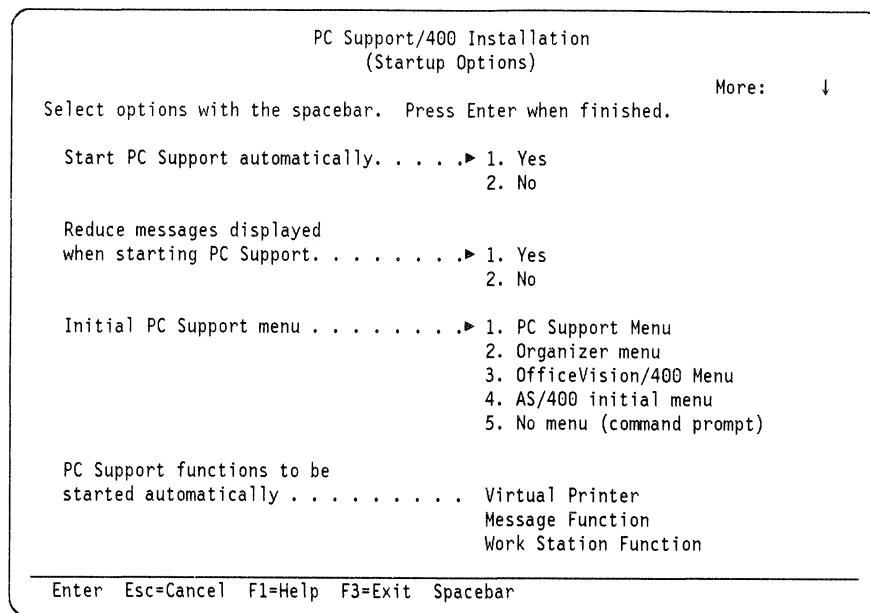
This is the drive letter that you want PC Support/400 to be stored on. If you are installing to the hard disk, this is probably the C: drive. If you are installing to diskette, this is probably the B: drive.

If you are installing to diskette, you will be prompted to insert the diskette on which you want to install PC Support/400. This is to verify that your working diskette is ready for installation.

Drive your personal computer starts from

This is the letter of the drive that contains the CONFIG.SYS file when you start your personal computer. If you are installing to a hard disk, this is usually the C: drive. If you start the system with a diskette in the drive, this is the A: drive.

When you are finished typing this information, press the Enter key. A display similar to the following appears:



6. Enter the following information:

Start PC Support automatically

If you select Yes, the PC Support/400 installation program adds the STARTPCS command at the end of your AUTOEXEC.BAT file. This causes PC Support/400 to start automatically when you start your personal computer.

If you are installing on more than one diskette, this field does not appear.

Reduce messages displayed when starting PC Support

If you select Yes, you see fewer messages when you start PC Support/400. You still receive messages when each function begins, and you also see any error messages. Other informational messages are not shown on the display.

Initial PC Support menu

This option is not displayed if you are installing PC Support/400 to run with the Microsoft Windows program.

This option allows you to specify which menu you want to initially appear when you start PC Support:

PC Support Menu

The main menu for PC Support/400 will be displayed when you start PC Support/400. This menu gives you access to selected PC Support/400 functions on the personal computer.

Organizer menu

The PC Support/400 Organizer menu will be displayed when you start PC Support/400. This menu combines AS/400 and PC commands.

OfficeVision/400* Menu

The main menu for the OfficeVision/400 program will be displayed when you start PC Support/400.

AS/400 initial menu

The display you normally see first will be displayed when you sign on the AS/400 system.

No menu

No menu will be displayed when you start PC Support/400. You will return to the DOS command prompt.

PC Support functions to be started automatically

This option allows you to select which functions you want to start automatically when you start PC Support. The functions you can select are:

- Virtual printer
- Message function
- Work station function (except when using Windows)
- Session manager (except when using Windows)
- Data queues function (extended DOS option only)

The necessary commands for the functions you select are added to the STARTPCS.BAT file. For a description of these functions, see "Functions Available with PC Support/400" on page 1-19.

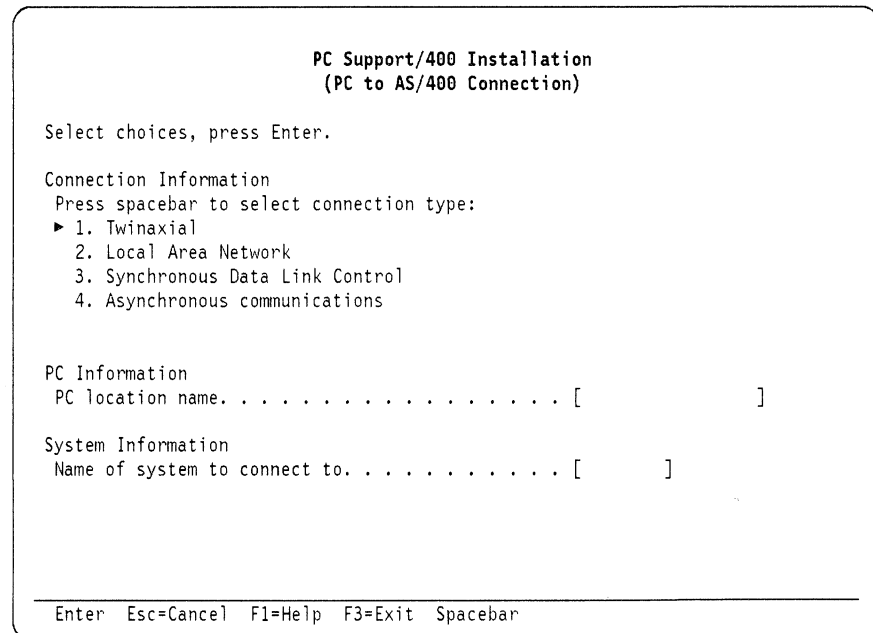
Options to use with work station function

This option is displayed only if you are installing PC Support/400 to run with the Windows program. If you do not use the work station function, you can ignore this option.

This option allows you to select which functions you want to use when you use the PC Support work station function for display or printer emulation. The functions you can select are:

- Organizer
- Session Manager

When you are finished typing this information, press the Enter key. The following display appears:



7. Select option 1, Twinaxial. The following display appears:

Twinaxial connection

```
PC Support/400 Installation
(PC to AS/400 Connection)

Select choices, press Enter.

Connection Information
Press spacebar to select connection type:
▶ 1. Twinaxial
  2. Local Area Network
  3. Synchronous Data Link Control
  4. Asynchronous communications

PC Information
PC location name. . . . . [      ]

System Information
Name of system to connect to. . . . . [      ]

Work station address . . . . . [ ] (0-6)

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar
```

8. Enter the following information from the work sheet on page 5-2:
 - PC location name (**1**)
 - Name of system to connect to (**2**)
 - Work station address (**3**)
9. When you finish typing this information, press the Enter key. A display appears informing you that the installation program is about to begin copying files. Press the Enter key to continue. After all the files are copied, the following window appears:

```
Verify PC to AS/400 Connection

Attempt to connect to AS/400 at this time
to verify values . . . . . ▶1. Yes
                                     2. No

-----
Enter  F1=Help
```

10. This display allows you to attempt to connect to the AS/400 system now, to ensure that the information you entered was correct. If you specify Yes, the installation program starts the PC Support/400 router. If the connection is not made, the PC Support/400 Error Log display appears. This display shows you the errors encountered while trying to connect to the AS/400 system. Use the Page Up and Page Down keys to move through the list. Press the Enter key to view cause and recovery information about the error messages displayed. Press the Esc key to return to the PC Support/400 Installation display, and correct the entries that caused the errors. If you need to see the error log again, press Alt+F5.

Note: This display will not appear if:

- You are installing PC Support/400 to run with the Windows program.
- You are installing to more than one working diskette.
- The router was loaded before you began installing PC Support/400.

11. When the program is complete, the PC Support/400 Installation Completed display is shown. Before you can start PC Support/400, you must start your personal computer again (press and hold the Ctrl and Alt keys, then press the Delete key).

Starting PC Support/400

If PC Support/400 does not start automatically when you start your personal computer, you can start it by entering

d:\PCS\STARTPCS

at the DOS prompt, where d: is the PC Support/400 directory drive.

If PC Support/400 does not work properly, see Part 5, "Analyzing Problems with PC Support/400." For information about configuring the PC Support/400 functions, see Part 4, "Configuring PC Support/400."

Twinaxial connection

Chapter 6. Installing PC Support/400 for Token-Ring Connections

DOS: Installation Work Sheet for Token-Ring	6-2
Configuring Token-Ring Connections on the AS/400 System	6-2
Preparing to Install PC Support/400 on the Personal Computer	6-5
Completing the Installation Work Sheet	6-5
Installing the Local Area Network Support Program on Each Personal Computer	6-6
Installing PC Support/400 on Each Personal Computer	6-7
Using Custom Installation Diskettes	6-7
Using Standard Installation Diskettes	6-7
Starting PC Support/400	6-12

DOS: Installation Work Sheet for Token-Ring

Before you install PC Support/400 on the personal computer, you must configure the AS/400 system for communications. While you configure the AS/400 system, fill out one copy of this work sheet for each personal computer as instructed. You will need this information when you install PC Support/400 on the personal computer.

Note: Reference numbers are listed on the work sheet to assist you in finding the correct parameter.

Token-Ring Network		
PC Support/400: Installation Work Sheet		
Refer- ence Number	Configuration Parameter	Fill In Your Information
1	Local LAN adapter address	<input type="checkbox"/> Use default address <input type="checkbox"/> Override default address with [_____]
2	PC location name	
3	Name of system to connect to	
4	System LAN address	

Configuring Token-Ring Connections on the AS/400 System

To configure a PC connection:

1. Display the Configure PC Connections menu. Either type the command GO CFGPCS at the AS/400 command prompt, or use the menus starting from the AS/400 Main Menu.
2. Select option 2 (Token-ring). The following display appears:


```

Create Token-ring (LAN) Connection

Type choices, press Enter.

Line description . . . . . TRNLINE          Name
Add a PC . . . . . Y                       Y=Yes, N=No

F3=Exit  F12=Cancel
    
```

This display shows you the name of the line description. Press the Enter key to accept the defaults.

- If this is the first user you are adding for this communications type, a display similar to the following appears:

```

Create Token-ring (LAN) Connection

Line description . . . . . : TRNLINE

Type choices, press Enter.

Resource name . . . . . LIN031          Name, F4 for list
Local adapter address . . . 402010039031  400000000000-7FFFFFFFFF
Text . . . . . Line for token-ring users

F3=Exit  F4=Prompt  F12=Cancel
    
```

In the *Local adapter address* field, either accept the default or type a 12-digit hexadecimal number for the address of the AS/400 system. Press the Help key if you want to know how this default is derived. The value in this field will override the preset LAN address. If you override the preset address, the address must be in the range 400000000000 to 7FFFFFFFFF, and the address must be unique on the local area network. You can decide here what this address will be. Write this address in the *System LAN address* (4) field on the work sheet on page 6-2.

- Press the Enter key. A display similar to the following appears:

Token-ring connection

```

                                Add PC to LAN Connection
Line description . . . . . : TRNLINE
Local adapter address . . . : 402010039031

Type choices, press Enter.

Auto create controller . . . Y           Y=Yes, N=No

-----

F3=Exit  F12=Cancel
```

The *Local adapter address* field shows you the token-ring address of the AS/400 system. If you have not done so already, write this address in the *System LAN address* (**4**) field on the work sheet.

In the *Automatically create controller* field, you should accept the default. This default depends on whether or not the line description already exists and whether or not controllers can be automatically created on it.

If you used a Y for yes (or accepted a default of Y), you are finished with the host system installation; go to "Completing the Installation Work Sheet" on page 6-5. If you used an N for no (or accepted a default of N), continue with the next step.

5. If you are not automatically creating controllers, you need to supply the following information:

PC LAN address

In this field, type a 12-digit hexadecimal number for the personal computer's LAN address. You can decide here what address you want to assign.

If you intend to use the adapter's default address, check the *Use default address space* in the *Local LAN adapter address* field (**1**) of the work sheet.

If you intend to override the adapter's preset address, the address must be in the range 000000000001 to FFFFFFFF. The address you use must be unique on the local area network. Check off the *Override default address space* in the *Local LAN adapter address* field (**1**) of the work sheet, and write this address in the space provided.

Controller description

This is the name of the controller that will be created and associated with the personal computer. To make this easier to remember, you can type the user's user ID. This will be the name by which the personal computer is known on the network. Write this name in the *PC location name* (**2**) field of the work sheet.

6. When you are finished typing this information, press the Enter key. A message appears at the bottom of the display:

```

                                Add PC to LAN Connection

Line description . . . . . : TRNLINE
Local adapter address . . . : 401010015031

Type choices, press Enter.

Autocreate controller . . . : N                Y=Yes, N=No
PC LAN address . . . . . : 4000000000001      000000000001-FFFFFFFFFFFF
Controller description . . . : JOE                Name
Text . . . . . : joe taylor 117

-----

F3=Exit  F12=Cancel
PC added.  Add another or press F3 to exit.

```

The AS/400 configuration for this personal computer is finished.

Preparing to Install PC Support/400 on the Personal Computer

To prepare for installing PC Support/400 on the personal computer:

1. Complete the necessary tasks on the AS/400 system as described in the following sections:
 - “Verifying the Installation of the PC Support/400 Licensed Program” on page 2-2
 - “Enrolling PC Support/400 Users” on page 2-3
 - Chapter 3, “Using the PC Support/400 Administration Function” (if required)
2. Complete the work sheet on page 6-2.
3. Install the Local Area Network (LAN) Support program on the personal computer.

Note: If you are using the basic DOS option of PC Support/400 and are installing PC Support/400 onto diskettes, you should install the LAN Support program on the diskette after installing PC Support/400.

Completing the Installation Work Sheet

Before the work sheet can be used to install PC Support/400 on the personal computer, you need to fill out the remaining fields:

Local LAN adapter address (1)

If you chose not to automatically create the controller, you should have already filled in this field in step 5 on page 6-4.

If you want to use the adapter's default address, check off the *Use default address* space.

Token-ring connection

If you want to override the default address of the personal computer's LAN adapter, check off the *Override default address* space. In the space provided, write the address you want to use for the personal computer. The address must be a 12-digit hexadecimal number, and must be unique on the local area network. For token-ring, the address must be between 400000000000 and 40007FFFFFFF. Values outside this range may be incompatible with other products on the network.

PC location name (2)

If you decided to automatically create the controller in step 4 on page 6-3, the PC location name is the AS/400 user ID of the user. If you decided not to automatically create the controller, you should have already filled in this field with the controller name in step 5 on page 6-4.

Name of system to connect to (3)

This is the name by which the AS/400 system is known on the network. You can determine the system name by using the Display Network Attributes (DSPNETA) command. Use the value in the *Default local location name* field.

System LAN address (4)

If you do not already have this address written on the work sheet, you can display this address by using the Display Line Description (DSPLIND) command on the AS/400 system. If you use this command, you need to enter the name of the line description as a parameter. The name of the line description was specified in step 2 on page 6-2. If you accepted the default, the name of this line description is TRNLINE. Use the value in the *Local adapter address* field on the Display Line Description display for the System LAN address (4).

Installing the Local Area Network Support Program on Each Personal Computer

For every personal computer using a token-ring connection, you must install IBM LAN Support (either Program 5601-075 or Program 5871-AAA). To install the LAN Support program, do the following:

1. Insert the Local Area Network Support Program diskette into drive A.
2. At the DOS prompt, type
A:
and press the Enter key. This makes A: the current drive.
3. At the DOS prompt, type
DXMAID
and press the Enter key.

4. Follow the prompts to install the LAN Support Program

Note: PC Support does not require the use of NETBIOS.

5. If you intend to override the default LAN address of your personal computer, use an editor to change your CONFIG.SYS file to indicate your LAN address. Your LAN address is recorded on the work sheet in field 1. This address should be entered after the DEVICE = DXMC0MOD.SYS line, such as:

```
device=C:\DXMA0MOD.SYS  
device=C:\DXMC0MOD.SYS 400000490490
```

Installing PC Support/400 on Each Personal Computer

Before you install PC Support/400 on the personal computer, be sure you have completed the tasks as described in "Preparing to Install PC Support/400 on the Personal Computer" on page 6-5.

Note: If you are installing onto diskettes instead of onto a hard disk, see Appendix D, "Installing PC Support/400 on Diskettes" for additional information.

Using Custom Installation Diskettes

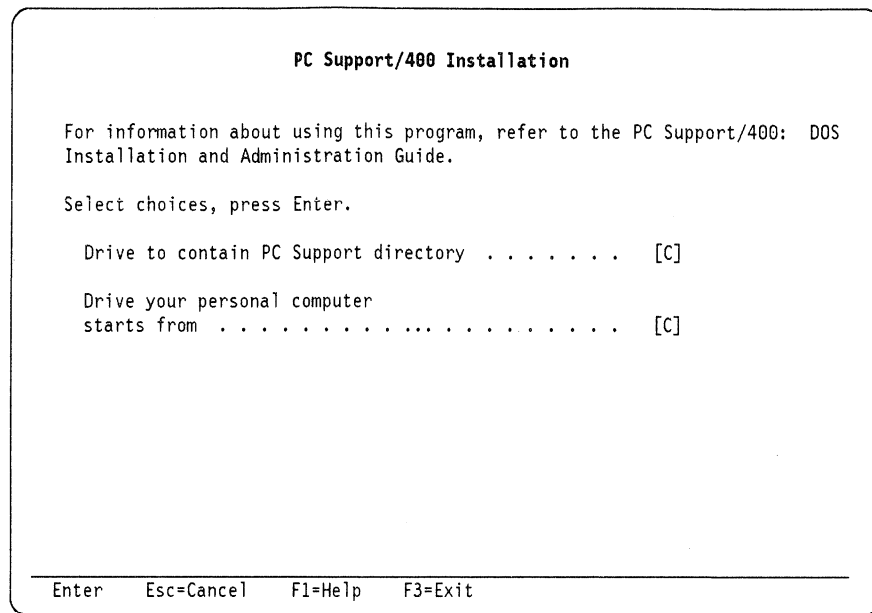
To install PC Support/400 using custom installation diskettes, do the following:

1. Insert the installation diskette in the A: drive.
2. At the DOS prompt, type A:INSTALL and press the Enter key. The installation program automatically sets up the necessary files on the personal computer and copies the PC Support/400 programs and files to the PCS subdirectory.
3. When the installation program has completed, start the personal computer again.

Using Standard Installation Diskettes

To install PC Support/400 using standard installation diskettes, do the following:

1. Use the DOS DISKCOPY command to create a backup copy of the DOS PC Support/400 installation diskette (volume 1) and label this diskette PCS01. You may have additional DOS PC Support/400 installation diskettes labeled volume 2, volume 3, and so on. Copy these diskettes, and label the backup copies PCS02, PCS03, and so on. Use the backup copies to install PC Support/400, and store the original diskettes in a safe place. You do not need to do this for each personal computer; you can install PC Support/400 on many personal computers using the same backup copies of the installation diskettes.
2. Insert the installation diskette PCS01 in the A: drive.
3. At the DOS prompt, type A:INSTALL and press the Enter key.
4. When the display with the IBM logo is shown, press the Enter key to continue. The following display appears:



5. Enter the following information:

Drive to contain PC Support directory

This is the drive letter that you want PC Support/400 to be stored on. If you are installing to the hard disk, this is probably the C: drive. If you are installing to diskette, this is probably the B: drive.

If you are installing to diskette, you will be prompted to insert the diskette on which you want to install PC Support/400. This is to verify that your working diskette is ready for installation.

Drive your personal computer starts from

This is the letter of the drive that contains the CONFIG.SYS file when you start your personal computer. If you are installing to a hard disk, this is usually the C: drive. If you start the system with a diskette in the drive, this is the A: drive.

When you are finished typing this information, press the Enter key. A display similar to the following appears:

```

PC Support/400 Installation
(Startup Options)
More: ↓

Select options with the spacebar. Press Enter when finished.

Start PC Support automatically. . . . .▶ 1. Yes
                                           2. No

Reduce messages displayed
when starting PC Support. . . . .▶ 1. Yes
                                           2. No

Initial PC Support menu . . . . .▶ 1. PC Support Menu
                                           2. Organizer menu
                                           3. OfficeVision/400 Menu
                                           4. AS/400 initial menu
                                           5. No menu (command prompt)

PC Support functions to be
started automatically . . . . . Virtual Printer
                                           Message Function
                                           Work Station Function

Enter Esc=Cancel F1=Help F3=Exit Spacebar

```

6. Enter the following information:

Start PC Support automatically

If you select Yes, the PC Support/400 installation program adds the STARTPCS command at the end of your AUTOEXEC.BAT file. This causes PC Support/400 to start automatically when you start your personal computer.

If you are installing on more than one diskette, this field does not appear.

Reduce messages displayed when starting PC Support

If you select Yes, you see fewer messages when you start PC Support/400. You still receive messages when each function begins, and you also see any error messages. Other informational messages are not shown on the display.

Initial PC Support menu

This option is not displayed if you are installing PC Support/400 to run with the Microsoft Windows program.

This option allows you to specify which menu you want to initially appear when you start PC Support:

PC Support/400 Menu

The main menu for PC Support/400 will be displayed when you start PC Support/400. This menu gives you access to selected PC Support/400 functions.

Organizer menu

The PC Support/400 Organizer menu will be displayed when you start PC Support/400. This menu combines AS/400 and PC commands.

OfficeVision/400 Menu

The main menu for the OfficeVision/400 program will be displayed when you start PC Support/400.

AS/400 initial menu

The display you normally see first will be displayed when you sign on the AS/400 system.

Token-ring connection

No menu

No menu will be displayed when you start PC Support/400. You will return to the DOS command prompt.

PC Support functions to be started automatically

This option allows you to select which functions you want to start automatically when you start PC Support. The functions you can select are:

- Virtual printer
- Message function
- Work station function (except when using Windows)
- Session manager (except when using Windows)
- Data queues function (extended DOS option only)

The necessary commands for the functions you select are added to the STARTPCS.BAT file. For a description of these functions, see "Functions Available with PC Support/400" on page 1-19.

Options to use with work station function

This option is displayed only if you are installing PC Support/400 to run with the Windows program. If you do not use the work station function, you can ignore this option.

This option allows you to select which functions you want to use when you use the PC Support work station function for display or printer emulation. The functions you can select are:

- Organizer
- Session Manager

When you are finished typing this information, press the Enter key. The following display appears:

```

                                     PC Support/400 Installation
                                     (PC to AS/400 Connection)

Select choices, press Enter.

Connection Information
Press spacebar to select connection type:
▶ 1. Twinaxial
  2. Local Area Network
  3. Synchronous Data Link Control
  4. Asynchronous communications

PC Information
PC location name. . . . . [          ]

System Information
Name of system to connect to. . . . . [          ]

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar
```

7. Select option 2, Local Area Network. The following display appears:


```

PC Support/400 Installation
(PC to AS/400 Connection)

Select choices, press Enter.

Connection Information
Press spacebar to select connection type:
 1. Twinaxial
▶ 2. Local Area Network
 3. Synchronous Data Link Control
 4. Asynchronous communications

PC Information
PC location name . . . . . [      ]

System Information
Name of system to connect to . . . . . [      ]

System LAN address . . . . . [      ]

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar

```

8. Enter the following information from the work sheet on page 6-2:
 - PC location name (**2**)
 - Name of system to connect to (**3**)
 - System LAN address (**4**)
9. When you finish typing this information, press the Enter key. A display appears informing you that the installation program is about to begin copying files. Press the Enter key to continue. After all the files are copied, the following display appears:

```

Verify PC to AS/400 Connection

Attempt to connect to AS/400 at this time
to verify values . . . . . ▶1. Yes
                                     2. No

-----
Enter  F1=Help

```

10. This display allows you to attempt to connect to the AS/400 system now, to ensure that the information you entered was correct. If you specify Yes, the installation program starts the PC Support/400 router. If the connection is not made, the PC Support/400 Error Log display appears. This display shows you the errors encountered while trying to connect to the AS/400 system. Use the Page Up and Page Down keys to move through the list. Press the Enter key to view cause and recovery information about the error messages displayed. Press the Esc key to return to the PC Support/400 Installation display, and correct the entries that caused the errors. If you need to see the error log again, press Alt+F5.

Note: This display will not appear if:

- You are installing PC Support/400 to run with the Windows program.
- You are installing to diskette.
- The LAN device drivers are not currently loaded.

Token-ring connection

- The router was loaded before you began installing PC Support/400.
11. When the program is complete, the PC Support/400 Installation Completed display is shown. Before you can start PC Support/400, you must start your personal computer again (press and hold the Ctrl and Alt keys, then press the Delete key).

Starting PC Support/400

If PC Support/400 does not start automatically when you start your personal computer, you can start it by entering

```
d:\PCS\STARTPCS
```

at the DOS prompt, where d: is the PC Support/400 directory drive.

If PC Support/400 does not work properly, see Part 5, "Analyzing Problems with PC Support/400." For information about configuring the PC Support/400 functions, see Part 4, "Configuring PC Support/400."

Chapter 7. Installing PC Support/400 for Ethernet Connections

DOS: Installation Work Sheet for Ethernet	7-2
Before You Begin—Ethernet Addresses	7-2
Configuring Ethernet Connections on the AS/400 System	7-3
Preparing to Install PC Support/400 on the Personal Computer	7-6
Completing the Installation Work Sheet	7-7
Installing the Local Area Network Support Program on Each Personal Computer	7-7
Installing PC Support/400 on Each Personal Computer	7-8
Using Custom Installation Diskettes	7-8
Using Standard Installation Diskettes	7-8
Starting PC Support/400	7-13

DOS: Installation Work Sheet for Ethernet

Before you install PC Support/400 on the personal computer, you must configure the AS/400 system for communications. While you configure the AS/400 system, fill out one copy of this work sheet for each personal computer as instructed. You will need this information when you install PC Support/400 on the personal computer.

Note: Reference numbers are listed on the work sheet to assist you in finding the correct parameter.

Ethernet Network		
PC Support/400: Installation Work Sheet		
Refer- ence Number	Configuration Parameter	Fill In Your Information
1	Local LAN adapter address	___ Use default address ___ Override default address with [_____]
2	PC location name	
3	Name of system to connect to	
4	System LAN address	

Before You Begin – Ethernet Addresses

Adapter addresses are represented in different formats on Ethernet and token-ring local area networks. This difference in address formats is discussed in detail in the *Communications: Local Area Network Guide*, SC41-0004. See the chapters on Ethernet and token-ring for additional information.

Because of these differences, Ethernet addresses may not be recognized when they pass through an 8209 LAN bridge. This would cause the connection attempt between the personal computer and the host system to fail.

This problem can be avoided if you use the following method to create Ethernet addresses. If you use this method, the address will be recognized correctly even if the address is read in the bit order used by token-ring. This is because these addresses use bytes with a symmetrical bit pattern.

1. For the first two digits, use either 42 or 66.
2. In each of the remaining 5 groups, use one of the following 2-digit combinations. The last 8 digits must be unique in the network.

00	18	24	3C
42	5A	66	7E
81	99	A5	BD
C3	DB	E7	FF

42 or 66 _____

For example, the following addresses will be recognized correctly even if they are read in the bit order used by token-ring:

```
420000000000
4200182499A5
4299A5BDC3FF
667EE7BDC3DB
```

If you do not use this method to create Ethernet addresses, you may need to convert the address yourself in order for the address to be recognized. For information about how to do this, see Appendix G, "Ethernet Address Considerations."

Configuring Ethernet Connections on the AS/400 System

To configure a PC connection:

1. Display the Configure PC Connections menu. Either type the command GO CFGPCS at the AS/400 command prompt, or use the menus starting from the AS/400 Main Menu.
2. Select option 3 (Ethernet). The following display appears:

Create Ethernet (LAN) Connection

Type choices, press Enter.

Line description	<u>ETHLINE</u>	Name
Add a PC	<u>Y</u>	Y=Yes, N=No

F3=Exit F12=Cancel

This display shows you the name of the line description. Press the Enter key to accept the defaults.

3. If this is the first user you are adding for this communications type, the following display appears:

```
                                Create Ethernet (LAN) Connection

Line description . . . . . : ETHLINE

Type choices, press Enter.

Resource name . . . . . : LIN071           Name, F4 for list
Local adapter address . . . : 4200005A81C3   020000000000-FEFFFFFFF
Text . . . . . : Ethernet line

-----

F3=Exit  F4=Prompt  F12=Cancel
```

In the *Local adapter address* field, either accept the default or type a 12-digit hexadecimal number for the address of the AS/400 system. Press the Help key if you want to know how this default is derived. The value in this field will override the preset LAN address. You can decide here what this address will be. The address must be between 020000000000 and FFFFFFFF, and the second digit must be a 2, 6, A or E. Write this address in the *System LAN address* (4) field on the work sheet on page 7-2.

If you cannot use an address described in "Before You Begin – Ethernet Addresses" on page 7-2, and if Appendix G, "Ethernet Address Considerations" indicates that you need to convert the address, do the following:

- a. In the *Local adapter address* field on the display, type the normal, unconverted Ethernet address.
- b. Convert this address to token-ring format, and write the converted address in the *System LAN address* (4) field of the work sheet.

Note: The Ethernet line is created with the Ethernet Standard (ETHSTD) parameter set to *ALL. This allows the personal computer to communicate with the AS/400 system using IEEE802.3 frames or Ethernet version 2 frames. In order to improve performance, you may want to create this line description using the Create Ethernet Line (CRTLINETH) command, and explicitly state in the ETHSTD parameter which type of frame you are using. If you are using IEEE802.2 frames encapsulated in Ethernet Version 2 frames, the ETHSTD parameter must be *ETHV2.

4. Press the Enter key. The following display appears:

```

Add PC to LAN Connection

Line description . . . . . : ETHLINE
Local adapter address . . . : 4200005A81C3

Type choices, press Enter.

Autocreate controller . . . Y           Y=Yes, N=No

F3=Exit  F12=Cancel

```

The *Local adapter address* field shows you the LAN address of the AS/400 system. If you have not done so already, write this address in the *System LAN address* (**4**) field on the work sheet. If you cannot use an address described in “Before You Begin – Ethernet Addresses” on page 7-2, and if Appendix G, “Ethernet Address Considerations” indicates that you need to convert the address, convert this address, and write the converted address in the work sheet.

In the *Automatically create controller* field, you should accept the default. This default depends on whether or not the line description already exists and whether or not controllers can be automatically created on it.

If you used a Y for yes (or accepted a default of Y), you are finished with the host system installation; go to “Completing the Installation Work Sheet” on page 7-7. If you used an N for no (or accepted a default of N), continue with the next step.

5. If you are not automatically creating controllers, you need to supply the following information:

PC LAN address

In this field, type a 12-digit hexadecimal number for the personal computer’s LAN address. You can decide here what address you want to assign.

If you intend to use the adapter’s default address, check the *Use default address space* in the *Local LAN adapter address* field (**1**) of the work sheet.

If you intend to override the adapter’s preset address, the address must be in the range 020000000000 to FFFFFFFF. The address you use must be unique on the local area network. Check off the *Override default address space* in the *Local LAN adapter address* field (**1**) of the work sheet, and write this address in the space provided.

If you cannot use an address described in “Before You Begin – Ethernet Addresses” on page 7-2, and if Appendix G, “Ethernet Address Considerations” indicates that you need to convert the address, do the following:

- a. In the LAN address space (1) of the work sheet, write in the normal, unconverted address.
- b. Convert this address, and type the converted address in the PC LAN address field on the display.

Controller description

This is the name of the controller that will be created and associated with the personal computer. To make this easier to remember, you can type the user's user ID. This will be the name by which the personal computer is known on the network. Write this name in the PC location name (2) field of the work sheet.

- 6. When you finish typing this information, press the Enter key. A message appears at the bottom of the display:

```

                                Add PC to LAN Connection

Line description . . . . . : ETHLINE
Local adapter address . . . : 4200005A81C3

Type choices, press Enter.

Autocreate controller . . . N                Y=Yes, N=No
PC LAN address . . . . . 420000000000      000000000001-FFFFFFFFFFFF
Controller description . . . JOE            Name
Text . . . . . joe taylor 117
_____

F3=Exit  F12=Cancel
PC added. Add another or press F3 to exit.
```

The AS/400 configuration for this personal computer is finished.

Preparing to Install PC Support/400 on the Personal Computer

To prepare for installing PC Support/400 on the personal computer:

- 1. Complete the necessary tasks on the AS/400 system as described in the following sections:
 - "Verifying the Installation of the PC Support/400 Licensed Program" on page 2-2
 - "Enrolling PC Support/400 Users" on page 2-3
 - Chapter 3, "Using the PC Support/400 Administration Function" (if required)
- 2. Complete the work sheet on page 7-2.
- 3. Install the Local Area Network (LAN) Support program.

Note: If you are using the basic DOS option of PC Support/400 and are installing PC Support/400 onto diskettes, you should install the LAN Support program on the diskette after installing PC Support/400.

Completing the Installation Work Sheet

Before the work sheet can be used to install PC Support/400 on the personal computer, you need to fill out the remaining fields on the work sheet:

Local LAN adapter Address (1)

If you chose not to automatically create the controller, you should have already filled in this field in step 5 on page 7-5.

If you want to use the adapter's default address, check off the *Use default address* space.

If you want to override the default address of the personal computer's LAN adapter, check off the *Override default address* space. In the space provided, write the address you want to use for the personal computer. The address must be a 12-digit hexadecimal number, and must be unique on the local area network. For Ethernet, the address must be between 020000000000 and FFFFFFFF. Even if you need to convert addresses on your network, use the normal, unconverted address in this field.

PC location name (2)

If you decided to automatically create the controller in step 4 on page 7-4, the PC location name is the AS/400 user ID of the user. If you decided not to automatically create the controller, you should have already filled in this field with the controller name in step 5 on page 7-5.

Name of system to connect to (3)

This is the name by which the AS/400 system is known on the network. You can determine the system name by using the Display Network Attributes (DSPNETA) command. Use the value in the *Default local location name* field.

System LAN address (4)

If you do not already have this address written on the work sheet, you can display this address by using the Display Line Description (DSPLIND) command on the AS/400 system. If you use this command, you need to enter the name of the line description as a parameter. The name of the line description was specified in step 2 on page 7-3. If you accepted the default, the name of this line description is ETHLINE. Use the value in the *Local adapter address* field on the Display Line Description display for the System LAN address (4).

Installing the Local Area Network Support Program on Each Personal Computer

For every personal computer using an Ethernet connection, you must install IBM LAN Support Version 1.2 (Program 5871-AAA). To install the LAN Support program, do the following:

1. Insert the Local Area Network Support Program diskette into drive A.
2. At the DOS prompt, type
A:
and press the Enter key. This makes A: the current drive.
3. At the DOS prompt, type
DXMAID
and press the Enter key.
4. Follow the prompts to install the LAN Support Program

Note: PC Support does not require the use of NETBIOS.

5. If you intend to override the default LAN address of your personal computer, use an editor to change your CONFIG.SYS file to indicate your LAN address. Your LAN address is recorded on the work sheet in field **1**. This address should be entered after the DEVICE = DXME0MOD.SYS line, such as:

```
device=C:\DXMA0MOD.SYS  
device=C:\DXME0MOD.SYS 400000490490
```

Installing PC Support/400 on Each Personal Computer

Before you install PC Support/400 on the personal computer, be sure you have completed the tasks as described in "Preparing to Install PC Support/400 on the Personal Computer" on page 7-6.

Note: If you are installing onto diskettes instead of onto a hard disk, see Appendix D, "Installing PC Support/400 on Diskettes" for additional information.

Using Custom Installation Diskettes

To install PC Support/400 using custom installation diskettes, do the following:

1. Insert the installation diskette in the A: drive.
2. At the DOS prompt, type A:INSTALL and press the Enter key. The installation program automatically sets up the necessary files on the personal computer and copies the PC Support/400 programs and files to the PCS subdirectory.
3. When the installation program has completed, start the personal computer again.

Using Standard Installation Diskettes

To install PC Support/400 using standard installation diskettes, do the following:

1. Use the DOS DISKCOPY command to create a backup copy of the DOS PC Support/400 installation diskette (volume 1) and label this diskette PCS01. You may have additional DOS PC Support/400 installation diskettes labeled volume 2, volume 3, and so on. Copy these diskettes, and label the backup copies PCS02, PCS03, and so on. Use the backup copies to install PC Support/400, and store the original diskettes in a safe place. You do not need to do this for each personal computer; you can install PC Support/400 on many personal computers using the same backup copies of the installation diskettes.
2. Insert the installation diskette PCS01 in the A: drive.
3. At the DOS prompt, type A:INSTALL and press the Enter key.
4. When the display with the IBM logo is shown, press the Enter key to continue. The following display appears:

PC Support/400 Installation

For information about using this program, refer to the PC Support/400: DOS Installation and Administration Guide.

Select choices, press Enter.

Drive to contain PC Support directory [C]

Drive your personal computer starts from [C]

Enter Esc=Cancel F1=Help F3=Exit

5. Enter the following information:

Drive to contain PC Support directory

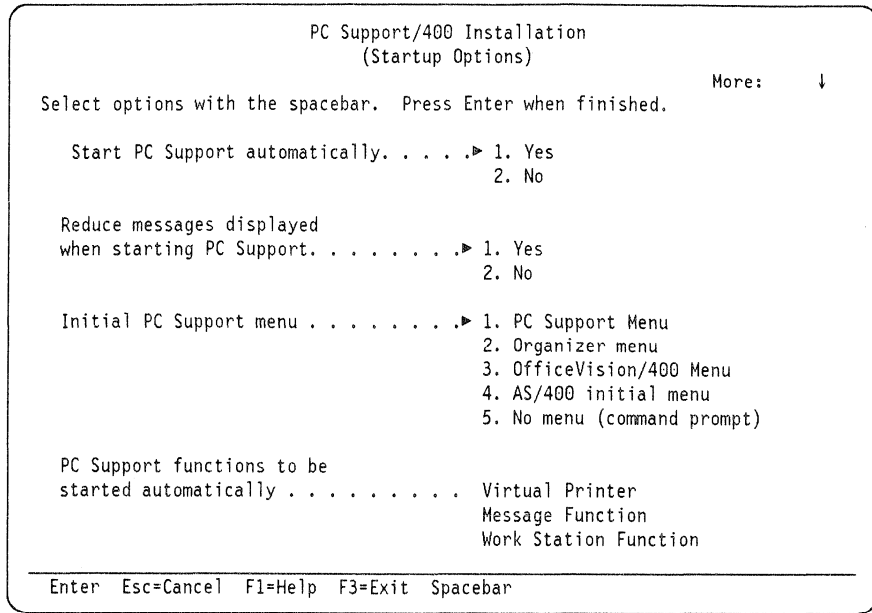
This is the drive letter that you want PC Support/400 to be stored on. If you are installing to the hard disk, this is probably the C: drive. If you are installing to diskette, this is probably the B: drive.

If you are installing to diskette, you will be prompted to insert the diskette on which you want to install PC Support/400. This is to verify that your working diskette is ready for installation.

Drive your personal computer starts from

This is the letter of the drive that contains the CONFIG.SYS file when you start your personal computer. If you are installing to a hard disk, this is usually the C: drive. If you start the system with a diskette in the drive, this is the A: drive.

When you are finished typing this information, press the Enter key. A display similar to the following appears:



6. Enter the following information:

Start PC Support automatically

If you select Yes, the PC Support/400 installation program adds the STARTPCS command at the end of your AUTOEXEC.BAT file. This causes PC Support/400 to start automatically when you start your personal computer.

If you are installing on more than one diskette, this field does not appear.

Reduce messages displayed when starting PC Support

If you select Yes, you see fewer messages when you start PC Support/400. You still receive messages when each function begins, and you also see any error messages. Other informational messages are not shown on the display.

Initial PC Support menu

This option is not displayed if you are installing PC Support/400 to run with the Microsoft Windows program.

This option allows you to specify which menu you want to initially appear when you start PC Support:

PC Support/400 Menu

The main menu for PC Support/400 will be displayed when you start PC Support/400. This menu gives you access to selected PC Support/400 functions on the personal computer.

Organizer menu

The PC Support/400 Organizer menu will be displayed when you start PC Support/400. This menu combines AS/400 and PC commands.

OfficeVision/400 Menu

The main menu for the OfficeVision/400 program will be displayed when you start PC Support/400.

AS/400 initial menu

The display you normally see first will be displayed when you sign on the AS/400 system.

No menu

No menu will be displayed when you start PC Support/400. You will return to the DOS command prompt.

PC Support functions to be started automatically

This option allows you to select which functions you want to start automatically when you start PC Support. The functions you can select are:

- Virtual printer
- Message function
- Work station function (except when using Windows)
- Session manager (except when using Windows)
- Data queues function (extended DOS option only)

The necessary commands for the functions you select are added to the STARTPCS.BAT file. For a description of these functions, see "Functions Available with PC Support/400" on page 1-19.

Options to use with work station function

This option is displayed only if you are installing PC Support/400 to run with the Windows program. If you do not use the work station function, you can ignore this option.

This option allows you to select which functions you want to use when you use the PC Support work station function for display or printer emulation. The functions you can select are:

- Organizer
- Session Manager

When you are finished typing this information, press the Enter key. The following display appears:

```

                                PC Support/400 Installation
                                (PC to AS/400 Connection)

Select choices, press Enter.

Connection Information
Press spacebar to select connection type:
▶ 1. Twinaxial
  2. Local Area Network
  3. Synchronous Data Link Control
  4. Asynchronous communications

PC Information
PC location name. . . . . [          ]

System Information
Name of system to connect to. . . . . [          ]

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar

```

7. Select option 2, Local Area Network. The following display appears:

Ethernet connection

```

                                PC Support/400 Installation
                                (PC to AS/400 Connection)

Select choices, press Enter.

Connection Information
Press spacebar to select connection type:
  1. Twinaxial
  ▶ 2. Local Area Network
  3. Synchronous Data Link Control
  4. Asynchronous communications

PC Information
PC location name. . . . . [          ]

System Information
Name of system to connect to. . . . . [          ]

System LAN address . . . . . [420000000000]

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar

```

8. Enter the following information from the work sheet on page 7-2:
 - PC location name (**2**)
 - Name of system to connect to (**3**)
 - System LAN address (**4**)
9. When you finish typing this information, press the Enter key. A display appears informing you that the installation is about to begin copying files. Press the Enter key to continue. After all the files are copied, the following display appears:

```

                                Verify PC to AS/400 Connection

Attempt to connect to AS/400 at this time
to verify values . . . . . ▶1. Yes
                                                2. No

-----
Enter  F1=Help

```

10. This display allows you to attempt to connect to the AS/400 system now, to ensure that the information you entered was correct. If you specify Yes, the installation program starts the PC Support/400 router. If the connection is not made, the PC Support/400 Error Log display appears. This display shows you the errors encountered while trying to connect to the AS/400 system. Use the Page Up and Page Down keys to move through the list. Press the Enter key to view cause and recovery information about the error messages displayed. Press the Esc key to return to the PC Support/400 Installation display, and correct the entries that caused the errors. If you need to see the error log again, press Alt+F5.

Note: This display will not appear if:

- You are installing PC Support/400 to run with the Windows program.
- You are installing to diskette.
- The LAN device drivers are not currently loaded.

- The router was loaded before you began installing PC Support/400.
11. When the program is complete, the PC Support/400 Installation Completed display is shown. Before you can start PC Support/400, you must start your personal computer again (press and hold the Ctrl and Alt keys, then press the Delete key).

Starting PC Support/400

If PC Support/400 does not start automatically when you start your personal computer, you can start it by entering

d: \PCS\STARTPCS

at the DOS prompt, where d: is the PC Support/400 directory drive.

If PC Support/400 does not work properly, see Part 5, “Analyzing Problems with PC Support/400.” For information about configuring the PC Support/400 functions, see Part 4, “Configuring PC Support/400.”

Note: If you encounter communications problems, do the following:

- Make sure a TRMF identifier is in the CONFIG.PCS file, and that the entry is 1496 or less.
- Make sure the QPCSUPP mode description on the AS/400 system has *CALC specified for the MAXLENRU parameter.

Ethernet connection

Chapter 8. Installing PC Support/400 for Synchronous Data Link Control (SDLC) Connections

DOS: Installation Work Sheet for SDLC	8-2
Configuring SDLC Connections on the AS/400 System	8-2
Preparing to Install PC Support/400 on the Personal Computer	8-5
Completing the Installation Work Sheet	8-6
Installing PC Support/400 on Each Personal Computer	8-6
Using Custom Installation Diskettes	8-6
Using Standard Installation Diskettes	8-6
Starting PC Support/400	8-12
Copying the PC Support Functions to the Personal Computer	8-12

DOS: Installation Work Sheet for SDLC

Before you install PC Support/400 on the personal computer, you must configure the AS/400 system for communications. While you configure the AS/400 system, fill out one copy of this work sheet for each personal computer as instructed. You will need this information when you install PC Support/400 on the personal computer.

Note: Reference numbers are listed on the work sheet to assist you in finding the correct parameter.

SDLC		
PC Support/400: Installation Work Sheet		
Refer- ence Number	Configuration Parameter	Fill In Your Information
1	PC location name	
2	Name of system to connect to	
3	Local station address	
4	Line type	<input type="checkbox"/> *NONSWTPP (Non-switched point-to-point) <input type="checkbox"/> *SWTPP (Switched point-to-point) <input type="checkbox"/> *MP (Multipoint)
5	NRZI data encoding	<input type="checkbox"/> Yes <input type="checkbox"/> No

Configuring SDLC Connections on the AS/400 System

To configure a PC connection:

1. Display the Configure PC Connections menu. Either type the command GO CFGPCS at the AS/400 command prompt, or use the menus starting from the AS/400 Main Menu.
2. Select option 4 (Synchronous data link control). The following display appears:

```

Create SDLC Connection

Type choices, press Enter.

Line description . . . . . SDLCLIN1      Name
Add a PC . . . . . Y                    Y=Yes, N=No

F3=Exit  F12=Cancel

```

3. This display shows you the name of the line description. You should accept the default and press the Enter key.
4. If this is the first personal computer of this communications type that you are adding, the following display appears:

```

Create SDLC Connection

Line description . . . . . :  SDLCLIN1

Type choices, press Enter.

Resource name . . . . . LIN011      Name, F4 for list
Connection type . . . . . *swtpp    *NONSWTPP, *SWTPP, *MP
NRZI data encoding . . . . . Y
Text . . . . . Line for switched point to point SDLC

F3=Exit  F4=Prompt  F12=Cancel

```

On this display, you need to specify the connection type to be used for this line. The possible values are:

- *NONSWTPP (Nonswitched point-to-point line)
- *SWTPP (Switched point-to-point line)
- *MP (Multipoint line)

On the *Line type* (**4**) field of the work sheet on page 8-2, check off the line type you select.

In the *NRZI data encoding* field, specify whether or not your SDLC hardware uses non-return-to-zero (inverted) (NRZI) data recording. If you are using a

SDLC connection

- line splitter, you should specify No. On the *NRZI data encoding* (**5**) field of the work sheet, check off whether you will use NRZI data encoding or not.
5. If your connection is through a multipoint line, you need to specify the maximum number of controllers that you want to allow on the line. Every personal computer requires its own controller on the line. Type a number large enough to account for all of the controllers that will be attached to the line. Then press the Enter key.
 6. The following display appears:

```

                                Add PC to SDLC Connection

Switched line . . . . . :  SDLCLIN1

Type choices, press Enter.

Controller description . . .  joe                Name
Station address . . . . .   01                 01-FE
Switched line list . . . . . N                 Y=Yes, N=No
Initial connection . . . . . *ANS             *ANS, *DIAL
Text . . . . .              Line for switched point to point SDLC

_____

F3=Exit  F12=Cancel

                                Bottom
```

You need to supply information in the following fields:

Controller description

This is the name of the controller associated with the personal computer. This will be the name by which the personal computer is known on the network. To make this easier to remember, you can type the user's user ID. Write this name in the *PC location name* (**1**) field of the work sheet.

Station address

Every personal computer attached to the AS/400 system through a single SDLC card must be assigned a unique station address. Assign an address for this personal computer, and write this number in the *Local station address* (**3**) field of the work sheet.

Switched line list

This prompt allows you to specify if there are other switched lines this controller will attach to. If you specify Y, up to 10 line description names may be entered. The line descriptions must already be created.

Initial connection

This prompt appears only if you specified the line type as switched, and allows you to specify whether the AS/400 system or the personal computer initiates the communications. Select *ANS if the personal computer initiates the call, or *DIAL if the AS/400 system initiates the call. If you do not know which system initiates the call, accept the default of *ANS.

Connection number

This prompt appears only if you specified *DIAL on a switched line. This is the phone number that the host system should dial if it wants to initiate communications with the personal computer.

Vary on line and controller

This prompt appears only if you specified the line type as nonswitched or multipoint. This prompt allows you to specify if you want the controller to vary on when it is created. Accept the default of Y.

Note: If you are using a line type of *SWTPP, you will have to vary on the controller yourself using the Vary Configuration (VRYCFG) command.

Text

Type any description you want for the controller.

- When you finish typing this information, press the Enter key. A message appears at the bottom of the display:

```

                                Add PC to SDLC Connection

Switched line . . . . . : SDLCLIN1

Type choices, press Enter.

Controller description . . . JOE           Name
Station address . . . . . 01             01-FE
Switched line list . . . . . N           Y=Yes, N=No
Initial connection . . . . . *ANS       *ANS, *DIAL
Text . . . . . Line for switched point to point SDLC

F3=Exit  F12=Cancel
PC added. Add another or press F3 to exit.

                                Bottom

```

The AS/400 configuration for this personal computer is finished.

Preparing to Install PC Support/400 on the Personal Computer

To prepare for installing PC Support/400 on the personal computer:

- Complete the necessary tasks on the AS/400 system as described in the following sections:
 - “Verifying the Installation of the PC Support/400 Licensed Program” on page 2-2
 - “Enrolling PC Support/400 Users” on page 2-3
 - Chapter 3, “Using the PC Support/400 Administration Function” (if required)
- Complete the work sheet on page 8-2.

Completing the Installation Work Sheet

Before the work sheet can be used to install PC Support/400 on the personal computer, you need to fill out the remaining fields on the work sheet:

Name of system to connect to (2)

This is the name by which the AS/400 system is known on the network. You can determine the system name by using the Display Network Attributes (DSPNETA) command. Use the value in the *Default local location name* field.

Installing PC Support/400 on Each Personal Computer

Before you install PC Support/400 on the personal computer, be sure you have completed the tasks as described in "Preparing to Install PC Support/400 on the Personal Computer" on page 8-5.

Note: If you are installing onto diskettes instead of onto a hard disk, see Appendix D, "Installing PC Support/400 on Diskettes" for additional information.

Using Custom Installation Diskettes

To install PC Support/400 using custom installation diskettes, do the following:

1. Insert the installation diskette in the A: drive.
2. At the DOS prompt, type A:INSTALL and press the Enter key. The installation program automatically sets up the necessary files on the personal computer and copies the PC Support/400 programs and files to the PCS subdirectory.
3. When the installation program has completed, start the personal computer again.

Using Standard Installation Diskettes

To install PC Support/400 using standard installation diskettes, do the following:

1. Use the DOS DISKCOPY command to create a backup copy of the DOS PC Support/400 installation diskette (volume 1) and label this diskette PCS01. You may have additional DOS PC Support/400 installation diskettes labeled volume 2, volume 3, and so on. Copy these diskettes, and label the backup copies PCS02, PCS03, and so on. Use the backup copies to install PC Support/400, and store the original diskettes in a safe place. You do not need to do this for each personal computer; you can install PC Support/400 on many personal computers using the same backup copies of the installation diskettes.
2. Insert the installation diskette PCS01 in the A: drive.
3. At the DOS prompt, type A:INSTALL and press the Enter key.
4. When the display with the IBM logo is shown, press the Enter key to continue. The following display appears:

PC Support/400 Installation

For information about using this program, refer to the PC Support/400: DOS Installation and Administration Guide.

Select choices, press Enter.

Drive to contain PC Support directory [C]

Drive your personal computer starts from [C]

Enter Esc=Cancel F1=Help F3=Exit

5. Enter the following information:

Drive to contain PC Support directory

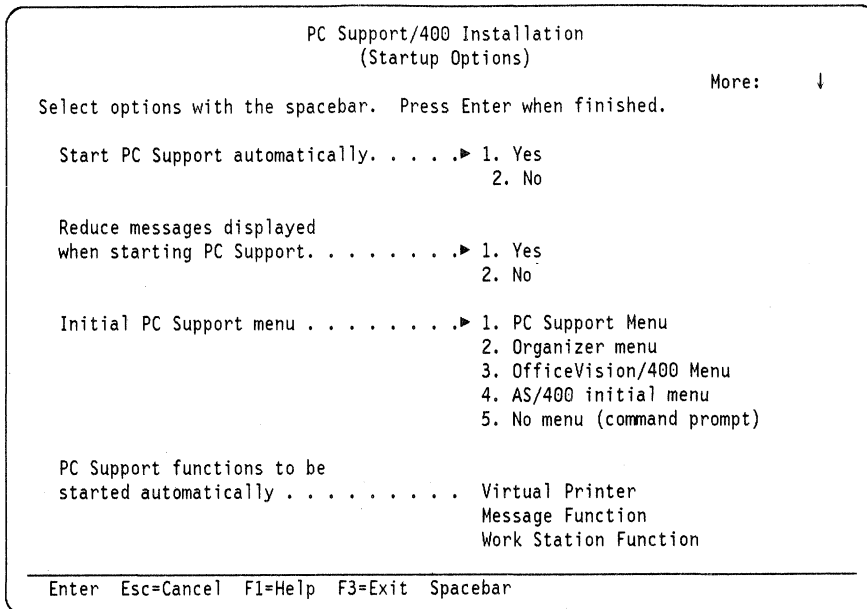
This is the drive letter that you want PC Support/400 to be stored on. If you are installing to the hard disk, this is probably the C: drive. If you are installing to diskette, this is probably the B: drive.

If you are installing to diskette, you will be prompted to insert the diskette on which you want to install PC Support/400. This is to verify that your working diskette is ready for installation.

Drive your personal computer starts from

This is the letter of the drive that contains the CONFIG.SYS file when you start your personal computer. If you are installing to a hard disk, this is usually the C: drive. If you start the system with a diskette in the drive, this is the A: drive.

When you are finished typing this information, press the Enter key. A display similar to the following appears:



6. Enter the following information:

Start PC Support automatically

If you select Yes, the PC Support/400 installation program adds the STARTPCS command at the end of your AUTOEXEC.BAT file. This causes PC Support/400 to start automatically when you start your personal computer.

If you are installing on more than one diskette, this field does not appear.

Reduce messages displayed when starting PC Support

If you select Yes, you see fewer messages when you start PC Support/400. You still receive messages when each function begins, and you also see any error messages. Other informational messages are not shown on the display.

Initial PC Support menu

This option is not displayed if you are installing PC Support/400 to run with the Microsoft Windows program.

This option allows you to specify which menu you want to initially appear when you start PC Support:

PC Support/400 Menu

The main menu for PC Support/400 will be displayed when you start PC Support/400. This menu gives you access to selected PC Support/400 functions on the personal computer.

Organizer menu

The PC Support/400 Organizer menu will be displayed when you start PC Support/400. This menu combines AS/400 and PC commands.

OfficeVision/400 Menu

The main menu for the OfficeVision/400 program will be displayed when you start PC Support/400.

AS/400 initial menu

The display you normally see first will be displayed when you sign on the AS/400 system.

No menu

No menu will be displayed when you start PC Support/400. You will return to the DOS command prompt.

PC Support functions to be started automatically

This option allows you to select which functions you want to start automatically when you start PC Support. The functions you can select are:

- Virtual printer
- Message function
- Work station function (except when using Windows)
- Session manager (except when using Windows)
- Data queues function (extended DOS option only)

The necessary commands for the functions you select are added to the STARTPCS.BAT file. For a description of these functions, see "Functions Available with PC Support/400" on page 1-19.

Options to use with work station function

This option is displayed only if you are installing PC Support/400 to run with the Windows program. If you do not use the work station function, you can ignore this option.

This option allows you to select which functions you want to use when you use the PC Support work station function for display or printer emulation. The functions you can select are:

- Organizer
- Session Manager

When you are finished typing this information, press the Enter key. The following display appears:

```

                                PC Support/400 Installation
                                (PC to AS/400 Connection)

Select choices, press Enter.

Connection Information
Press spacebar to select connection type:
▶ 1. Twinaxial
   2. Local Area Network
   3. Synchronous Data Link Control
   4. Asynchronous communications

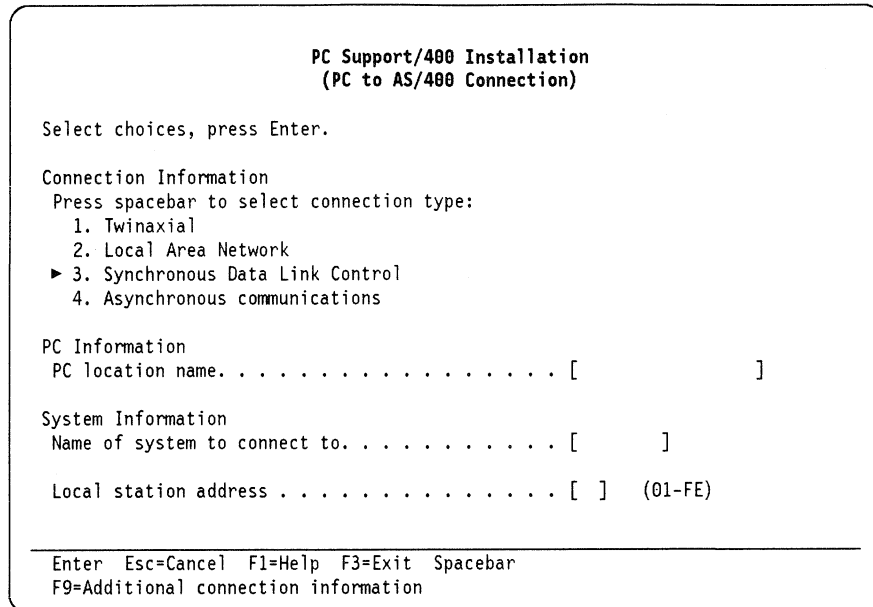
PC Information
PC location name. . . . . [          ]

System Information
Name of system to connect to. . . . . [          ]

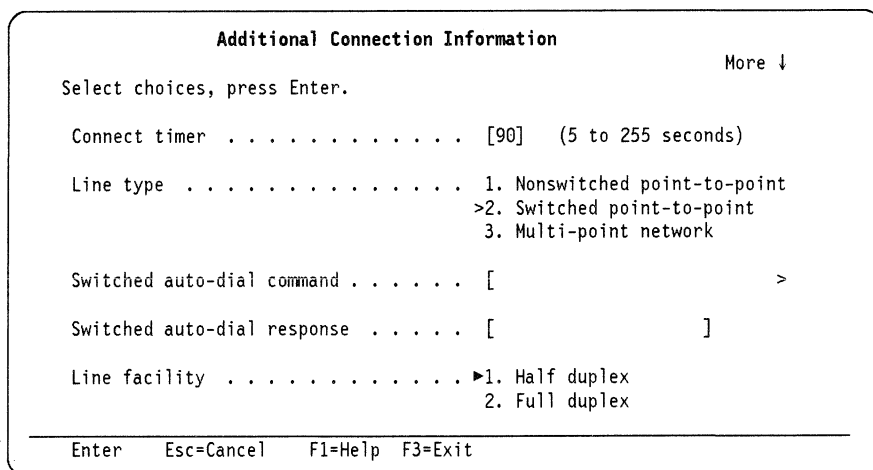
-----
Enter Esc=Cancel F1=Help F3=Exit Spacebar
F9=Additional connection information

```

7. Select option 3, Synchronous Data Link Control. The following display appears:



8. Enter the following information from the work sheet on page 8-2:
 - PC location name (**1**)
 - Name of system to connect to (**2**)
 - Local station address (**3**)
9. When you finish typing this information, press F9. The following window appears:



10. Enter the following information:

Connect timer

This is the amount of time the router waits for a connection to the modem before the router turns off the data terminal ready (DTR) signal. If you specify a value of 255 seconds, the router waits for contact from the AS/400 system until a connection is made.

Line type (**4)**

This is the connection type for the line. You should have the line type recorded on the work sheet.

Switched auto-dial command

This field appears only if you selected a line type of switched. For V.25 bis modems, this field represents the command and telephone number that the personal computer sends to the modem when it attempts to connect to the AS/400 system. For example, if your modem accepts the string CRN as a call command indication and you want to dial the number 1-987-654-3210, specify the following:

```
CRN 1-987-654-3210
```

Switched auto-dial response

This field appears only if you selected a line type of switched. This field specifies the character string that is sent from the modem to the personal computer to indicate that the call was successful. This field is required only if your modem returns a string on successful completion of the call; not all modems provide this function. This information can be found in the documentation for the modem.

Line facility

This field determines whether your transmission is half duplex or full duplex. The default is half duplex. Select full duplex if your modem is capable of duplex operations or if it supports constant request-to-send. This information can be found in the documentation for the modem.

NRZI data encoding (5)

This field determines whether or not your SDLC hardware uses non-return-to-zero (inverted) (NRZI) data recording. You should have this information recorded on the work sheet.

11. When you finish typing this information, press the Enter key. You return to the PC Support/400 Installation display. Press the Enter key to continue.
12. A display appears informing you that the installation program is about to begin copying files. Press the Enter key to continue. After all the files are copied, the following display appears:

Verify PC to AS/400 Connection

Attempt to connect to AS/400 at this time
to verify values ▶1. Yes
2. No

Enter F1=Help

13. This display allows you to attempt to connect to the AS/400 system now, to ensure that the information you entered was correct. If you specify Yes, the installation program starts the PC Support/400 router. If the connection is not made, the PC Support/400 Error Log display appears. This display shows you the errors encountered while trying to connect to the AS/400 system. Use the Page Up and Page Down keys to move through the list. Press the Enter key to view cause and recovery information about the error messages displayed. Press the Esc key to return to the PC Support/400 Installation display, and correct the entries that caused the errors. If you need to see the error log again, press Alt+F5.

Note: This display will not appear if:

- You are installing PC Support/400 to run with the Windows program.

- You are installing to more than one working diskette.
 - The router was loaded before you began installing PC Support/400.
14. When the program is complete, the PC Support/400 Installation Completed display is shown. Before you can start PC Support/400, you must start your personal computer again (press and hold the Ctrl and Alt keys, then press the Delete key).

Starting PC Support/400

If PC Support/400 does not start automatically when you start your personal computer, you can start it by entering

d:\PCS\STARTPCS

at the DOS prompt, where d: is the PC Support/400 directory drive.

If PC Support/400 does not work properly, see Part 5, "Analyzing Problems with PC Support/400." For information about configuring the PC Support/400 functions, see Part 4, "Configuring PC Support/400."

Copying the PC Support Functions to the Personal Computer

It is recommended that you copy the PC Support functions you will be using to the personal computer from the AS/400 system. The PC Support functions load and run faster when they are located on the personal computer. This initial copying is time-consuming, but performance is significantly enhanced for each time you start PC Support/400.

To copy the PC Support functions to the personal computer, do the following:

1. From the PC Support/400 Menu, select the **Configure PC Support/400** option.
2. A window appears. Select option 1 (PC Support/400 configuration).
3. The PC Support/400 Configuration menu appears. Select **General** options.
4. The **General Options for PC Support/400** display appears. Select the **Location of PC Support functions** option.
5. The **Location of PC Support Functions** display appears. Select the functions that you want to copy to your hard disk. Do this by moving the cursor to the function and pressing the spacebar.
6. When you have selected the functions you want, press **F3 (Exit)**.
7. Select **Save** and exit. The **Copy Files to Your Personal Computer** display appears.
8. Select whether you want to copy the functions now or the next time you start PC Support/400.

The necessary files will be copied to your personal computer, and the STARTPCS file will be changed to run the function from your personal computer.

Chapter 9. Installing PC Support/400 for Asynchronous Connections

DOS: Installation Work Sheet for Asynchronous Communications	9-2
Configuring Asynchronous Communications Connections on the AS/400 System	9-2
Preparing to Install PC Support/400 on the Personal Computer	9-4
Completing the Installation Work Sheet	9-4
Installing PC Support/400 on Each Personal Computer	9-5
Using Custom Installation Diskettes	9-5
Using Standard Installation Diskettes	9-5
Starting PC Support/400	9-11
Copying the PC Support Functions to the Personal Computer	9-11
Considerations for Using PC Support/400 in an Asynchronous Environment	9-12
Types of Cables to Use	9-12
Flow Control	9-12
Asynchronous Protocols	9-13
Bringing Up a Connection to the AS/400 System	9-13
Poll Timer Support	9-14
Microsoft Windows Program Mode To Use	9-15

DOS: Installation Work Sheet for Asynchronous Communications

Before you install PC Support/400 on the personal computer, you must configure the AS/400 system for communications. While you configure the AS/400 system, fill out one copy of this work sheet for each personal computer as instructed. You will need this information when you install PC Support/400 on the personal computer.

Note: Reference numbers are listed on the work sheet to assist you in finding the correct parameter.

Asynchronous Communications		
PC Support/400 Installation Work Sheet		
Refer- ence Number	Configuration Parameter	Fill In Your Information
1	PC location name	
2	Name of system to connect to	
3	Line type	— *NONSWTPP (Non-switched point-to-point) — *SWTPP (Switched point-to-point)

Configuring Asynchronous Communications Connections on the AS/400 System

To configure a PC connection:

1. Display the Configure PC Connections menu. Either type the command GO CFGPCS at the AS/400 command prompt, or use the menus starting from the AS/400 Main Menu.
2. Select option 5 (Asynchronous communications). The following display appears:

Add PC to ASYNC Connection		
Type choices, press Enter.		
Device description	<u>ct104port1</u>	Name
Port number	<u>1</u>	0-17
Attachment type	<u>*MODEM</u>	*DIRECT, *MODEM, *PTT
Attached controller	<u>CTL04</u>	Name, F4 for list
Text	<u>Device for Joe</u>	

F3=Exit F4=Prompt F12=Cancel		

You need to supply information in the following fields:

Device description

This is the device name of the physical port on the AS/400 work station controller. More than one personal computer may be attached to this device.

Port number

This is the port on the AS/400 work station controller that the line from the personal computer or AS/400 modem is physically connected to.

Attachment type

This is the type of attachment you will be using. This can be either direct, through a modem, or Post Telephone and Telegraph (PTT). Select PTT if you are connecting to a modem outside the United States.

If you specify a direct attachment, check off the nonswitched point-to-point space for the *Line type* (**3**) field of the work sheet on page 9-2. Otherwise, check off the switched point-to-point space for the *Line type* (**3**) field on the work sheet.

Attached controller

This is the name of the controller that the device will be attached to. You should accept the default.

Text

Type any description you want for the device.

- When you finish typing this information, press the Enter key. A message appears at the bottom of the display:

Asynchronous connection

Add PC to ASYNC Connection

Type choices, press Enter.

Device description	<u>CTL04PORT1</u>	Name
Port number	<u>1</u>	0-17
Attachment Type	<u>*MODEM</u>	*DIRECT, *MODEM, *PTT
Attached controller	<u>CTL04</u>	Name, F4 for list
Text	<u>Device for Joe</u>	

F3=Exit F4=Prompt F12=Cancel
PC added. Add another or press F3 to exit.

The AS/400 configuration for this personal computer is finished.

Preparing to Install PC Support/400 on the Personal Computer

To prepare for installing PC Support/400 on the personal computer:

1. Complete the necessary tasks on the AS/400 system as described in the following sections:
 - “Verifying the Installation of the PC Support/400 Licensed Program” on page 2-2
 - “Enrolling PC Support/400 Users” on page 2-3
 - Chapter 3, “Using the PC Support/400 Administration Function” (if required)
2. Complete the work sheet on page 9-2.

Completing the Installation Work Sheet

Before the work sheet can be used to install PC Support/400 on the personal computer, you need to fill out the remaining fields on the work sheet:

PC location name (1)

This is the name by which the personal computer is known on the network. It must be unique for each personal computer. To make it easy to remember, make this name the user’s user ID.

Name of system to connect to (2)

This is the name by which the AS/400 system is known on the network. You can determine the system name by using the Display Network Attributes (DSPNETA) command. Use the value in the *Default local location name* field.

Installing PC Support/400 on Each Personal Computer

Before you install PC Support/400 on the personal computer, be sure you have completed the tasks as described in "Preparing to Install PC Support/400 on the Personal Computer" on page 9-4.

Note: If you are installing onto diskettes instead of onto a hard disk, see Appendix D, "Installing PC Support/400 on Diskettes" for additional information.

Using Custom Installation Diskettes

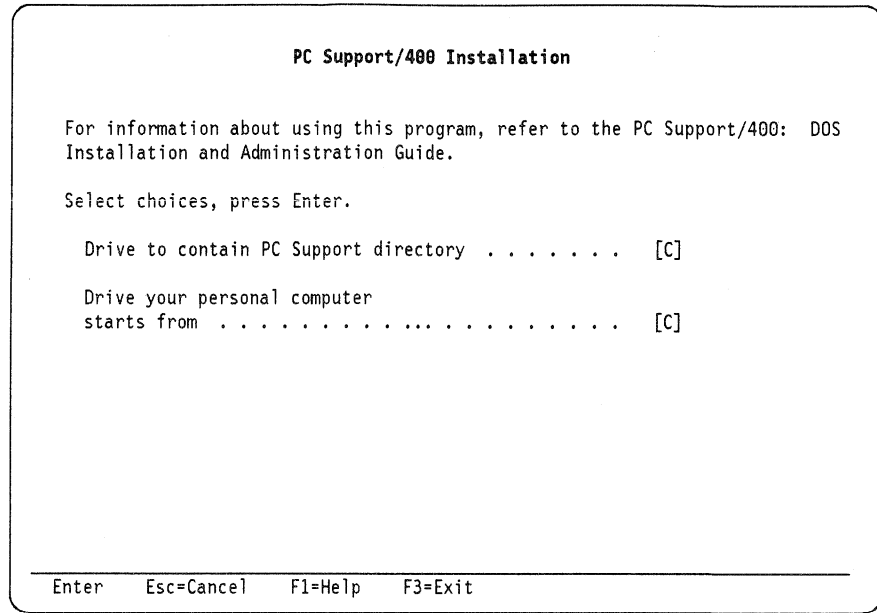
To install PC Support/400 using custom installation diskettes, do the following:

1. Insert the installation diskette in the A: drive.
2. At the DOS prompt, type A:INSTALL and press the Enter key. The installation program automatically sets up the necessary files on the personal computer and copies the PC Support/400 programs and files to the PCS subdirectory.
3. When the installation program has completed, start the personal computer again.

Using Standard Installation Diskettes

To install PC Support/400 using standard installation diskettes, do the following:

1. Use the DOS DISKCOPY command to create a backup copy of the DOS PC Support/400 installation diskette (volume 1) and label this diskette PCS01. You may have additional DOS PC Support/400 installation diskettes labeled volume 2, volume 3, and so on. Copy these diskettes, and label the backup copies PCS02, PCS03, and so on. Use the backup copies to install PC Support/400, and store the original diskettes in a safe place. You do not need to do this for each personal computer; you can install PC Support/400 on many personal computers using the same backup copies of the installation diskettes.
2. Insert the installation diskette PCS01 in the A: drive.
3. At the DOS prompt, type A:INSTALL and press the Enter key.
4. When the display with the IBM logo is shown, press the Enter key to continue. The following display appears:



5. Enter the following information:

Drive to contain PC Support directory

This is the drive letter that you want PC Support/400 to be stored on. If you are installing to the hard disk, this is probably the C: drive. If you are installing to diskette, this is probably the B: drive.

If you are installing to diskette, you will be prompted to insert the diskette on which you want to install PC Support/400. This is to verify that your working diskette is ready for installation.

Drive your personal computer starts from

This is the letter of the drive that contains the CONFIG.SYS file when you start your personal computer. If you are installing to a hard disk, this is usually the C: drive. If you start the system with a diskette in the drive, this is the A: drive.

When you are finished typing this information, press the Enter key. A display similar to the following appears:

```

PC Support/400 Installation
(Startup Options)
More: ↓
Select options with the spacebar. Press Enter when finished.

Start PC Support automatically. . . . ▶ 1. Yes
                                         2. No

Reduce messages displayed
when starting PC Support. . . . . ▶ 1. Yes
                                         2. No

Initial PC Support menu . . . . . ▶ 1. PC Support Menu
                                         2. Organizer menu
                                         3. OfficeVision/400 Menu
                                         4. AS/400 initial menu
                                         5. No menu (command prompt)

PC Support functions to be
started automatically . . . . . Virtual Printer
                                         Message Function
                                         Work Station Function

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar

```

6. Enter the following information:

Start PC Support automatically

If you select **Yes**, the PC Support/400 installation program adds the STARTPCS command at the end of your AUTOEXEC.BAT file. This causes PC Support/400 to start automatically when you start your personal computer.

If you are installing on more than one diskette, this field does not appear.

Reduce messages displayed when starting PC Support

If you select **Yes**, you see fewer messages when you start PC Support/400. You still receive messages when each function begins, and you also see any error messages. Other informational messages are not shown on the display.

Initial PC Support menu

This option is not displayed if you are installing PC Support/400 to run with the Microsoft Windows program.

This option allows you to specify which menu you want to initially appear when you start PC Support:

PC Support/400 Menu

The main menu for PC Support/400 will be displayed when you start PC Support/400. This menu gives you access to selected PC Support/400 functions on the personal computer.

Organizer menu

The PC Support/400 Organizer menu will be displayed when you start PC Support/400. This menu combines AS/400 and PC commands.

OfficeVision/400 Menu

The main menu for the OfficeVision/400 program will be displayed when you start PC Support/400.

AS/400 initial menu

The display you normally see first will be displayed when you sign on the AS/400 system.

Asynchronous connection

No menu

No menu will be displayed when you start PC Support/400. You will return to the DOS command prompt.

PC Support functions to be started automatically

This option allows you to select which functions you want to start automatically when you start PC Support. The functions you can select are:

- Virtual printer
- Message function
- Work station function (except when using Microsoft Windows)
- Session manager (except when using Microsoft Windows)
- Data queues function (extended DOS option only)

The necessary commands for the functions you select are added to the STARTPCS.BAT file. For a description of these functions, see "Functions Available with PC Support/400" on page 1-19.

Options to use with work station function

This option is displayed only if you are installing PC Support/400 to run with the Windows program. If you do not use the work station function, you can ignore this option.

This option allows you to select which functions you want to use when you use the PC Support work station function for display or printer emulation. The functions you can select are:

- Organizer
- Session Manager

When you are finished typing this information, press the Enter key. The following display appears:

```

                                     PC Support/400 Installation
                                     (PC to AS/400 Connection)

Select choices, press Enter.

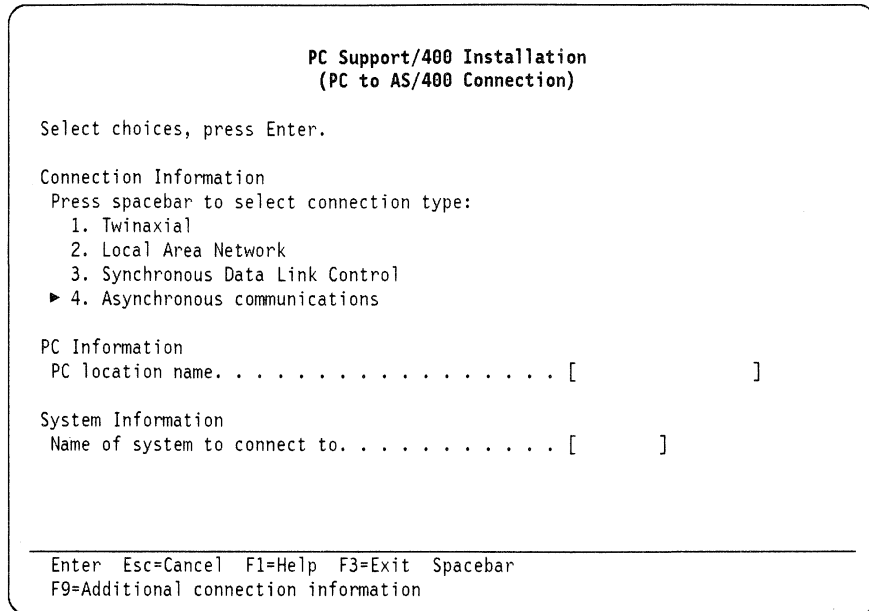
Connection Information
Press spacebar to select connection type:
▶ 1. Twinaxial
  2. Local Area Network
  3. Synchronous Data Link Control
  4. Asynchronous communications

PC Information
PC location name. . . . . [          ]

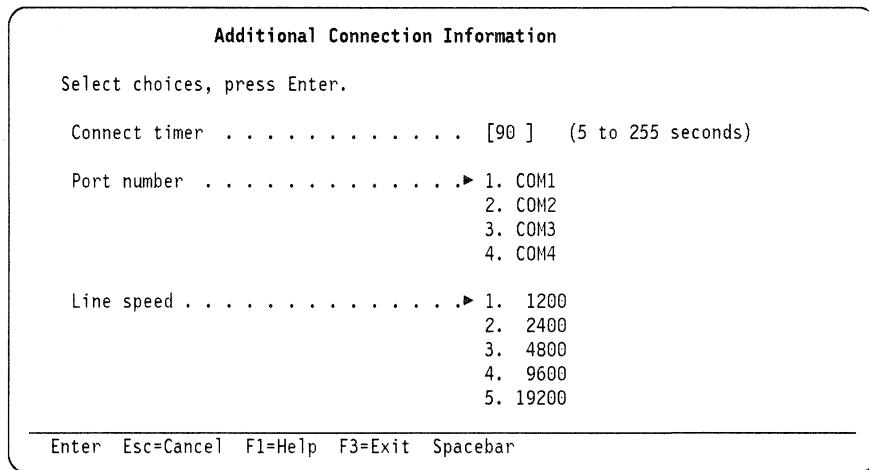
System Information
Name of system to connect to. . . . . [          ]

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar
```

7. Select option 4, Asynchronous communications. The following display appears:



8. Enter the following information from the work sheet on page 9-2:
 - PC location name (**1**)
 - Name of system to connect to (**2**)
9. When you finish typing this information, press F9. The following window appears:



10. Enter the following information:

Connect timer

This is the amount of time the router waits for a connection to the modem before the router turns off the data terminal ready (DTR) signal.

Port number

This is the personal computer port that is used to physically connect to the AS/400 work station controller or the personal computer's modem.

Line speed

This is the baud rate for data between your personal computer and its modem or between your personal computer and the AS/400 work station controller.

Asynchronous connection

Line type (3)

This is the connection type for the line. You should have the line type recorded on the work sheet.

Switched auto-dial command

This field appears only if you selected a line type of switched. This field represents the command and telephone number that the personal computer sends to the modem when it attempts to connect to the AS/400 system. For example, if your modem accepts the string ATDT as a call command indication and you want to dial the number 1-987-654-3210, specify the following:

```
ATDT 1-987-654-3210
```

Switched auto-dial response

This field appears only if you selected a line type of switched. This field specifies the character string that is sent from the modem to the personal computer to indicate that the call was successful. For example, connect 2400

This field is required only if your modem has not been programmed to respond according to EIA232-C specifications.

Number of data bits

This is the number of bits in the transmitted byte that will be assumed to be data. You should use 8 unless your modem only supports 7.

Parity

This field only appears if you selected 7 as your number of data bits. Select whether you want to use even or odd parity checking.

Modem initialization string

This is an optional identifier. This is the string that you send to your modem at initialization time before a telephone call is attempted. Consult the documentation for your modem to determine what this string should be.

If you do not enter anything in this field, the installation program does not add the asynchronous modem initialization string (ASMI) identifier to your CONFIG.PCS file. If you edit the CONFIG.PCS file and add the ASMI identifier without any parameters, the STARTRTR program runs the following:

```
IAC / n (where n is a digit from 1 to 4)
```

The IAC number specifies the serial port that is used.

IAC uses the current state of the line control register for the specified serial port (baud, parity, data bits, stop bits). These values can be set with the DOS MODE command. The modem control register, which contains the current state of the electrical signals that control the modem, is saved and the data terminal ready (DTR) signal is turned on.

When the Esc key is pressed, IAC stops sending data to the modem, restores the modem control register, and stops running.

When the IAC program is finished, PC Support continues processing the configuration file.

11. When you finish typing this information, press the Enter key. A display appears informing you that the installation is about to begin copying files.

Press the Enter key to continue. After all the files are copied, the following display appears:

Verify PC to AS/400 Connection

Attempt to connect to AS/400 at this time
to verify values ▶1. Yes
2. No

Enter F1=Help

12. This display allows you to attempt to connect to the AS/400 system now, to ensure that the information you entered was correct. If you specify Yes, the installation program starts the PC Support/400 router. If the connection is not made, the PC Support/400 Error Log display appears. This display shows you the errors encountered while trying to connect to the AS/400 system. Use the Page Up and Page Down keys to move through the list. Press the Enter key to view cause and recovery information about the error messages displayed. Press the Esc key to return to the PC Support/400 Installation display, and correct the entries that caused the errors. If you need to see the error log again, press Alt+F5.

Note: This display will not appear if:

- You are installing PC Support/400 to run with the Windows program.
 - You are installing to more than one working diskette.
 - The router was loaded before you began installing PC Support/400.
13. When the program is complete, the PC Support/400 Installation Completed display is shown. Before you can start PC Support/400, you must start your personal computer again (press and hold the Ctrl and Alt keys, then press the Delete key).

Starting PC Support/400

If PC Support/400 does not start automatically when you start your personal computer, you can start it by entering

d:\PCS\STARTPCS

at the DOS prompt, where d: is the PC Support/400 directory drive.

If PC Support/400 does not work properly, see Part 5, "Analyzing Problems with PC Support/400." For information about configuring the PC Support/400 functions, see Part 4, "Configuring PC Support/400."

Copying the PC Support Functions to the Personal Computer

It is recommended that you copy the PC Support functions you will be using to the personal computer from the AS/400 system. The PC Support functions load and run faster when they are located on the personal computer. This initial copying is time-consuming, but performance is significantly enhanced for each time you start PC Support/400.

To copy the PC Support functions to the personal computer, do the following:

Asynchronous connection

1. From the PC Support/400 Menu, select the Configure PC Support/400 option.
2. A window appears. Select option 1 (PC Support/400 configuration).
3. The PC Support/400 Configuration menu appears. Select General options.
4. The General Options for PC Support/400 display appears. Select the Location of PC Support functions option.
5. The Location of PC Support Functions display appears. Select the functions that you want to copy to your hard disk. Do this by moving the cursor to the function and pressing the spacebar.
6. When you have selected the functions you want, press F3 (Exit).
7. Select Save and exit. The Copy Files to Your Personal Computer display appears.
8. Select whether you want to copy the functions now or the next time you start PC Support/400.

The necessary files will be copied to your personal computer, and the STARTPCS file will be changed to run the function from your personal computer.

Considerations for Using PC Support/400 in an Asynchronous Environment

For information on using the ASCII work station controller, see *ASCII Work Station Reference and Example*, SA41-9922.

The following additional information about using PC Support/400 in an asynchronous environment discusses:

- Types of cables to use
- Flow control
- Asynchronous protocols
- Bringing up a connection to the AS/400 system
- Poll timer support
- Microsoft Windows program mode to use

Types of Cables to Use

It is highly recommended that you use IBM cables to connect your personal computer to the AS/400 system. These cables are fully shielded and provide a stable connection between your personal computer and the AS/400 system.

Flow Control

The PC Support/400 asynchronous router supports uni-directional hardware flow control between the personal computer and its modem. This may be referred to in your modem documentation as **Clear To Send (CTS) Pacing**. When the modem wants the personal computer to stop sending data, it should turn off the CTS signal. The PC Support/400 asynchronous router will not send any more data until the CTS signal is turned on again.

The asynchronous router does not turn off the Request To Send (RTS) signal while the link to the AS/400 system is active, so there is no need for flow control between the personal computer and the modem when receiving data.

The ASCII controller works in a manner similar to asynchronous PC Support. It supports CTS Pacing and does not drop RTS until the connection has been

ended. It also supports XON/XOFF flow control, sometimes referred to as **software flow control**.

Asynchronous Protocols

The protocol used to send and receive data over the asynchronous connection is very similar to the SDLC protocol. The ASCII controller polls the attached personal computer with a Receive Ready Poll, and if the personal computer has any data to send to the AS/400 system, it sends the data when it detects the Receive Ready poll. If it has no data to send, then it sends a Poll Response. This informs the ASCII controller that the personal computer has no data but is still running.

When data is sent between the personal computer and the ASCII controller, both the ASCII controller and the personal computer running asynchronous PC Support/400 follow these rules:

1. A 16-bit CRC (cyclic redundancy check) is attached to each block of data. This is used by the receiver of the data to indicate whether or not there were any communications line errors on the data as it travelled from the sender to the receiver.
2. There is also a sequence counter on each block. This is used by the receiver of the data to indicate the correct order of the received frames.

By following these rules, the ASCII controller and the personal computer can reliably send and receive data over the asynchronous connection. If any communications line errors do occur, the block of data is automatically transmitted again by the sender.

Bringing Up a Connection to the AS/400 System

- Switched Connection

If the SDLT parameter is set to SWTPP:

1. The STARTRTR program reads the CONFIG.PCS file.
2. The STARTRTR program builds a parameter list for opening the asynchronous adapter on the personal computer, and the asynchronous router gets the adapter ready for communicating to the AS/400 system. This involves setting up the baud rate, parity, and number of data bits, and then turning on the Data Terminal Ready (DTR) and Request To Send (RTS) control signals. If there is an ASMI string to be sent to the modem, then the asynchronous router sends this string after it turns on DTR and RTS.
3. If there is a blank ASMI entry, then the STARTRTR program requests DOS to run an IAC program.
4. Switched Automatic Dial (SWAD) Processing

If there is an automatic-dial string present, then the asynchronous router sends this string to the personal computer modem, and waits for an indication that the connection to the AS/400 modem has been completed.

If there is no SWAD entry, then the STARTRTR program assumes that you are doing a manual dial. Once you have established a connection with the modem on the AS/400 system, press the Enter key.

Once the connection to the AS/400 system is complete, the next step that occurs is **Transparency Negotiation**.

Asynchronous connection

- Nonswitched Connection

If the SDLT parameter is set to NONSWTPP:

1. The STARTRTR program reads the CONFIG.PCS file.
2. The STARTRTR program builds a parameter list for opening the asynchronous adapter on the personal computer, and the asynchronous router gets the adapter ready for communicating to the AS/400 system. This involves setting up the baud rate, parity, and number of data bits, and then turning on the Data Terminal Ready (DTR) and Request To Send (RTS) control signals. If there is an ASMI string to be sent to the modem, then the asynchronous router sends this string after it turns on DTR and RTS.
3. If there is a blank ASMI entry, then the STARTRTR program requests DOS to run an IAC program.
4. The STARTRTR program next tells the asynchronous router to open a connection to the AS/400 system. The asynchronous router then starts **Transparency Negotiation**.

- Transparency Negotiation

During transparency negotiation, the ASCII controller and the personal computer dynamically determine the parity setting and the number of data bits of the other machine.

The personal computer starts this process by sending 6-byte packets to the AS/400 system (one every 2 to 3 seconds). These packets contain data based on the parity setting and number of data bits set in the CONFIG.PCS file. When the ASCII controller has received three consecutive identical packets, it starts sending packets back to the personal computer. This continues until the personal computer and the ASCII controller have determined settings for parity and number of data bits that will accommodate both machines. When this is complete, the personal computer sends an XID message, telling the AS/400 system the PC location name (RTLN) of this personal computer.

This process allows mismatches between the settings for parity and number of data bits on the ASCII controller and those on the personal computer. Normally, for best performance you should set the personal computer to 8 data bits, and the ASCII controller port description should be set to *CALC. If you are using a network or modem on one end of the connection that supports only 7 data bits, change the configuration on that end of the connection. The other end of the connection realizes during transparency negotiation what the other machine's settings are, and adjusts automatically.

Poll Timer Support

When running PC Support/400 in X.25 networks, or to reduce the congestion on heavily used controllers, adaptive polling can be used on ports that have attached personal computers running PC Support/400.

Adaptive polling uses a normal response mode (NRM) poll timer of 0.5 seconds until 20 consecutive, nonproductive polls are received. The ASCII controller then switches to an NRM poll timer of 6 seconds. As soon as a productive poll response from the personal computer is encountered, the NRM poll timer switches back to the 0.5-second value.

This adaptive polling reduces X.25 network costs and controller congestion by reducing the amount of nonproductive polling done by the controller. The increased time between the polls to the attached will however, have an impact on performance.

Adaptive polling can be enabled on a per-port basis on the AS/400 system by specifying a 98 for the NRM poll timer value when creating the device description for the port.

Microsoft Windows Program Mode To Use

When you use an asynchronous communications connection, you can run PC Support/400 functions with the Microsoft Windows program only if the Microsoft Windows program has been started in standard mode.

Asynchronous connection

Chapter 10. Installing PC Support/400 for 5394 Remote Communications

DOS Installation Work Sheet for 5394 Remote Communications or Remote 5250 Adapter	10-2
Configuring 5394 Connections on the AS/400 System	10-2
Configuring 5394 (SDLC) Connections	10-2
Configuring 5394 (X.25) Connections	10-6
Creating an X.25 Line Description	10-7
Creating a Remote Work Station Controller Description	10-7
Creating a Device Description	10-7
Preparing to Install PC Support/400 on the Personal Computer	10-7
Completing the Installation Work Sheet	10-8
Installing PC Support/400 on Each Personal Computer	10-8
Using Custom Installation Diskettes	10-8
Using Standard Installation Diskettes	10-8
Starting PC Support/400	10-13
Copying the PC Support Functions to the Personal Computer	10-13

DOS Installation Work Sheet for 5394 Remote Communications or Remote 5250 Adapter

Before you install PC Support/400 on the personal computer, you must configure the AS/400 system for communications. While you configure the AS/400 system, fill out one copy of this work sheet for each personal computer as instructed. You will need this information when you install PC Support/400 on the personal computer.

Note: Reference numbers are listed on the work sheet to assist you in finding the correct parameter.

Remote 5394 Communications or Remote 5250 Adapter		
PC Support/400: Installation Work Sheet		
Reference Number	Configuration Parameter	Fill In Your Information
1	PC location name	
2	Name of system to connect to	
3	Work station address	

Configuring 5394 Connections on the AS/400 System

You may use an SDLC connection or an X.25 connection with the 5394 Remote Control Unit. If you are using an SDLC connection, continue with "Configuring 5394 (SDLC) Connections." If you are using an X.25 connection, go to "Configuring 5394 (X.25) Connections" on page 10-6.

Configuring 5394 (SDLC) Connections

To configure a PC connection:

1. Display the Configure PC Connections menu. Either type the command GO CFGPCS at the AS/400 command prompt, or use the menus starting from the AS/400 Main Menu.
2. Select option 6 (5394 remote). The following display appears:

```

Create 5394 Remote Connection

Type choices, press Enter.

Line description . . . . . LINE5394      Name
Add a PC . . . . . Y                    Y=Yes, N=No

F3=Exit  F12=Cancel

```

3. This display shows you the name of the line description. You should accept the default and press the Enter key.
4. If this is the first user of this communications type that you are adding, the following display appears.

```

Create 5394 Remote Connection

Line description . . . . . : LINE5394

Type choices, press Enter.

Resource name . . . . . LIN011      Name, F4 for list
Connection type . . . . . *swtpp    *NONSWTPP, *SWTPP, *MP
NRZI data encoding . . . . . Y
Line text . . . . . Line for 5394

F3=Exit  F4=Prompt  F12=Cancel

Bottom

```

On this display, you need to supply the following information:

Resource name

This is the name of the SDLC card that will be used for communications. If you wish to use a different card, press F4 (Prompt).

Connection type

This is the connection type to be used for this line. The possible values are:

- *NONSWTPP (Nonswitched point-to-point line)
- *SWTPP (Switched point-to-point line)

- *MP (Multipoint line)

NRZI data encoding

In the *NRZI data encoding* field, specify whether or not your SDLC hardware uses non-return-to-zero (inverted) (NRZI) data recording. If you are using a line-splitter, you should specify No.

Line text

Type any description you want for the line.

5. When you finish typing this information, press the Enter key. Depending on whether you selected *NONSWTPP, *SWTPP, or *MP, a display similar to the following appears:

```

                                Create 5394 Remote Connection

Line description . . . . . : LINE5394

Type choices, press Enter.

Resource name . . . . . LN011           Name, F4 for list
Connection type . . . . . *SWTPP       *NONSWTPP, *SWTPP, *MP
Line text . . . . . Line for 5394

-----
Controller . . . . . ct15394           Name
Switched line list . . . . . N         Y=Yes, N=No
Initial connection . . . . . *ANS     *ANS,*DIAL
Station address . . . . . 01         01-FE
Controller text . . . . . Controller for 5394

-----

                                Bottom

F3=Exit  F4=Prompt  F12=Cancel
    
```

Depending on your connection type, you need to supply the following information:

If your connection type is *NONSWTPP (nonswitched point-to-point):

Vary on line Specify whether or not you want to vary on the line when it is created. You should accept the default of Y.

Controller name This is the name of the controller to associate with the SDLC line.

Station address This is the SDLC station address for the 5394 controller.

Controller text Type any description you want for the controller.

If your connection type is *SWTPP (switched point-to-point):

Controller name This is the name of the controller to associate with the SDLC line. Press the Enter key to accept the default.

Switched line list If you specify Y, you will be allowed to enter a list of line names.

Initial connection Specify whether the AS/400 system or the 5394 controller initiates the communications. Select *ANS if the 5394 controller

initiates the call, or *DIAL if the AS/400 system initiates the call. If you do not know which system initiates the call, accept the default of *ANS.

Connection number

This prompt appears only if you specified *DIAL on a switched line. This is the phone number that the host system should dial to initiate communications with the 5394 controller.

Station address

This is the port number on the SDLC card that the SDLC cable is connected to.

Controller text Type any description you want for the controller.

If your connection type is *MP (multipoint):

Maximum controllers

This is the maximum number of controllers that will be allowed on the line. Every personal computer requires its own controller on the line. Type a number large enough to account for all the controllers that will attach to the line.

Vary on line Specify whether or not you want to vary on the line when it is created. You should accept the default of Y.

Controller name

This is the name of the controller to associate with the SDLC line.

Station address

This is the SDLC station address for the 5394 controller.

Controller text Type any description you want for the controller.

- When you finish typing the information, press the Enter key. The following display appears:

```

Add PC to 5394 Remote Connection

Line description . . . . . : LINE5394
Attached controller . . . . : CTL5394

Type choices, press Enter.

Device description . . . . . joe           Name
PC model . . . . . 2                       1,2
Local location address . . . 01           00-14
Vary on controller and
device . . . . . Y                       Y=Yes, N=No
Text . . . . . Device for Joe
_____

F3=Exit  F12=Cancel
    
```

On this display, you need to supply the following information:

Device description

This is the name of the device associated with the personal computer. To make this easier to remember, type the user's user ID. This will be

5394 remote connection

the name by which the personal computer is known on the network. Write this name in the *PC location name* (**1**) field of the work sheet.

PC model

This indicates whether or not the personal computer uses Micro Channel architecture (such as the PS/2 models 50 and above). If the personal computer uses Micro Channel architecture, type a 2. Otherwise, type a 1.

Local location address

Every personal computer attached to the AS/400 system through a single SDLC card must be assigned a unique work station address. Assign an address for this personal computer, and write this number in the *Work station address* (**3**) field on the work sheet.

Vary on controller and device

Specify whether or not you want to vary on the controller and device when they are created. You should accept the default of Y.

Text

Type any description you want for the device.

7. When you finish typing this information, press the Enter key. A message appears at the bottom of the display:

```

                                Add PC to 5394 Remote Connection

Line description . . . . . : LINE5394
Attached controller . . . . : CTL5394

Type choices, press Enter.

Device description . . . . . : JOE          Name
PC model . . . . .           : 2           1,2
Local location address . . . : 01         00-14
Vary on controller and
device . . . . .             : Y           Y=Yes, N=No
Text . . . . .               : Device for Joe
_____

F3=Exit  F12=Cancel
PC added. Add another or press F3 to exit.
```

The AS/400 configuration for this personal computer is finished. Continue with "Preparing to Install PC Support/400 on the Personal Computer" on page 10-7.

Configuring 5394 (X.25) Connections

The 5394 remote option on the Configure PC Connections (CFGPCS) menu creates descriptions on the system only for those 5394 remote connections using synchronous data link control (SDLC). When you use an X.25 connection with the 5394 Remote Control Unit, you need to create the connection descriptions manually on the system.

The descriptions you need to create are:

- An X.25 line description
- A remote work station controller description
- A device description for each personal computer connected to the controller

This chapter contains some general information about creating the necessary descriptions. For more details, see the *Communications: X.25 Network Guide*, SC41-0005.

Creating an X.25 Line Description

A line description must exist on the AS/400 system containing information about the communications connection between the AS/400 system and the 5394 remote control unit. If the line description does not already exist, you need to do the following:

1. Use the Create X.25 Line Description (CRTLINX25) command to create the line description.
2. Use the Vary Configuration (VRYCFG) command to vary on the line description.

Creating a Remote Work Station Controller Description

A controller description must exist on the AS/400 system containing information about the 5394 remote control unit. If the controller description does not already exist, you need to do the following:

1. Use the Create Controller Description for Remote Work Station (CRTCTLRWS) command to create the controller description
2. Use the Vary Configuration (VRYCFG) command to vary on the controller description.

Creating a Device Description

A device description must exist on the AS/400 system for each personal computer attached to the 5394 remote control unit. If the device description does not already exist, you need to do the following:

1. Use the Create Device Description (Display) (CRTDEVDSP) command to create the device description.
2. Record the name of the device description in the *PC location name* (**1**) field on the work sheet on page 10-2.
3. Record the local location address (LOCADR) value in the *Work station address* (**3**) field on the work sheet.

The AS/400 configuration for this personal computer is finished.

Preparing to Install PC Support/400 on the Personal Computer

To prepare for installing PC Support/400 on the personal computer:

1. Complete the necessary tasks on the AS/400 system as described in the following sections:
 - “Verifying the Installation of the PC Support/400 Licensed Program” on page 2-2
 - “Enrolling PC Support/400 Users” on page 2-3

- Chapter 3, "Using the PC Support/400 Administration Function" (if required)
2. Complete the work sheet on page 10-2.

Completing the Installation Work Sheet

Before the work sheet can be used to install PC Support/400 on the personal computer, you need to fill out the remaining fields on the work sheet:

Name of system to connect to (2)

This is the name by which the AS/400 system is known on the network. You can determine the system name by using the Display Network Attributes (DSPNETA) command. Use the value in the *Default local location name* field.

Installing PC Support/400 on Each Personal Computer

Before you install PC Support/400 on the personal computer, be sure you have completed the tasks as described in "Preparing to Install PC Support/400 on the Personal Computer" on page 10-7.

Note: If you are installing onto diskettes instead of onto a hard disk, see Appendix D, "Installing PC Support/400 on Diskettes" for additional information.

Using Custom Installation Diskettes

To install PC Support/400 using custom installation diskettes, do the following:

1. Insert the installation diskette in the A: drive.
2. At the DOS prompt, type A:INSTALL and press the Enter key. The installation program automatically sets up the necessary files on the personal computer and copies the PC Support/400 programs and files to the PCS subdirectory.
3. When the installation program has completed, start the personal computer again.

Using Standard Installation Diskettes

To install PC Support/400 using standard installation diskettes, do the following:

1. Use the DOS DISKCOPY command to create a backup copy of the DOS PC Support/400 installation diskette (volume 1) and label this diskette PCS01. You may have additional DOS PC Support/400 installation diskettes labeled volume 2, volume 3, and so on. Copy these diskettes, and label the backup copies PCS02, PCS03, and so on. Use the backup copies to install PC Support/400, and store the original diskettes in a safe place. You do not need to do this for each personal computer; you can install PC Support/400 on many personal computers using the same backup copies of the installation diskettes.
2. Insert the installation diskette PCS01 in the A: drive.
3. At the DOS prompt, type A:INSTALL and press the Enter key.
4. When the display with the IBM logo is shown, press the Enter key to continue. The following display appears:

```

                                PC Support/400 Installation

For information about using this program, refer to the PC Support/400: DOS
Installation and Administration Guide.

Select choices, press Enter.

Drive to contain PC Support directory . . . . . [C]

Drive your personal computer
starts from . . . . . [C]

-----
Enter   Esc=Cancel   F1=Help   F3=Exit

```

5. Enter the following information:

Drive to contain PC Support directory

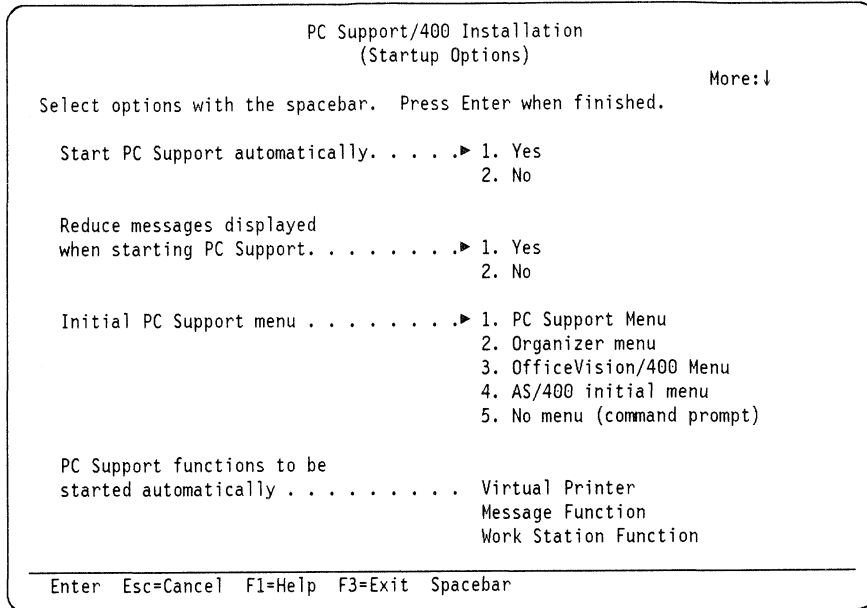
This is the drive letter that you want PC Support/400 to be stored on. If you are installing to the hard disk, this is probably the C: drive. If you are installing to diskette, this is probably the B: drive.

If you are installing to diskette, you will be prompted to insert the diskette on which you want to install PC Support/400. This is to verify that your working diskette is ready for installation.

Drive your personal computer starts from

This is the letter of the drive that contains the CONFIG.SYS file when you start your personal computer. If you are installing to a hard disk, this is usually the C: drive. If you start the system with a diskette in the drive, this is the A: drive.

When you finish typing this information, press the Enter key. A display similar to the following appears:



6. Enter the following information:

Start PC Support automatically

If you select Yes, the PC Support/400 installation program adds the STARTPCS command at the end of your AUTOEXEC.BAT file. This causes PC Support/400 to start automatically when you start your personal computer.

If you are installing on more than one diskette, this field does not appear.

Reduce messages displayed when starting PC Support

If you select Yes, you see fewer messages when you start PC Support/400. You still receive messages when each function begins, and you also see any error messages. Other informational messages are not shown on the display.

Initial PC Support menu

This option is not displayed if you are installing PC Support/400 to run with the Microsoft Windows program.

This option allows you to specify which menu you want to initially appear when you start PC Support:

PC Support Menu

The main menu for PC Support/400 will be displayed when you start PC Support/400. This menu gives you access to selected PC Support/400 function on the personal computer.

Organizer menu

The PC Support/400 Organizer menu will be displayed when you start PC Support/400. This menu combines AS/400 and PC commands.

OfficeVision/400 Menu

The main menu for the OfficeVision/400 program will be displayed when you start PC Support/400.

AS/400 initial menu

The display you normally see first will be displayed when you sign on the AS/400 system.

No menu

No menu will be displayed when you start PC Support/400. You will return to the DOS command prompt.

PC Support functions to be started automatically

This option allows you to select which functions you want to start automatically when you start PC Support. The functions you can select are:

- Virtual printer
- Message function
- Work station function (except when using Windows)
- Session manager (except when using Windows)
- Data queues function (extended DOS option only)

The necessary commands for the functions you select are added to the STARTPCS.BAT file. For a description of these functions, see "Functions Available with PC Support/400" on page 1-19.

Options to use with work station function

This option is displayed only if you are installing PC Support/400 to run with the Windows program. If you do not use the work station function, you can ignore this option.

This option allows you to select which functions you want to use when you use the PC Support work station function for display or printer emulation. The functions you can select are:

- Organizer
- Session Manager

When you are finished typing this information, press the Enter key. The following display appears:

```

          PC Support/400 Installation
          (PC to AS/400 Connection)

Select choices, press Enter.

Connection Information
Press spacebar to select connection type:
▶ 1. Twinaxial
  2. Local Area Network
  3. Synchronous Data Link Control
  4. Asynchronous communications

PC Information
PC location name. . . . . [          ]

System Information
Name of system to connect to. . . . . [          ]

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar

```

7. Select option 1, Twinaxial. The following display appears:

```

                                PC Support/400 Installation
                                (PC to AS/400 Connection)

Select choices, press Enter.

Connection Information
Press spacebar to select connection type:
▶ 1. Twinaxial
  2. Local Area Network
  3. Synchronous Data Link Control
  4. Asynchronous communications

PC Information
PC location name. . . . . [          ]

System Information
Name of system to connect to. . . . . [          ]

Work station address . . . . . [2]  0-6

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar
    
```

8. Enter the following information from the work sheet on page 10-2:

- PC location name (**1**)
- Name of system to connect to (**2**)
- Work station address (**3**)

9. When you finish typing this information, press the Enter key. A display appears informing you that the installation program is about to begin copying files. Press the Enter key to continue. After all the files are copied, the following display appears:

```

                                Verify PC to AS/400 Connection

Attempt to connect to AS/400 at this time
to verify values . . . . . ▶1. Yes
                                     2. No

-----
Enter  F1=Help
    
```

10. This display allows you to attempt to connect to the AS/400 system now, to ensure that the information you entered was correct. If you specify Yes, the installation program starts the PC Support/400 router. If the connection is not made, the PC Support/400 Error Log display appears. This display shows you the errors encountered while trying to connect to the AS/400 system. Use the Page Up and Page Down keys to move through the list. Press the Enter key to view cause and recovery information about the error messages displayed. Press the Esc key to return to the PC Support/400 Installation display, and correct the entries that caused the errors. If you need to see the error log again, press Alt+F5.

Note: This display will not appear if:

- You are installing PC Support/400 to run with the Windows program.
- You are installing to more than one working diskette.
- The router was loaded before you began installing PC Support/400.

11. When the program is complete, the PC Support/400 Installation Completed display is shown. Before you can start PC Support/400, you must start your personal computer again (press and hold the Ctrl and Alt keys, then press the Delete key).

Starting PC Support/400

If PC Support/400 does not start automatically when you start your personal computer, you can start it by entering

d:\PCS\STARTPCS

at the DOS prompt, where d: is the PC Support/400 directory drive.

If PC Support/400 does not work properly, see Part 5, "Analyzing Problems with PC Support/400." For information about configuring the PC Support/400 functions, see Part 4, "Configuring PC Support/400."

Copying the PC Support Functions to the Personal Computer

It is recommended that you copy the PC Support functions you will be using to the personal computer from the AS/400 system. The PC Support functions load and run faster when they are located on the personal computer. This initial copying is time-consuming, but performance is significantly enhanced for each time you start PC Support/400.

To copy the PC Support functions to the personal computer, do the following:

1. From the PC Support/400 Menu, select the **Configure PC Support/400** option.
2. A window appears. Select option 1 (**PC Support/400 configuration**).
3. The **PC Support/400 Configuration** menu appears. Select **General options**.
4. The **General Options for PC Support/400 display** appears. Select the **Location of PC Support functions** option.
5. The **Location of PC Support Functions display** appears. Select the functions that you want to copy to your hard disk. Do this by moving the cursor to the function and pressing the spacebar.
6. When you have selected the functions you want, press **F3 (Exit)**.
7. Select **Save** and exit. The **Copy Files to Your Personal Computer display** appears.
8. Select whether you want to copy the functions now or the next time you start PC Support/400.

The necessary files will be copied to your personal computer, and the STARTPCS file will be changed to run the function from your personal computer.

Chapter 11. Installing PC Support/400 for 5494 Remote Communications

DOS: Installation Work Sheet for 5494 Remote Communications	11-2
Configuring 5494 Remote Control Units	11-2
Configuring the 5494 Remote Control Unit on the AS/400 System	11-4
Configuring 5494 (SDLC) Connections	11-4
Configuring an SDLC Line Description	11-4
Configuring an APPC Controller for an SDLC Connection	11-7
Configuring a Remote Work Station Controller for an SDLC Connection	11-11
Configuring 5494 (X.25) Connections	11-13
Configuring an X.25 Line Description	11-13
Configuring an APPC Controller for an X.25 Connection	11-16
Configuring a Remote Work Station Controller for an X.25 Connection	11-19
Configuring 5494 (Token-Ring) Connections	11-21
Configuring a Token-Ring Line Description	11-21
Configuring an APPC Controller for a Token-Ring Connection	11-21
Configuring a Remote Work Station Controller for a Token-Ring Connection	11-25
Preparing to Install PC Support/400 on the Personal Computer	11-27
Completing the Installation Work Sheet	11-27
Installing PC Support/400 on Each Personal Computer	11-28
Using Custom Installation Diskettes	11-28
Using Standard Installation Diskettes	11-28
Starting PC Support/400	11-33
Copying the PC Support Functions to the Personal Computer	11-33

DOS: Installation Work Sheet for 5494 Remote Communications

Before you install PC Support/400 on the personal computer, you must configure the AS/400 system for communications. Fill out one copy of this work sheet for each personal computer as instructed. You will need this information when you install PC Support/400 on the personal computer.

Note: Reference numbers are listed on the work sheet to assist you in finding the correct parameter.

Remote 5494 Communications		
PC Support/400: Installation Work Sheet		
Refer- ence Number	Configuration Parameter	Fill In Your Information
1	PC location name	
2	Name of system to connect to	
3	Work station address	

Configuring 5494 Remote Control Units

This chapter discusses how to configure and manage the 5494 controller on the AS/400 system. For information on how to configure the 5494 controller hardware, see the *5494 Remote Control Unit Planning Guide*, GA27-3936 and the *5494 Remote Control Unit User's Guide*, GA27-3960.

The 5494 controller performs all of the functions of the 5394 controller, plus:

- The 5494 Remote Control Unit can attach to a token-ring network, with the following token-ring configurations:
 - Token-ring gateway configuration, which supports up to 40 downstream devices. Up to 28 of these devices can be attached as 5250 (dependent) devices; the remainder (or all 40) can be programmable (independent) work stations attached to a token-ring network.

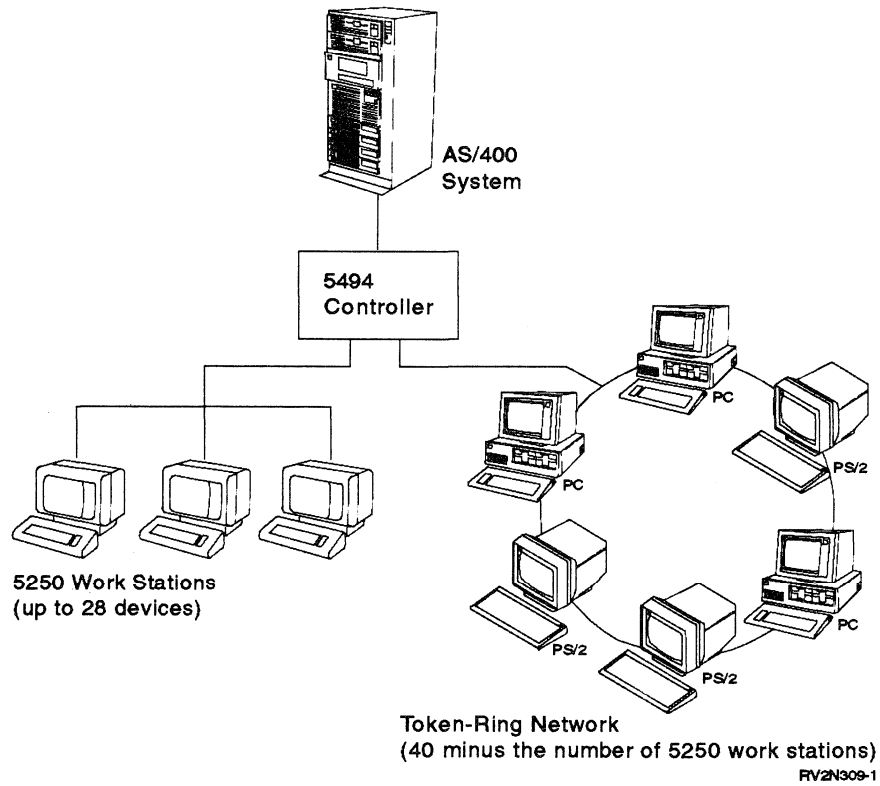


Figure 11-1. 5494 Remote Control Unit in a Token-Ring Gateway Configuration.

- AS/400 token-ring attachment configuration, which allows you to connect the 5494 controller to an AS/400 system through a token-ring network. You can connect up to twenty-eight 5250 devices in this configuration.

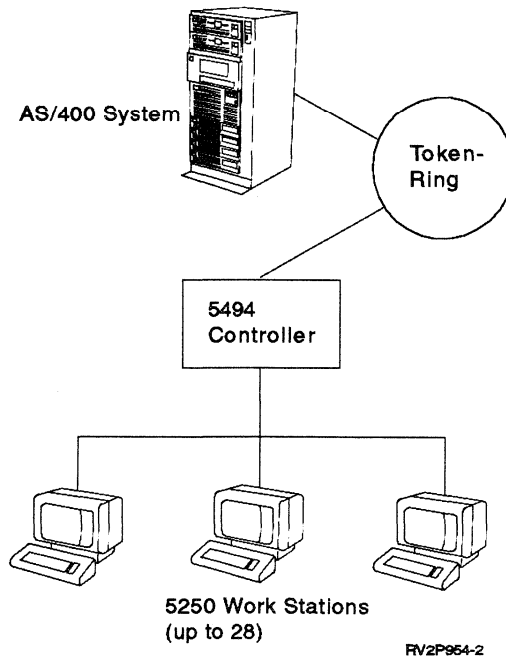


Figure 11-2. 5494 Remote Control Unit with AS/400 Token-Ring Attachment Configuration.

- The 5494 Remote Control Unit uses logical unit 6.2 (LU6.2) to communicate with the AS/400 system. This allows for better performance when using attached SNA devices.

Configuring the 5494 Remote Control Unit on the AS/400 System

You may use an SDLC connection, an X.25 connection, or a Token-ring connection with the 5494 Remote Control Unit.

- If you are using an SDLC connection, continue with “Configuring 5494 (SDLC) Connections.”
- If you are using an X.25 connection, go to “Configuring 5494 (X.25) Connections” on page 11-13.
- If you are using a Token-ring connection, go to “Configuring 5494 (Token-Ring) Connections” on page 11-21.

The AS/400 system provides a mode description, QRMTWSC, for use with the 5494 controller. There are 28 sessions available for 5250 devices with this mode. If the number of sessions is not enough (you have more than one 5494 controller), use the Change Mode Description (CHGMODD) command to increase the number of sessions associated with mode QRMTWSC.

Note: This mode is not for the PC Support session.

Configuring 5494 (SDLC) Connections

To configure a 5494 (SDLC) connection, you must configure a line description to the network, an APPC controller description, and a 5494 controller description. If previous communications between the AS/400 system and the network have occurred, this may already be done.

Configuring an SDLC Line Description

To create an SDLC line description:

1. Type the command CRTLNSDLC and press F4(Prompt). The following display appears:

```

                                Create Line Desc (SDLC) (CRTLINS DLC)

Type choices, press Enter.

Line description . . . . . Name
Resource names . . . . . Name
      + for more values
Online at IPL . . . . . *YES      *YES, *NO
Data link role . . . . . *NEG      *NEG, *PRI, *SEC
Physical interface . . . . . *RS232V24 *RS232V24, *V35, *X21, ...
Connection type . . . . . *NONSWTTP *NONSWTTP, *SWTTP, *MP, *SHM

                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys

```

On this display, you need to supply the following information:

Line description

Type the name of the line description you are creating.

Resource names

A resource name identifies the hardware this description represents. This name may be determined using the Work with Hardware Resource (WRKHDWRSC) command.

Data link role

The data link role specifies whether the system is the primary or secondary station, or whether the system dynamically negotiates the primary and secondary roles. The possible values are:

*NEG

Negotiable

*PRI

Primary

*SEC

Secondary

Connection type

This is the connection type to be used for this line. The possible values are:

*NONSWTTP

Nonswitched point-to-point line

*SWTTP

Switched point-to-point line

*MP

Multipoint line

***SHM**

X.21 short hold mode line

2. When you finish typing this information, press the Enter key. Depending on whether you selected *NONSWTTP, *SWTTP, *MP, or *SHM, a display similar to the following appears:

```

                                Create Line Desc (SDLC) (CRTLINS DLC)

Type choices, press Enter.

Line description . . . . . > NYLINE          Name
Resource names . . . . . > LIN061          Name
      + for more values
Online at IPL . . . . . *YES              *YES, *NO
Data link role . . . . . > *PRI            *NEG, *PRI, *SEC
Physical interface . . . . . *RS232V24    *RS232V24, *V35, *X21, ...
Connection type . . . . . > *SWTTP        *NONSWTTP, *SWTTP, *MP, *SHM
Vary on wait . . . . . *NOWAIT           *NOWAIT, 15-180 (1 second)
Autocall unit . . . . . *NO              *NO, *YES
Exchange identifier . . . . . *SYSGEN     05600000-056FFFFF, *SYSGEN
NRZI data encoding . . . . . *YES         *YES, *NO
Line speed . . . . . 9600                 600, 1200, 2400, 4800...
Modem type supported . . . . . *NORMAL    *NORMAL, *V54, *IBMWRAP...
Switched connection type . . . . . *BOTH  *BOTH, *ANS, *DIAL
Autoanswer . . . . . *YES                *YES, *NO
Autodial . . . . . *NO                   *NO, *YES

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
More...

```

Note: You may leave the default value for the NRZI data encoding prompt, but the value must match the value for this prompt in the 5494 controller configuration setup.

3. Press the Page Down key to move to the next set of prompts. A display similar to the following is shown:

```

                                Create Line Desc (SDLC) (CRTLINS DLC)

Type choices, press Enter.

Calling number . . . . . *NONE
Connect poll retry . . . . . 7           0-64
Maximum frame size . . . . . 521         265, 521, 1033, 2057
Duplex . . . . . *HALF                   *HALF, *FULL
Nonproductive receive timer . . . 320    160-4200 (0.1 seconds)
Idle timer . . . . . 30                  5-300 (0.1 seconds)
Connect poll timer . . . . . 30          2-300 (0.1 seconds)
Poll cycle pause . . . . . 0             0-2048 (0.0001 seconds)
Frame retry . . . . . 7                  0-64
Autoanswer type . . . . . *DTR           *DTR, *CDSTL
Remote answer timer . . . . . 60         30, 35, 40, 45, (seconds)...
Text 'description' . . . . . *BLANK

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
Bottom

```

On this display, you need to supply the following information:

Text 'description'

Type a description that uniquely identifies this line.

Notes:

- a. The maximum possible value for the *Maximum frame size* prompt for a 5494 controller is 521.
 - b. You may leave the default value for the *Duplex* prompt, but the value must match the capabilities of your data circuit terminating equipment (DCE) and your 5494 configuration value.
4. When you finish typing this information, press the Enter key. You have completed the configuration of the SDLC line.

Configuring an APPC Controller for an SDLC Connection

This controller description is used to connect the 5494 controller to the AS/400 system.

Note: The APPC controller description automatically creates the APPC device description. To change the APPC device description, use the Work with Device Description (WRKDEVD) command.

To create an APPC controller description:

1. Type the command CRTCTLAPPC and press F4 (Prompt). The following display appears:

Create Ct1 Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description		Name
Link type		*IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL	*YES	*YES, *NO

Bottom

F3=Exit F4=Prompt F5=Refresh F10=Additional parameters F12=Cancel
F13=How to use this display F24=More keys

On this display, you need to supply the following information:

Controller description

Type the name of the controller description you are creating.

Link type

Type *SDLC.

2. When you finish typing this information, press the Enter key. The following display appears:

```

                                Create Ct1 Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > NYAPPC           Name
Link type . . . . . > *SDLC                       *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES                       *YES, *NO
Switched connection . . . . . *NO                   *NO, *YES

                                                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
    
```

If your line is switched, change the value for the *Switched connection* prompt to *YES.

3. Press the Enter key. A display similar to the following is shown:

```

                                Create Ct1 Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > NYAPPC           Name
Link type . . . . . > *SDLC                       *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES                       *YES, *NO
Switched connection . . . . . > *YES               *NO, *YES
Short hold mode . . . . . *NO                     *NO, *YES
APPN-capable . . . . . *YES                       *YES, *NO

                                                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display.
F24=More keys
    
```

4. Press the Enter key again. The following display is shown:

```

                                Create Ct1 Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > NYAPPC          Name
Link type . . . . . > *SDLC                       *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES                       *YES, *NO
Switched connection . . . . . > *YES             *NO, *YES
Short hold mode . . . . . *NO                      *NO, *YES
APPN-capable . . . . . *YES                       *YES, *NO
Switched line list . . . . .                      Name
      + for more values
Maximum frame size . . . . . *LINKTYPE           265-16393, 256, 265, 512...
Remote network identifier . . . *NETATR          Name, *NETATR, *NONE, *ANY
Remote control point . . . . .                  Name, *ANY
Exchange identifier . . . . .                   00000000-FFFFFFFF
Initial connection . . . . . *DIAL               *DIAL, *ANS

Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys

```

On this display, you need to supply the following information:

Switched line list

These are the names of the switched lines to which this controller attaches. Specify the name of the line description created in "Configuring an SDLC Line Description" on page 11-4.

Remote network identifier

Leave the value *NETATR to use the same network identifier as the AS/400 system. This is field Hn:3 (where n is any number) on the 5494 configuration display.

Remote control point

Enter the remote control point name for this controller. The remote control point name must match the control point name of the 5494 controller. This is field 13 on the 5494 configuration display.

Initial connection

Specify an initial connection of *ANS.

5. Press the Page Down key to move to the next set of prompts. A display similar to the following is shown:

```

                                Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > NYAPPC          Name
Link type . . . . . > *SDLC          *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES          *YES, *NO
Switched connection . . . . . > *YES          *NO, *YES
Short hold mode . . . . . *NO          *NO, *YES
APPN-capable . . . . . *YES          *YES, *NO
Switched line list . . . . . > NYLINE          Name
      + for more values
Maximum frame size . . . . . *LINKTYPE          265-16393, 256, 265, 512...
Remote network identifier . . . *NETATR          Name, *NETATR, *NONE, *ANY
Remote control point . . . . . > L5494          Name, *ANY
Exchange identifier . . . . . 05600000          00000000-FFFFFFFF
Initial connection . . . . . > *ANS          *DIAL, *ANS
Connection number . . . . .
Data link role . . . . . *NEG          *NEG, *PRI, *SEC

                                                                More...
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
    
```

6. Press the Page Down key to move to the next set of prompts. A display similar to the following is shown:

```

                                Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Station address . . . . . 00-FE
APPN CP session support . . . *YES          *YES, *NO
APPN node type . . . . . *ENDNODE          *ENDNODE, *LENNODE...
APPN transmission group number 1          1-20, *CALC
APPN minimum switched status . *VRYONPND          *VRYONPND, *VRYON
Autodelete device . . . . . 1440          1-10000, *NO
User-defined 1 . . . . . *LIND          0-255, *LIND
User-defined 2 . . . . . *LIND          0-255, *LIND
User-defined 3 . . . . . *LIND          0-255, *LIND
Text 'description' . . . . . *BLANK

                                                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
    
```

On this display, you need to supply the following information:

Station address

Type the station address to be used when communicating with the controller. The station address must match the station address of the 5494 controller. This is field 2 on the 5494 configuration display.

APPN CP session support

Specify a value of *NO.

APPN node type

The only valid APPN node type for a 5494 controller is *LENNODE.

Text 'description'

Type a description that uniquely identifies this controller.

- When you finish typing this information, press the Enter key. You have completed the configuration of the APPC controller.

Configuring a Remote Work Station Controller for an SDLC Connection

To create a remote work station controller description:

- Type the command CRTCTLRWS and press F4 (Prompt). The following display is shown:

```

                                Create Ctl Desc (Remote WS) (CRTCTLRWS)

Type choices, press Enter.

Controller description . . . . .                               Name
Controller type . . . . .                                     3174, 3274, 5251, 5294...
Controller model . . . . .                                   0, 1, 0001, 2, 0002, 12, 0012
Link type . . . . .                                         *IDLC, *LAN, *NONE, *SDLC...
Online at IPL . . . . . *YES                                *YES, *NO

                                                                 Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys

```

On this display, you need to supply the following information:

Controller description

Type the name of the controller description you are creating.

Controller type

Type 5494.

Controller model

Type the model number of your 5494 controller. Possible values for a 5494 SDLC connection are 1 or 2.

Link type

Enter the value *NONE to indicate LU6.2 attachment. The controller description will not be physically attached to a line description.

- When you finish typing this information, press the Enter key. The following display appears:

```

                                Create Ctl Desc (Remote WS) (CRTCTRLWS)

Type choices, press Enter.

Controller description . . . . . > NYRWSCTL      Name
Controller type . . . . . > 5494                3174, 3274, 5251, 5294...
Controller model . . . . . > 1                  0, 1, 0001, 2, 0002, 12, 0012
Link type . . . . . > *NONE                    *IDLC, *LAN, *NONE, *SDLC...
Online at IPL . . . . . *YES                   *YES, *NO
Remote location . . . . .                      Name
Local location . . . . . *NETATR               Name, *NETATR
Remote network identifier . . . *NETATR        Name, *NETATR, *NONE
Text 'description' . . . . . *BLANK

                                Bottom
F3=Exit   F4=Prompt   F5=Refresh   F10=Additional parameters   F12=Cancel
F13=How to use this display   F24=More keys
    
```

On this display, you need to supply the following information:

Remote location

Enter the remote location name for this controller. The remote location name must match the logical unit (LU) name of the 5494 controller. This is field 12 on the 5494 configuration display.

Note: If the 5494 LU name does not match the 5494 control point name, you must create a remote configuration list on the AS/400 system.

Local location

Enter the local location name for this controller. The local location name must match the remote location name of the AS/400 system on the 5494 controller. A value of *NETATR causes the network identifier specified in the network attributes to be used. This is field Hx:1 on the 5494 configuration display.

Remote network identifier

Enter the remote network identifier for this controller. The remote network identifier must match the network identifier that is specified on the 5494 controller. A value of *NETATR causes the network identifier specified in the network attributes to be used. This is field Hx:3 on the 5494 configuration display.

Text 'description'

Type a description that uniquely identifies this controller.

- When you finish typing this information, press the Enter key. You have completed the configuration of the remote work station controller. Continue with "Preparing to Install PC Support/400 on the Personal Computer" on page 11-27.

Configuring 5494 (X.25) Connections

To configure a 5494 (X.25) connection, you must configure a line description to the network, an APPC controller description, and a 5494 controller description. If previous communications between the AS/400 system and the network have occurred, this may already be done.

Configuring an X.25 Line Description

To create an X.25 line description:

1. Type the command CRTLINX25 and press F4 (Prompt). The following display appears:

```

                                Create Line Desc (X.25) (CRTLINX25)

Type choices, press Enter.

Line description . . . . . Name
Resource name . . . . . Name, *NWID
Logical channel entries:
  Logical channel identifier . . 001-FFF, *PROMPT
  Logical channel type . . . . . *PVC, *SVCIN, *SVCBOTH...
  PVC controller . . . . . Name
                                + for more values
Local network address . . . . .
Connection initiation . . . . . *LOCAL, *REMOTE, *WAIT
Online at IPL . . . . . *YES *YES, *NO
Physical interface . . . . . *X21BISV24 *X21BISV24, *X21BISV35...
Connection type . . . . . *NONSWTPP *NONSWTPP, *SWTPP

                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys

```

On this display, you need to supply the following information:

Line description

Type the name of the line description you are creating.

Resource names

A resource name identifies the hardware this description represents. This name may be determined using the Work with Hardware Resource (WRKHDWRSC) command.

Logical channel identifier

Valid values for a logical channel identifier range from hexadecimal 001 to FFF.

Logical channel type

The possible channel types are:

*PVC

permanent virtual circuit

*SVCIN

switched virtual circuit for incoming calls

*SVCBOTH

switched virtual circuit for both incoming and outgoing calls

***SVCOUT**

switched virtual circuit for outgoing calls

Note: If you specify *PVC for this prompt, the APPC controller must be connected with a nonswitched connection. If you specify *SVCIN, *SVCBOTH, or *SVCOUT, the APPC controller must be connected with a switched connection.

Local network address

This is the address of the local network.

Connection initiation

This specifies who initiates the X.25 Data Link connection. Possible values are:

***LOCAL**

local system initiates connection

***REMOTE**

remote system initiates connection

***WAIT**

local system waits for a disconnect or disconnect mode before attempting to activate the link

- When you finish typing this information, press the Enter key. The following display appears:

```

                                Create Line Desc (X.25) (CRTLINX25)

Type choices, press Enter.

Line description . . . . . > CHILINE          Name
Resource name . . . . . > LIN021           Name, *NWD
Logical channel entries:
Logical channel identifier . . > 001        001-FFF, *PROMPT
Logical channel type . . . . . > *PVC      *PVC, *SVCIN, *SVCBOTH...
PVC controller . . . . .                  Name
                                + for more values
Local network address . . . . . > 11111111111111
Connection initiation . . . . . > *LOCAL    *LOCAL, *REMOTE, *WAIT
Online at IPL . . . . .                  *YES, *NO
Physical interface . . . . .              *X21BISV24 *X21BISV24, *X21BISV35...
Connection type . . . . .                 *NONSWTPP *NONSWTPP, *SWTPP
Vary on wait . . . . .                    *NOWAIT   *NOWAIT, 15-180, (1 second)
Line speed . . . . .                      9600     *CALC, 600, 1200, 2400...
Exchange identifier . . . . .             *SYSGEN   05600000-056FFFFFF, *SYSGEN
Extended network addressing . .           *NO       *YES, *NO
                                                More...
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
    
```

- Press the Page Down key to move to the next set of prompts. The following display is shown:


```

                                Create Line Desc (X.25) (CRTLINX25)

Type choices, press Enter.

Maximum frame size . . . . . 1024          1024, 2048, 4096
Default packet size:
  Transmit value . . . . . 128            64, 128, 256, 512, 1024...
  Receive value . . . . . *TRANSMIT      *TRANSMIT, 64, 128, 256...
Maximum packet size:
  Transmit value . . . . . *DFTPKTSIZE   *DFTPKTSIZE, 64, 128, 256...
  Receive value . . . . . *TRANSMIT      *DFTPKTSIZE, *TRANSMIT, 64...
Modulus . . . . . 8                      8, 128
Default window size:
  Transmit value . . . . . 2             1-15
  Receive value . . . . . *TRANSMIT      1-15, *TRANSMIT
Insert net address in packets . *YES    *YES, *NO
Text 'description' . . . . . *BLANK

                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys

```

On this display you need to enter the following information:

Text 'description'

Type a description that uniquely identifies this line.

4. Press F10 (Additional parameters). Press the Page Down key to move to the next set of prompts. The following display is shown:

```

                                Create Line Desc (X.25) (CRTLINX25)

Type choices, press Enter.

                                Additional Parameters

X.25 DCE support . . . . . *NO          *NO, *YES
Network controller . . . . .           Name
Switched controller list . . . . . *NONE  Name, *NONE
      + for more values
Idle timer . . . . . 40                3-600 in 0.1 second intervals
Frame retry . . . . . 7                0-64
Error threshold level . . . . . *OFF    *OFF, *MIN, *MED, *MAX
Modem type supported . . . . . *NORMAL  *NORMAL, *V54, *IBMWRAP
Modem data rate select . . . . . *FULL  *FULL, *HALF
Clear To Send timer . . . . . 25       10-60 (seconds)
Link speed . . . . . *INTERFACE        *INTERFACE, *MIN, 1200...
Cost/connect time . . . . . 128        0-255
Cost/byte . . . . . 128                0-255

                                More...
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys

```

On this display, you need to supply the following information:

X.25 DCE support

Type *YES if the system communicates through the X.25 data circuit-terminating equipment (DCE) support.

5. When you finish typing this information, press the Enter key. You have completed the configuration of the X.25 line.

Configuring an APPC Controller for an X.25 Connection

This controller description is used to connect the 5494 controller to the AS/400 system.

Note: The APPC controller description automatically creates the APPC device description. To change the APPC device description, use the Work with Device Description (WRKDEVD) command.

To create an APPC controller description:

1. Type the command CRTCTLAPPC and press F4 (Prompt). The following display appears:

```
                Create Ct1 Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . .          Name
Link type . . . . .                      *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES              *YES, *NO

                                           Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
```

On this display, you need to supply the following information:

Controller description

Type the name of the controller description you are creating.

Link type

Type *X25.

2. When you finish typing this information, press the Enter key. The following display is shown:

```

                                Create Ct1 Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > CHIAPPC      Name
Link type . . . . . > *X25                    *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES                  *YES, *NO
Switched connection . . . . . *NO             *NO, *YES

                                                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys

```

3. Press the Enter key again. The following display is shown:

```

                                Create Ct1 Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > CHIAPPC      Name
Link type . . . . . > *X25                    *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES                  *YES, *NO
Switched connection . . . . . *NO             *NO, *YES
APPN-capable . . . . . *YES                  *YES, *NO

                                                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys

```

Press F10 (Additional parameters). The following display is shown:

```

                                Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > CHIAPPC      Name
Link type . . . . . > *X25                    *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES                  *YES, *NO
Switched connection . . . . . *NO             *NO, *YES
APPN-capable . . . . . *YES                  *YES, *NO
Attached nonswitched line . . . . .           Name
Maximum frame size . . . . . *LINKTYPE        265-16393, 256, 265, 512...
Remote network identifier . . . *NETATR        Name, *NETATR, *NONE, *ANY
Remote control point . . . . .               Name, *ANY
Exchange identifier . . . . .                00000000-FFFFFFFF
Data link role . . . . . *NEG                 *NEG, *PRI, *SEC

                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
    
```

On this display, you need to supply the following information:

Attached nonswitched line

Type the name of the line that was created in "Configuring an X.25 Line Description" on page 11-13.

Remote network identifier

Leave the value *NETATR to use the same network identifier as the AS/400 system. This is field Hx:3 on the 5494 configuration display.

Remote control point

Enter the remote control point name for this controller. The remote control point name must match the control point name of the 5494 controller. This is field 13 on the 5494 configuration display.

4. When you finish typing this information, press the Enter key. The following display is shown:

```

                                Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > CHIAPPC      Name
Link type . . . . . > *X25                    *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES                  *YES, *NO
Switched connection . . . . . *NO             *NO, *YES
APPN-capable . . . . . *YES                  *YES, *NO
Attached nonswitched line . . . > CHILINE        Name
Maximum frame size . . . . . *LINKTYPE        265-16393, 256, 265, 512...
Remote network identifier . . . *NETATR        Name, *NETATR, *NONE, *ANY
Remote control point . . . . . > LU5494        Name, *ANY
Exchange identifier . . . . .                00000000-FFFFFFFF
Data link role . . . . . *NEG                 *NEG, *PRI, *SEC
X.25 network level . . . . .                 1980, 1984, 1988
X.25 link level protocol . . . *QLLC         *QLLC, *ELLC
X.25 logical channel ID . . . .             001-FFF
APPN CP session support . . . . *YES          *YES, *NO
APPN node type . . . . . *ENDNODE            *ENDNODE, *LENNODE...

                                More...
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys
    
```

On this display, you need to supply the following information:

X.25 network level

Type the year of the standard used by the X.25 network.

X.25 logical channel ID

Type the logical channel identifier used for the X.25 permanent virtual circuit (PVC) to this controller. The first digit is the logical group number. The last two digits are the logical channel number.

APPN CP session support

Specify a value of *NO.

APPN node type

The only valid APPN node type for a 5494 controller is *LENNODE.

Text 'description'

Type a description that uniquely identifies this controller.

- When you finish typing this information, press the Enter key. You have completed the configuration of the APPC controller.

Configuring a Remote Work Station Controller for an X.25 Connection

To create a remote work station controller description:

- Type the command CRTCTLRWS and press F4 (Prompt). The following display is shown:

```

                                Create Ctl Desc (Remote WS) (CRTCTLRWS)

Type choices, press Enter.

Controller description . . . . .                               Name
Controller type . . . . .                                     3174, 3274, 5251, 5294...
Controller model . . . . .                                   0, 1, 0001, 2, 0002, 12, 0012
Link type . . . . .                                         *IDLC, *LAN, *NONE, *SDLC...
Online at IPL . . . . . *YES                                *YES, *NO

                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys

```

On this display, you need to supply the following information:

Controller description

Type the name of the controller description you are creating.

Controller type

Type 5494.

Controller model

The model number for an X.25 connection is 1.

Link type

Enter the value *NONE to indicate LU6.2 attachment. The controller description will not be physically attached to a line description.

- When you finish typing this information, press the Enter key. The following display appears:

```

                                Create Ctl Desc (Remote WS) (CRTCTLRWS)

Type choices, press Enter.

Controller description . . . . . > NYRWSCTL      Name
Controller type . . . . . > 5494                3174, 3274, 5251, 5294...
Controller model . . . . . > 1                  0, 1, 0001, 2, 0002, 12, 0012
Link type . . . . . > *NONE                    *IDLC, *LAN, *NONE, *SDLC...
Online at IPL . . . . . *YES                   *YES, *NO
Remote location . . . . .                      Name
Local location . . . . . *NETATR               Name, *NETATR
Remote network identifier . . . *NETATR        Name, *NETATR, *NONE
Text 'description' . . . . . *BLANK

                                                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
    
```

On this display, you need to supply the following information:

Remote location

Enter the remote location name for this controller. The remote location name must match the logical unit (LU) name of the 5494 controller. This is field 12 on the 5494 configuration display.

Local location

Enter the local location name for this controller. The local location name must match the remote location name of the AS/400 system on the 5494 controller. A value of *NETATR causes the network identifier specified in the network attributes to be used. This is field Hx:1 on the 5494 configuration display.

Remote network identifier

Enter the remote network identifier for this controller. The remote network identifier must match the network identifier that is specified on the 5494 controller. A value of *NETATR causes the network identifier specified in the network attributes to be used. This is field Hx:3 on the 5494 configuration display.

Text 'description'

Type a description that uniquely identifies this controller.

- When you finish typing this information, press the Enter key. You have completed the configuration of the remote work station controller. Continue with "Preparing to Install PC Support/400 on the Personal Computer" on page 11-27.

Configuring 5494 (Token-Ring) Connections

To configure a 5494 (token-ring) connection, you must configure a line description to the network, an APPC controller description, and a 5494 controller description. If previous communications between the AS/400 system and the network have occurred, this may already be done.

Configuring a Token-Ring Line Description

To create a token-ring line description:

1. Type the command CRTLINTRN and press F4 (Prompt). The following display appears:

```

                                Create Line Desc (Token-Ring) (CRTLINTRN)

Type choices, press Enter.

Line description . . . . . Name
Resource name . . . . . Name
Online at IPL . . . . . *YES *YES, *NO
Vary on wait . . . . . *NOWAIT *NOWAIT, 15-180 (1 second)
Maximum controllers . . . . . 40 1-256
Line speed . . . . . 4M 4M, 16M
Maximum frame size . . . . . 1994 265-16393, 265, 521, 1033...
Local adapter address . . . . . *ADPT 400000000000-7FFFFFFF...
Exchange identifier . . . . . *SYSGEN 05600000-056FFFFF, *SYSGEN
SSAP list:
  Source Service Access Point . *SYSGEN 02-FE, *SYSGEN
  SSAP maximum frame . . . . . *MAXFRAME, 265-16393
  SSAP type . . . . . *CALC, *NONSNA, *SNA
  + for more values
Text 'description' . . . . . *BLANK

                                Bottom
F3=Exit F4=Prompt F5=Refresh F10=Additional parameters F12=Cancel
F13=How to use this display F24=More keys

```

On this display, you need to supply the following information:

Line description

Type the name of the line description you are creating.

Resource name

A resource name identifies the hardware this description represents. This name may be determined using the Work with Hardware Resource (WRKHDWRSC) command.

Text 'description'

Type a description that uniquely identifies this line.

2. When you finish typing this information, press the Enter key. You have completed the configuration of the token-ring line.

Configuring an APPC Controller for a Token-Ring Connection

This controller description is used to connect the 5494 controller to the AS/400 system.

Note: The APPC controller description automatically creates the APPC device description. To change the APPC device description, use the Work with Device Description (WRKDEVD) command.

To create an APPC controller description:

1. Type the command CRTCTLAPPC and press F4 (Prompt). The following display appears:

```
                Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . .                Name
Link type . . . . .                            *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES                    *YES, *NO

                                                    Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
```

On this display, you need to supply the following information:

Controller description

Type the name of the controller description you are creating.

Link type

Type *LAN.

2. When you finish typing this information, press the Enter key. The following display appears:

```
                Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > LAAPPC        Name
Link type . . . . . > *LAN                      *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES                    *YES, *NO
APPN-capable . . . . . *YES                    *YES, *NO

                                                    Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
```

Press the Enter key again. The following display is shown:


```

                                Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > LAAPPC           Name
Link type . . . . . > *LAN                         *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES                       *YES, *NO
APPN-capable . . . . . *YES                       *YES, *NO
Switched line list . . . . .                        Name
      + for more values
Maximum frame size . . . . . *LINKTYPE             265-16393, 256, 265, 512...
Remote network identifier . . . *NETATR            Name, *NETATR, *NONE, *ANY
Remote control point . . . . .                    Name, *ANY
Exchange identifier . . . . .                      00000000-FFFFFFF
Initial connection . . . . . *DIAL                 *DIAL, *ANS

                                                                    Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display      F24=More keys

```

On this display, you need to supply the following information:

Switched line list

Type the name of the line that was created in "Configuring a Token-Ring Line Description" on page 11-21.

Remote network identifier

Leave the value *NETATR to use the same network identifier as the AS/400 system. This is field Hx:3 on the 5494 configuration display.

Remote control point

Enter the remote control point name for this controller. The remote control point name must match the control point name of the 5494 controller. This is field 13 on the 5494 configuration display.

Initial connection

Specify an initial connection of *ANS.

- When you finish typing this information, press the Enter key. The following display is shown:

```

                                Create Ct1 Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > LAAPPC          Name
Link type . . . . . > *LAN                       *IDLC, *LAN, *LOCAL, *SDLC...
Online at IPL . . . . . *YES                      *YES, *NO
APPN-capable . . . . . *YES                      *YES, *NO
Switched line list . . . . . > LALINE            Name
      + for more values
Maximum frame size . . . . . *LINKTYPE          265-16393, 256, 265, 512...
Remote network identifier . . . *NETATR          Name, *NETATR, *NONE, *ANY
Remote control point . . . . . > LU5494         Name, *ANY
Exchange identifier . . . . .                  00000000-FFFFFFFF
Initial connection . . . . . > *ANS             *DIAL, *ANS
Dial initiation . . . . . *LINKTYPE            *LINKTYPE, *IMMED, *DELAY
LAN remote adapter address . . .                000000000001-FFFFFFFFFFFF
APPN CP session support . . . *YES           *YES, *NO
APPN node type . . . . . *ENDNODE              *ENDNODE, *LENNODE...
APPN transmission group number 1                1-20, *CALC

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel  More...
F13=How to use this display  F24=More keys
    
```

On this display, you need to supply the following information:

LAN remote adapter address

Type the LAN adapter address of the remote controller. This is field 15 on the 5494 configuration display.

APPN node type

The only valid APPN node type for a 5494 controller is *LENNODE.

4. Press Page Down to display the next set of prompts. The following display is shown:

```

                                Create Ct1 Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

APPN minimum switched status . . *VRYONPND  *VRYONPND, *VRYON
Autodelete device . . . . . 1440          1-10000, *NO
User-defined 1 . . . . . *LIND           0-255, *LIND
User-defined 2 . . . . . *LIND           0-255, *LIND
User-defined 3 . . . . . *LIND           0-255, *LIND
Model controller description . . *NO        *NO, *YES

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel  More...
F13=How to use this display  F24=More keys
    
```

5. Press the Enter key. The following display is shown:

```

                                Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

APPN minimum switched status . . *VRYONPND   *VRYONPND, *VRYON
Autodelete device . . . . . 1440           1-10000, *NO
User-defined 1 . . . . . *LIND          0-255, *LIND
User-defined 2 . . . . . *LIND          0-255, *LIND
User-defined 3 . . . . . *LIND          0-255, *LIND
Model controller description . . *NO           *NO, *YES
Text 'description' . . . . . *BLANK

                                                                More...
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display      F24=More keys

```

On this display, you need to supply the following information:

Text 'description'

Type a description that uniquely identifies this line.

- When you finish typing this information, press the Enter key. You have completed the configuration of the APPC controller.

Configuring a Remote Work Station Controller for a Token-Ring Connection

To create a remote work station controller description:

- Type the command CRTCLRWS and press F4 (Prompt). The following display is shown:

```

                                Create Ctl Desc (Remote WS) (CRTCLRWS)

Type choices, press Enter.

Controller description . . . . .                               Name
Controller type . . . . .                               3174, 3274, 5251, 5294...
Controller model . . . . .                               0, 1, 0001, 2, 0002, 12, 0012
Link type . . . . . *IDLC, *LAN, *NONE, *SDLC...
Online at IPL . . . . . *YES                             *YES, *NO

                                                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display      F24=More keys

```

On this display, you need to supply the following information:

Controller description

Type the name of the controller description you are creating.

Controller type

Type 5494.

Controller model

The model number for a token-ring connection is 2.

Link type

Enter the value *NONE to indicate LU6.2 attachment. The controller description will not be physically attached to a line description.

- When you finish typing this information, press the Enter key. The following display appears:

```

                                Create Ctl Desc (Remote WS) (CRTCLRWS)

Type choices, press Enter.

Controller description . . . . . > NYRWSCTL      Name
Controller type . . . . . > 5494                3174, 3274, 5251, 5294...
Controller model . . . . . > 2                  0, 1, 0001, 2, 0002, 12, 0012
Link type . . . . . > *NONE                    *IDLC, *LAN, *NONE, *SDLC...
Online at IPL . . . . . *YES                   *YES, *NO
Remote location . . . . .                      Name
Local location . . . . . *NETATR                Name, *NETATR
Remote network identifier . . . *NETATR         Name, *NETATR, *NONE
Text 'description' . . . . . *BLANK

                                                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
    
```

On this display, you need to supply the following information:

Remote location

Enter the remote location name for this controller. The remote location name must match the logical unit (LU) name of the 5494 controller. This is field 12 on the 5494 configuration display.

Local location

Enter the local location name for this controller. The local location name must match the remote location name of the AS/400 system on the 5494 controller. A value of *NETATR causes the network identifier specified in the network attributes to be used. This is field Hx:1 on the 5494 configuration display.

Remote network identifier

Enter the remote network identifier for this controller. The remote network identifier must match the network identifier that is specified on the 5494 controller. A value of *NETATR causes the network identifier specified in the network attributes to be used. This is field Hx:3 on the 5494 configuration display.

Text 'description'

Type a description that uniquely identifies this controller.

3. When you finish typing this information, press the Enter key. You have completed the configuration of the remote work station controller. Continue with "Preparing to Install PC Support/400 on the Personal Computer."

Preparing to Install PC Support/400 on the Personal Computer

To prepare for installing PC Support/400 on the personal computer:

1. Complete the necessary tasks on the AS/400 system as described in the following sections:
 - "Verifying the Installation of the PC Support/400 Licensed Program" on page 2-2
 - "Enrolling PC Support/400 Users" on page 2-3
 - Chapter 3, "Using the PC Support/400 Administration Function" (if required)
2. Complete the work sheet on page 11-2.

Completing the Installation Work Sheet

There is no configuration information required on the AS/400 system for personal computers that have a twinaxial or token-ring connection to the AS/400 system through the 5494 remote controller. Because the 5494 remote controller is a type 2.1 node and APPN capable, all of the APPC devices associated with the personal computers attached through the 5494 are automatically created through APPC automatic configuration on the AS/400 system.

Before the work sheet can be used to install PC Support/400 on the personal computer, you need to fill out the fields on the work sheet on page 11-2:

PC location name (1)

Each personal computer must have a unique location name. To make this easier to remember, use the user's user ID. This will be the name by which the personal computer is known on the network.

Name of system to connect to (2)

This is the name by which the AS/400 system is known on the network. You can determine the system name by using the Display Network Attributes (DSPNETA) command. Use the value in the *Default local location name* field.

Work station address (3)

For personal computers connected through a token-ring from a 5494 remote controller to an AS/400 system (through an SDLC or X.25 line between the AS/400 and the 5494), **the work station address is the token-ring adapter address of the 5494 token-ring adapter**. This is field 15 on the 5494 configuration display.

For personal computers connected through a twinaxial line from a 5494 remote controller to an AS/400 system, the work station address is any twinaxial work station address (a valid value from 0 to 6) that is unique to the twinaxial 5494 port to which you are connecting. No two twinaxial devices on the same twinaxial port may have the same work station address.

Installing PC Support/400 on Each Personal Computer

Before you install PC Support/400 on the personal computer, be sure you have completed the tasks as described in "Preparing to Install PC Support/400 on the Personal Computer" on page 11-27.

Note: If you are installing onto diskettes instead of onto a hard disk, see Appendix D, "Installing PC Support/400 on Diskettes" for additional information.

Using Custom Installation Diskettes

To install PC Support/400 using custom installation diskettes, do the following:

1. Insert the installation diskette in the A: drive.
2. At the DOS prompt, type A:INSTALL and press the Enter key. The installation program automatically sets up the necessary files on the personal computer and copies the PC Support/400 programs and files to the PCS subdirectory.
3. When the installation program has completed, start the personal computer again.

Using Standard Installation Diskettes

To install PC Support/400 using standard installation diskettes, do the following:

1. Use the DOS DISKCOPY command to create a backup copy of the DOS PC Support/400 installation diskette (volume 1) and label this diskette PCS01. You may have additional DOS PC Support/400 installation diskettes labeled volume 2, volume 3, and so on. Copy these diskettes, and label the backup copies PCS02, PCS03, and so on. Use the backup copies to install PC Support/400, and store the original diskettes in a safe place. You do not need to do this for each personal computer; you can install PC Support/400 on many personal computers using the same backup copies of the installation diskettes.
2. Insert the installation diskette PCS01 in the A: drive.
3. At the DOS prompt, type A:INSTALL and press the Enter key.
4. When the display with the IBM logo is shown, press the Enter key to continue. The following display appears:

PC Support/400 Installation

For information about using this program, refer to the PC Support/400: DOS Installation and Administration Guide.

Select choices, press Enter.

Drive to contain PC Support directory [C]

Drive your personal computer starts from [C]

Enter Esc=Cancel F1=Help F3=Exit

5. Enter the following information:

Drive to contain PC Support directory

This is the drive letter that you want PC Support/400 to be stored on. If you are installing to the hard disk, this is probably the C: drive. If you are installing to diskette, this is probably the B: drive.

If you are installing to diskette, you will be prompted to insert the diskette on which you want to install PC Support/400. This is to verify that your working diskette is ready for installation.

Drive your personal computer starts from

This is the letter of the drive that contains the CONFIG.SYS file when you start your personal computer. If you are installing to a hard disk, this is usually the C: drive. If you start the system with a diskette in the drive, this is the A: drive.

When you finish typing this information, press the Enter key. A display similar to the following appears:

```

PC Support/400 Installation
(Startup Options)
More:↓

Select options with the spacebar. Press Enter when finished.

Start PC Support automatically. . . . .▶ 1. Yes
                                           2. No

Reduce messages displayed
when starting PC Support. . . . .▶ 1. Yes
                                           2. No

Initial PC Support menu . . . . .▶ 1. PC Support Menu
                                           2. Organizer menu
                                           3. OfficeVision/400 Menu
                                           4. AS/400 initial menu
                                           5. No menu (command prompt)

PC Support functions to be
started automatically . . . . . Virtual Printer
                                           Message Function
                                           Work Station Function

Enter Esc=Cancel F1=Help F3=Exit Spacebar

```

6. Enter the following information:

Start PC Support automatically

If you select *Yes*, the PC Support/400 installation program adds the STARTPCS command at the end of your AUTOEXEC.BAT file. This causes PC Support/400 to start automatically when you start your personal computer.

If you are installing on more than one diskette, this field does not appear.

Reduce messages displayed when starting PC Support

If you select *Yes*, you see fewer messages when you start PC Support/400. You still receive messages when each function begins, and you also see any error messages. Other informational messages are not shown on the display.

Initial PC Support menu

This option is not displayed if you are installing PC Support/400 to run with the Microsoft Windows program.

This option allows you to specify which menu you want to initially appear when you start PC Support:

PC Support Menu

The main menu for PC Support/400 will be displayed when you start PC Support/400. This menu gives you access to selected PC Support/400 function on the personal computer.

Organizer menu

The PC Support/400 Organizer menu will be displayed when you start PC Support/400. This menu combines AS/400 and PC commands.

OfficeVision/400 Menu

The main menu for the OfficeVision/400 program will be displayed when you start PC Support/400.

AS/400 initial menu

The display you normally see first will be displayed when you sign on the AS/400 system.

No menu

No menu will be displayed when you start PC Support/400. You will return to the DOS command prompt.

PC Support functions to be started automatically

This option allows you to select which functions you want to start automatically when you start PC Support. The functions you can select are:

- Virtual printer
- Message function
- Work station function (except when using Windows)
- Session manager (except when using Windows)
- Data queues function (extended DOS option only)

The necessary commands for the functions you select are added to the STARTPCS.BAT file. For a description of these functions, see "Functions Available with PC Support/400" on page 1-19.

Options to use with work station function

This option is displayed only if you are installing PC Support/400 to run with the Windows program. If you do not use the work station function, you can ignore this option.

This option allows you to select which functions you want to use when you use the PC Support work station function for display or printer emulation. The functions you can select are:

- Organizer
- Session Manager

When you are finished typing this information, press the Enter key. The following display appears:

```

                                PC Support/400 Installation
                                (PC to AS/400 Connection)

Select choices, press Enter.

Connection Information
Press spacebar to select connection type:
▶ 1. Twinaxial
  2. Local Area Network
  3. Synchronous Data Link Control
  4. Asynchronous communications

PC Information
PC location name. . . . . [          ]

System Information
Name of system to connect to. . . . . [          ]

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar

```

7. For personal computers connected through a twinaxial line from a 5494 remote controller to an AS/400 system, select option 1, Twinaxial. The following display appears:

```

                                PC Support/400 Installation
                                (PC to AS/400 Connection)

Select choices, press Enter.

Connection Information
Press spacebar to select connection type:
▶ 1. Twinaxial
  2. Local Area Network
  3. Synchronous Data Link Control
  4. Asynchronous communications

PC Information
PC location name. . . . . [          ]

System Information
Name of system to connect to. . . . . [          ]

Work station address . . . . . [2]  0-6

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar
    
```

For personal computers connected through a token-ring from a 5494 remote controller to an AS/400 system, select option 2, Local Area Network. The following display appears:

```

                                PC Support/400 Installation
                                (PC to AS/400 Connection)

Select choices, press Enter.

Connection Information
Press spacebar to select connection type:
  1. Twinaxial
▶ 2. Local Area Network
  3. Synchronous Data Link Control
  4. Asynchronous communications

PC Information
PC location name. . . . . [          ]

System Information
Name of system to connect to. . . . . [          ]

System LAN address . . . . . [          ]

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar
    
```

8. Enter the following information from the work sheet on page 11-2:

- PC location name (**1**)
- Name of system to connect to (**2**)
- Work station address (**3**)

Note: For personal computers connected through a token-ring from a 5494 remote controller to an AS/400 system, **the work station address is the token-ring adapter address of the 5494 token-ring adapter**. This is field 15 on the 5494 configuration display. Enter this address in the *System LAN address* prompt.

9. When you finish typing this information, press the Enter key. A display appears informing you that the installation program is about to begin copying files. Press the Enter key to continue. After all the files are copied, the following display appears:

Verify PC to AS/400 Connection

Attempt to connect to AS/400 at this time
to verify values ▶1. Yes
2. No

Enter F1=Help

10. This display allows you to attempt to connect to the AS/400 system now, to ensure that the information you entered was correct. If you specify Yes, the installation program starts the PC Support/400 router. If the connection is not made, the PC Support/400 Error Log display appears. This display shows you the errors encountered while trying to connect to the AS/400 system. Use the Page Up and Page Down keys to move through the list. Press the Enter key to view cause and recovery information about the error messages displayed. Press the Esc key to return to the PC Support/400 Installation display, and correct the entries that caused the errors. If you need to see the error log again, press Alt+F5.

Note: This display will not appear if:

- You are installing PC Support/400 to run with the Windows program.
 - You are installing to more than one working diskette.
 - The router was loaded before you began installing PC Support/400.
11. When the program is complete, the PC Support/400 Installation Completed display is shown. Before you can start PC Support/400, you must start your personal computer again (press and hold the Ctrl and Alt keys, then press the Delete key).

Starting PC Support/400

If PC Support/400 does not start automatically when you start your personal computer, you can start it by entering

d:\PCS\STARTPCS

at the DOS prompt, where d: is the PC Support/400 directory drive.

If PC Support/400 does not work properly, see Part 5, "Analyzing Problems with PC Support/400." For information about configuring the PC Support/400 functions, see Part 4, "Configuring PC Support/400."

Copying the PC Support Functions to the Personal Computer

It is recommended that you copy the PC Support functions you will be using to the personal computer from the AS/400 system. The PC Support functions load and run faster when they are located on the personal computer. This initial copying is time-consuming, but performance is significantly enhanced for each time you start PC Support/400.

5494 remote connection

To copy the PC Support functions to the personal computer, do the following:

1. From the PC Support/400 Menu, select the Configure PC Support/400 option.
2. A window appears. Select option 1 (PC Support/400 configuration).
3. The PC Support/400 Configuration menu appears. Select General options.
4. The General Options for PC Support/400 display appears. Select the Location of PC Support functions option.
5. The Location of PC Support Functions display appears. Select the functions that you want to copy to your hard disk. Do this by moving the cursor to the function and pressing the spacebar.
6. When you have selected the functions you want, press F3 (Exit).
7. Select Save and exit. The Copy Files to Your Personal Computer display appears.
8. Select whether you want to copy the functions now or the next time you start PC Support/400.

The necessary files will be copied to your personal computer, and the STARTPCS file will be changed to run the function from your personal computer.

Part 4. Configuring PC Support/400

Chapter 12. Configuring PC Support with the Configuration Program	12-1
Chapter 13. Managing PC Support/400 with Microsoft Windows	13-1
Chapter 14. Managing Information in Folders	14-1
Chapter 15. Managing Virtual Printers	15-1
Chapter 16. Managing Your Work Station Function Sessions	16-1
Chapter 17. Managing the Organizer	17-1
Chapter 18. Managing Your Messages	18-1
Chapter 19. Managing Access to Data Queues	19-1
Chapter 20. Connecting Your Personal Computer to the AS/400 System . .	20-1
Chapter 21. Managing the Update Function	21-1
Chapter 22. Printing with PC Support: Example	22-1
Chapter 23. Configuring PC Support Using the Editor	23-1
Chapter 24. Configuration Identifiers and Work Sheets	24-1
Chapter 25. Work Station Function Configuration Information and Work Sheets	25-1

Chapter 12. Configuring PC Support with the Configuration Program

	An Overview of the Configuration Process	12-2
	Introducing the PC Support Configuration Program	12-2
	Starting the PC Support/400 Configuration Program	12-2
	Using the PC Support Configuration Menu	12-3
	Changing PC Support/400 General Options	12-3
	Changing the Location of PC Support/400 Functions	12-4
	Changing PC Support/400 Startup Options	12-5
	Changing the Working Set	12-5
	Selecting a Function to Configure	12-6
	Selecting the Configuration Editor	12-6
	Changing Your Application Program Support	12-6
	Ending the Configuration Program	12-6

An Overview of the Configuration Process

You can operate PC Support using the default values supplied by the licensed program. But, if you have special needs or want to enhance your performance in some way, you can use the PC Support/400 configuration program (CFGPCS) to create new values or to change the values already present.

This chapter provides you with the basic information you need to use the configuration program. It explains how to:

- Start the PC Support/400 configuration program
- Use the PC Support/400 Configuration menu to change the working set and to select a function to configure
- End the PC Support/400 configuration program

For specific information about configuring a function, refer to the chapter dealing with the function. For example, for information about configuring a shared folders function drive, refer to chapter Chapter 14, "Managing Information in Folders."

Introducing the PC Support Configuration Program

The PC Support configuration program (CFGPCS.EXE) is an interactive program you can use to change the way PC Support operates. It consists of a series of menus and displays to help you tailor the individual functions of PC Support. As you make selections or enter information on the displays, the program edits the necessary files and makes the requested changes for you. You do not have to edit the files yourself.

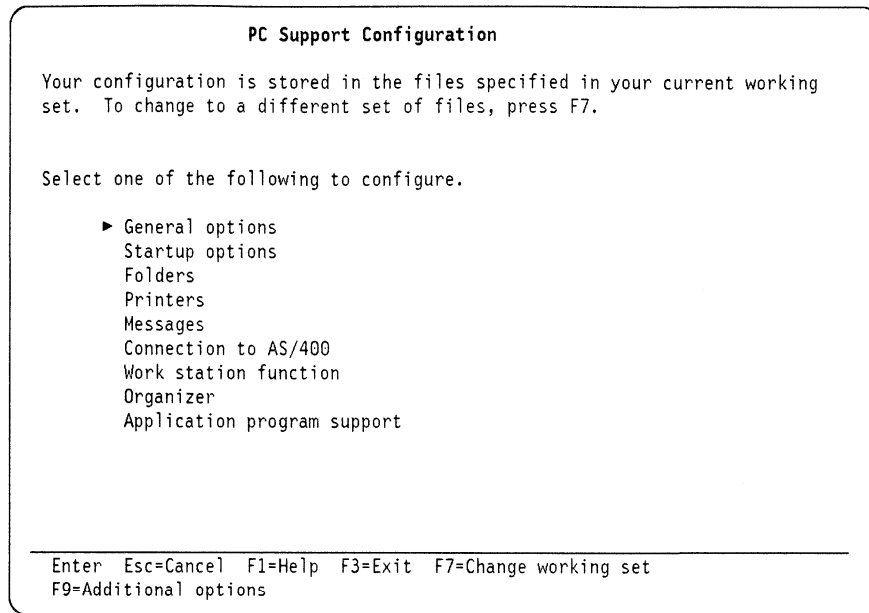
Note: If you make changes to a batch file that is currently running (for example, the STARTPCS.BAT file), you may have unexpected results when you exit the configuration program. The batch file should run normally the next time it is processed.

When you start a PC Support/400 function, the function reads the configuration files. If you change the configuration file after starting the function, the changes you make may not take effect immediately. For example, if you start the shared folders function, then change your shared folders function type, the change will not take effect until you start your personal computer again.

Starting the PC Support/400 Configuration Program

You can start the PC Support/400 configuration program from the PC Support/400 Menu or with the command CFGPCS. In addition, the PC Support/400 administration program (PCSADM) allows you to access the configuration program from within the administration function.

- To start the configuration program from the PC Support/400 Menu, select the Configure PC Support/400 option. A window appears. Select option 1 (PC Support configuration). The PC Support Configuration main menu is shown.



- To start the configuration program with the command CFGPCS, enter the following at the DOS prompt:

[d:][path]CFGPCS

where d: and path are the drive and directory where the configuration program is stored.

When you enter the command, the IBM logo is shown. Press the Enter key to go to the PC Support Configuration main menu.

Using the PC Support Configuration Menu

From this menu you can:

- Change the PC Support/400 general options
- Change the PC Support/400 startup options
- Change or verify the working set by pressing F7 (Change working set)
- Select a function to configure or change
- Select the configuration editor by pressing F9 (Additional options)
- Change your application program support

Changing PC Support/400 General Options

Selecting General options allows you to do the following:

- Specify where you want the individual PC Support/400 functions to be stored. You can have the functions stored on your personal computer or on the AS/400 system. For more information on where to store the functions, see “Changing the Location of PC Support/400 Functions” on page 12-4.
- Specify which personal computer applications you want updated from the host system when you start PC Support/400. For more information about the PC Support/400 update function, see Chapter 21, “Managing the Update Function.”
- Specify whether or not PC Support/400 errors should be logged in the PC Support/400 error log. For more information about PC Support/400 error logging, see Chapter 29, “The PC Support/400 Error Logging Function.”

- Select the language to use on your personal computer when using PC Support/400. For more information about using different languages with PC Support/400, see Appendix F, "National Language Support for PC Support/400."
- Allow your PC Support/400 configuration to be changed by an administrator. For more information about the PC Support/400 administration function, see Chapter 3, "Using the PC Support/400 Administration Function."
- Change from the basic DOS to the extended DOS option of PC Support/400. If your personal computer uses an 80286 microprocessor or higher, such as the PS/2 model 30-286 or above, you should use the extended DOS option. This option allows some of the PC Support/400 functions to load in extended memory.

For information about how the extended DOS option of PC Support/400 differs from the basic DOS option, see "Using the Extended DOS Option of PC Support/400" on page 1-13. For information about the memory requirements for the extended DOS and basic DOS options of PC Support/400, see Appendix B, "PC Support Memory Requirements."
- Set up your PC Support/400 files for running PC Support/400 functions with Microsoft Windows. For information about configuring PC Support/400 with Microsoft Windows, see Chapter 13, "Managing PC Support/400 with Microsoft Windows."

Changing the Location of PC Support/400 Functions

The Location of Functions option provides an interactive menu interface for you to select the location of each PC Support/400 function.

It is recommended that you copy the PC Support functions you will be using to the personal computer from the AS/400 system. The PC Support functions load and run faster when they are located on the personal computer. This initial copying is time-consuming, but performance is significantly enhanced for each time you start PC Support/400.

To copy the PC Support functions to the personal computer, do the following:

1. From the PC Support/400 Menu, select the Configure PC Support/400 option.
2. A window appears. Select option 1 (PC Support/400 configuration).
3. The PC Support/400 Configuration menu appears. Select General options.
4. The General Options for PC Support/400 display appears. Select the Location of PC Support functions option.
5. The Location of PC Support Functions display appears. Select the functions that you want to copy to your hard disk. Do this by moving the cursor to the function and pressing the spacebar.
6. When you have selected the functions you want, press F3 (Exit).
7. Select Save and exit. The Copy Files to Your Personal Computer display appears.
8. Select whether you want to copy the functions now or the next time you start PC Support/400.

The necessary files will be copied to your personal computer, and the STARTPCS file will be changed to run the function from your personal computer.

Notes:

1. If you select to copy the PC Support update function, the Next time option will not be available.
2. The Immediate option is only available when the I: drive is assigned as an AS/400 system drive.

Changing PC Support/400 Startup Options

Selecting Startup options allows you to do the following:

- Specify whether or not PC Support/400 should be started automatically when you start your personal computer.

Note: This option is not shown if you are using the PC Support/400 administration function.

- Specify whether or not informational messages should be displayed when PC Support/400 is started.
- Specify which display should appear when PC Support/400 is started.
- Specify which functions should start automatically when you start PC Support/400.

Changing the Working Set

The working set displayed by the PC Support configuration program is the list of items that define your PC Support configuration. The **working set** consists of the drive, directory, and file names that the PC Support/400 configuration program uses to display or change your configuration. The working set consists of the following:

- Configuration file
- Command file

The configuration file is the file you use to define how your PC Support functions operate. The default configuration file is the CONFIG.PCS file.

The command file is the file used to start PC Support. When you select a function to configure, the program displays the current startup options based on the entries in this file. The default command file is the STARTPCS.BAT file.

You can also specify whether or not this working set is your default working set. If you make the working set your default, it becomes the working set the configuration program changes unless you specify otherwise. The default working set is also the working set used if you choose to start PC Support/400 automatically when you start the personal computer.

You should verify that these are the files you want to change. If you want to change the working set, press F7 before you select the function you want to change.

Selecting a Function to Configure

Once you have verified that the files shown in your working set are the files you want changed by the PC Support/400 configuration program, you can select a function to configure such as folders, printers, a connection to the AS/400 system, and so on.

For detailed information about configuring each function, refer to the chapter dealing with the function or press F1 (Help) for online help information.

Selecting the Configuration Editor

Use the F9 key to start the PC Support configuration editor. The editor allows you to update your PC Support configuration file by providing prompts, online help information, and format checking. You should be an experienced PC Support user before you use the editor.

When you press F9, the Additional Options window is shown. The option to start the PC Support editor is highlighted. Press the Enter key to start the editor. You can find additional information about the editor in Chapter 23, "Configuring PC Support Using the Editor." You should familiarize yourself with the four-character identifiers associated with each function. When you configure PC Support using the editor, you add or change the identifiers listed in the CONFIG.PCS file or in an alternative configuration file. The identifiers are listed in Chapter 24, "Configuration Identifiers and Work Sheets." To configure, make sure the working set indicates the correct drive, directory, and file names. For more information about verifying and changing your working set, refer to "Changing the Working Set" on page 12-5.

Changing Your Application Program Support

If you are using the extended DOS option of PC Support/400, selecting this option allows you to access configuration for the data queues function. If you are using the basic DOS option of PC Support/400, this option has no functions to configure.

Ending the Configuration Program

To end the configuration program:

1. Press F3 (Exit) on the PC Support Configuration Menu.
2. Select option 1 (Exit configuration).

The environment you have defined will be effective the next time you use the PC Support function. You may need to start your personal computer again for your changes to take effect.

Chapter 13. Managing PC Support/400 with Microsoft Windows

Configuring PC Support/400 to Run with Microsoft Windows	13-2
Introducing the IBM AFPDS Printer Driver for Microsoft Windows	13-4
Capabilities of the IBM AFPDS Printer Driver	13-4
Using the IBM AFPDS Printer Driver	13-4
Using the IBM AFPDS Printer Driver with IBM Facsimile Support/400	13-7
Creating Overlays and Page Segments	13-7
Printer Capabilities Assumed by the IBM AFPDS Printer Driver	13-7
Removing Microsoft Windows Support from PC Support/400	13-8

You should use the instructions in this chapter if you already have the PC Support/400 and Microsoft Windows programs installed on the personal computer.

Using the PC Support/400 configuration program (CFGPCS), you can:

- Set up your PC Support/400 files for running PC Support/400 functions in windows.
- Remove the ability to run PC Support/400 in windows.

You can use the PC Support/400 setup program for Windows (PCSETUPW) to specify how PC Support/400 operates with the Microsoft Windows program. For more information about the PCSETUPW program, see "PC Support/400 Setup Program for Windows (PCSETUPW)" on page 4-4.

For instructions on installing PC Support/400 with the Windows program and considerations for using PC Support/400 functions in windows, see Chapter 4, "Installing and Using PC Support/400 with Microsoft Windows."

Configuring PC Support/400 to Run with Microsoft Windows

To use the PC Support/400 configuration program to set up the way PC Support/400 runs with the Microsoft Windows program, do the following:

1. Start the PC Support/400 configuration program and display the PC Support/400 Configuration menu. Refer to "Starting the PC Support/400 Configuration Program" on page 12-2 for information on displaying this menu.
2. Select General options. The General Options for PC Support/400 menu appears.
3. Select Microsoft Windows options. A display similar to the following appears:

```
Microsoft Windows Options

You may configure PC Support to run with Microsoft Windows.

Select options, press Enter.

Run PC Support with Microsoft Windows . . . . . >1. Yes
                                                2. No

Communications buffer size
(1 to 64 Kbytes) . . . . . |16|

Options to use with
Work Station Function . . . . . Organizer
                                                Session Manager

Create PC Support/400 group . . . . . >1. Yes
                                                2. No

Directory where Microsoft Windows is located
|C:\WINDOWS |

-----
Enter Esc=Cancel F1=Help F3=Exit Spacebar
```

4. Specify the options and values you want to use:

Run PC Support with Microsoft Windows

Select *Yes* to change your PC Support/400 files to run with the Windows program. Select *No* to remove the capability to run PC Support/400 with

Windows. The option shown as the default is based on whether or not an entry for Windows exists in the command file (usually STARTPCS.BAT) specified in the current working set.

Communications buffer size

Specify the size of the buffer (in kilobytes) to allocate in conventional memory for communications buffers. Valid values are from 1 to 64. The default is 16. This value must be large enough to contain the communications buffer for each PC Support/400 application started after the Windows program is started. If the PCSWIN buffer is not large enough, the PC Support/400 functions will not start and an error message will be displayed. Use the following table to determine the total size you need:

Function	Memory (KB)
Each WSF display session	2
Each WSF printer session	1
Message function (STARTMSG)	2
Interactive message function (MSG)	1
Virtual printer function (VPRT)	2
Each virtual printer	2
Transfer function	1
Each RUMBA/400 session	4

Options to use with Work Station Function

If you are using the PC Support/400 work station function for display and printer emulation, select any additional functions you want to use. The functions that are shown as defaults are those that are currently included in the PCSWWSF.BAT file or in the command file (usually STARTPCS.BAT) specified in the working set. Use the spacebar to select or remove a function. If you do not use the work station function, you can ignore this option.

Create PC Support/400 group

Specify *Yes* to have a PC Support/400 group created the next time you start the Windows program. If a PC Support/400 group already exists, it will be replaced. Specify *No* if you do not want the group created. If a PC Support/400 group already exists, it is not removed.

Notes:

- This option is displayed only if you are using the extended DOS option of PC Support/400.
- This option is not displayed if you are running the configuration program from the administration function (PCSADM).

Directory where Microsoft Windows is located

Specify the drive and directory where Microsoft Windows is installed on your personal computer. The path you specify is used to find the WIN.INI file. This file is modified so that the PC Support Setup Program for Windows is started automatically the next time Microsoft Windows is started.

Note: This option is displayed only if you select *Yes* for the Create PC Support/400 group option.

- Press the Enter key to process your changes. For these changes to take effect, start the personal computer again, then start PC Support/400 and the Windows program again.

Introducing the IBM AFPDS Printer Driver for Microsoft Windows

The IBM AFPDS printer driver for Microsoft Windows allows you to use the PC Support virtual printer function with Microsoft Windows applications. The IBM AFPDS printer driver formats your output for an AS/400 IPDS printer capable of Advanced Function Printing and sends the output either directly to an AS/400 output queue, or to a PC file that you can later send to an output queue.

There are a variety of tasks you can perform once the file is in the AS/400 output queue. See *Guide to Programming for Printing*, SC41-8194 for information about these tasks.

Note: You must use the extended DOS option of PC Support/400 in order to use the IBM AFPDS printer driver for Microsoft Windows.

Capabilities of the IBM AFPDS Printer Driver

The primary use of the IBM AFPDS printer driver is to print output from Microsoft Windows applications on a printer attached to the AS/400 system. The IBM AFPDS printer driver also has the following capabilities:

- The IBM AFPDS printer driver can be used in conjunction with the IBM Facsimile Support/400 program. This allows you to use a Microsoft Windows application to create documents, and send them using Facsimile Support/400*. This capability is discussed in "Using the IBM AFPDS Printer Driver with IBM Facsimile Support/400" on page 13-7.
- The IBM AFPDS printer driver can create overlays and page segments from Microsoft Windows applications. Overlays can be superimposed on OfficeVision/400 documents, and are useful for creating company logos and stationary. Page segments can be included in documents created using any application that supports the use of page segments, such as OfficeVision/400 or IBM BookMaster*. This capability is discussed in "Creating Overlays and Page Segments" on page 13-7.

Using the IBM AFPDS Printer Driver

To install the IBM AFPDS printer driver, see "PC Support/400 Setup Program for Windows (PCSETUPW)" on page 4-4.

The IBM AFPDS printer driver uses the virtual printer function to send the output to an AS/400 output queue. Therefore, you need to have the virtual printer function started in order to use the IBM AFPDS printer driver.

When you choose to configure the IBM AFPDS printer driver, the following information is shown on the IBM AFPDS printer driver display:

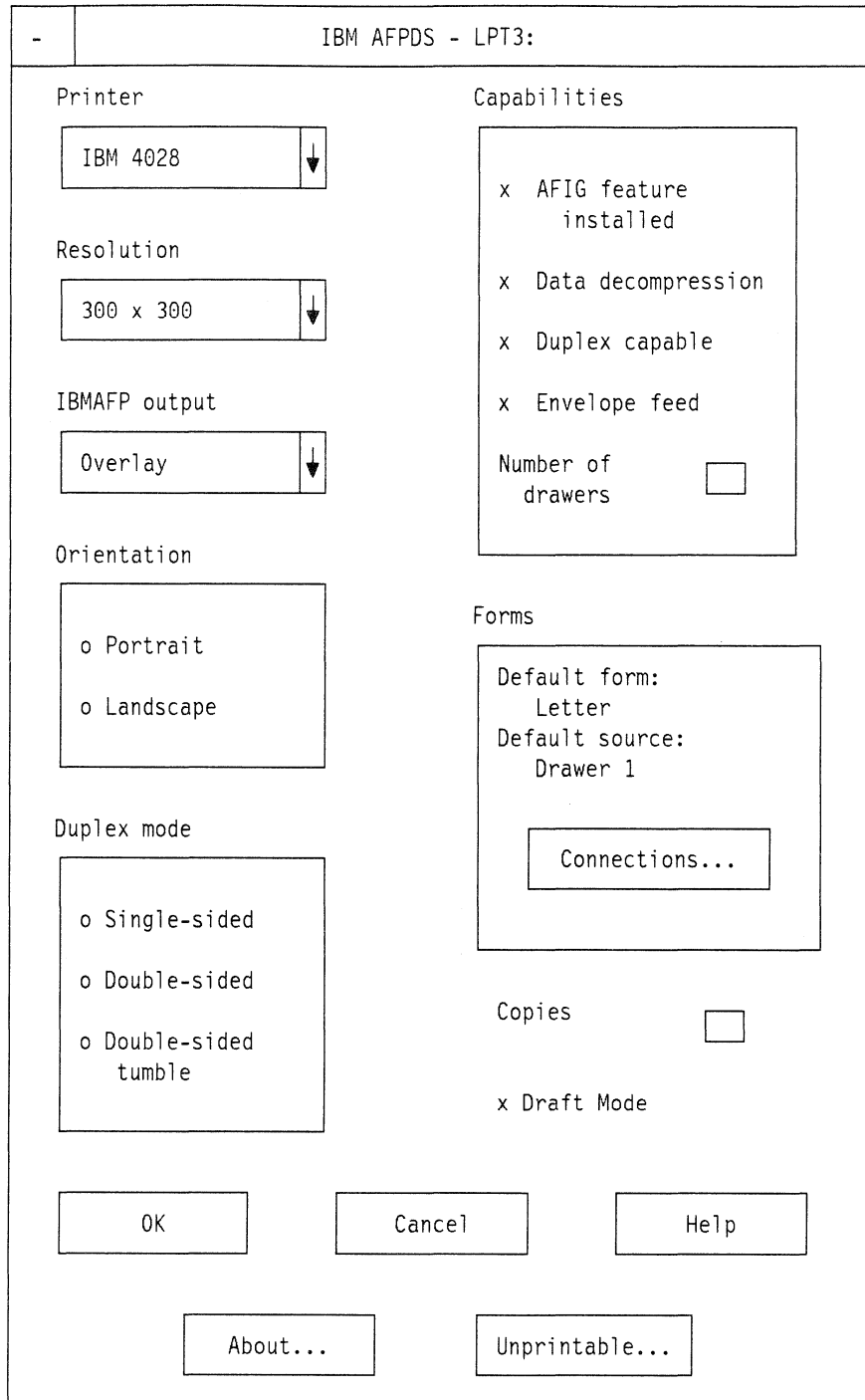


Figure 13-1. IBM AFPDS Printer Driver Information

The following are the options on this display:

Printer

The type of printer used on the AS/400 system. If the printer you are using is not in the list, select Unlisted.

Resolution

Specifies the host printer's resolution in dots per inch.

IBMAFP output

Specifies what type of AFP* object the output should be. The default is a standard AFP spooled file, which can be directly sent through the PC Support virtual printer function to an AS/400 output queue. Page segments and overlays are other types of AFP objects.

Orientation

Specifies whether the document should be printed in portrait (vertical) or landscape (horizontal) mode.

Duplex mode

Specifies whether the document should be printed single-sided or double-sided. These options cannot be selected if the Duplex capable capability is not specified (see **Capabilities** below). **Capabilities**

AFIG feature installed

Indicates whether or not the host printer has the Advanced Function Image and Graphics (AFIG) feature installed.

Data decompression

Indicates whether or not the host printer can perform hardware decompression.

Duplex capable

Indicates whether or not the host printer can print on both sides of the paper.

Envelope feed installed

Indicates whether or not the host printer has an envelope feed installed.

Number of drawers

Specifies the number of drawers on the host printer, not including any envelope feeds.

Forms**Default form**

Specifies the name of the default form to use.

Default source

Indicates which drawer is used as the default drawer.

Connections

When you select this item, another dialog appears where you can specify which forms are contained in which drawers and which to use as the default.

Copies

Specifies the number of copies to print.

Draft mode

Indicates whether the output should be in draft mode. If you specify draft mode, the print resolution is half of what it would be in normal mode. This will improve performance while lowering print quality.

About

Choosing this option opens another dialog, which contains release and copyright information.

Unprintable

Choosing this option opens another dialog, allowing you to specify the borders for the host printer. The borders are the areas of the page on which the printer is incapable of printing.

Using the IBM AFPDS Printer Driver with IBM Facsimile Support/400

To use the IBM AFPDS printer driver with IBM Facsimile Support/400, do the following:

1. Configure your PC Support virtual printer to use the AFPDS data type. See Chapter 15, "Managing Virtual Printers" for information about configuring your virtual printer.
2. In the *Printer* field of the IBM AFPDS window, select IBM Facsimile Support/400.
3. Create your document using a Microsoft Windows application.
4. Use the AS/400 Send Facsimile (SNDFAX) command to send the data. See the *Facsimile Support/400 User's Guide and Reference*, SC41-8245, for information about using the IBM Facsimile Support/400 program.

Creating Overlays and Page Segments

To create overlays and page segments with the IBM AFPDS printer driver, do the following:

1. Using the Microsoft Windows control panel, assign the IBM AFPDS printer driver to FILE: through the Windows control panel. Refer to the *Microsoft Windows User's Guide* for information about performing this task.
2. Use any Microsoft Windows application to create your document.
3. Print the data. You are prompted for a drive, path, and file name for your output.
4. Transfer the file to an AS/400 physical file (using the PC Support transfer function).
5. Use the AS/400 Create Overlay (CRTOVL) or Create Page Segment (CRTPAGSEG) command to create an overlay or page segment from the physical file.

Printer Capabilities Assumed by the IBM AFPDS Printer Driver

The following table shows the default values used for the printer selected from the *Printers* option.

Table 13-1. Target Host Printer Capabilities

Capabilities	IBM 4028 ¹	IBM 3812 ²	IBM 3816 -01S ²	IBM 3816 -01D ²	IBM 3820 ²	IBM 3825 ²	IBM 3827 ²	IBM 3828 ²	IBM 3835 ²	IBM 3900 ²	IBM Facsimile/400 ²	Unlisted Printer ¹
AFIG capable						X	X	X	X			
Data decompression	X	X	X	X		X	X	X	X		X	X
Duplex capable				X	X	X	X					X
Envelope feed	X											X
Maximum drawers	2	2	2	2	2	2	2	2	1	1	1	3
Left unprintable	.16	.13	.13	.13	.10	.36	.10	.10	0	0	.13	0
Right unprintable	.16	.13	.13	.13	.10	.36	.10	.10	0	0	.13	0
Bottom unprintable	.16	.13	.13	.13	.10	.36	.10	.10	.17	.17	.13	0
Top unprintable	.16	.13	.13	.13	.10	.36	.10	.10	.17	.17	.13	0
¹ Resolution is 300x300. ² Resolution is 240x240.												

Removing Microsoft Windows Support from PC Support/400

To remove the ability for PC Support/400 to run with Windows:

1. Display the Microsoft Windows Options panel as described in "Configuring PC Support/400 to Run with Microsoft Windows" on page 13-2.
2. Select *No* for the Run PC Support/400 with Microsoft Windows option.

The configuration program removes the necessary entries from the files in your working set so that PC Support/400 is not configured to run with the Windows program.

Note: The configuration program does not remove the Windows programs from the personal computer.

Chapter 14. Managing Information in Folders

Introducing the Concept of Folders	14-2
Managing Folders Using the Configuration Program	14-2
Assigning and Releasing Drives	14-3
Performance Tuning	14-3
Securing Folders	14-4
Controlling Access to Folders	14-4
Preventing and Detecting PC Viruses in Folders	14-5
Preventing PC Viruses in Folders	14-5
Detecting PC Viruses	14-6
Improving Performance	14-7
Understanding the Types of Shared Folders Function	14-8
Shared Folders Function Type 0	14-9
Shared Folders Function Type 1	14-9
Shared Folders Function Type 2	14-10
Extended DOS Shared Folders Function Type	14-10
Understanding the Concept of a Memory Cache	14-10
Determining the Size of Your Memory Cache	14-11
Working with the Shared Folders Function Subsystem	14-12
Starting the Subsystem	14-12
Tailoring the Subsystem	14-12

Introducing the Concept of Folders

A folder stored on the AS/400 system is like a folder stored in a filing cabinet. It can contain:

- Text documents
- Mail
- Data created using OfficeVision/400
- PC files

When you store a PC file as a document in a folder, it is stored in PC format just like DOS files. By using folders on the AS/400 system, you can share information with others.

When you want information from a folder stored in a filing cabinet, you open the appropriate drawer and select the folder containing the information you need. All of the folders are stored according to a particular pattern, such as alphabetical or numerical order.

When you want information from a folder stored on the AS/400 system, PC Support/400 gets it for you using the shared folders function. When you use the shared folders function, you assign one of eight drive letters to the folder or system of folders you want to use.

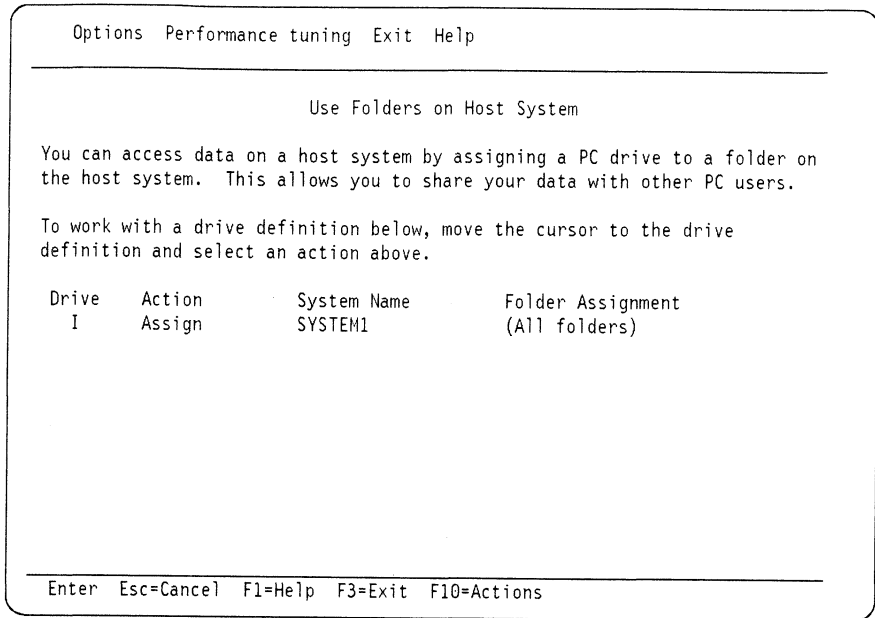
The folders act like directories and subdirectories on a personal computer's hard disk. Therefore, you can use many of the DOS commands to work with the folders. Be aware, though, that some restrictions do exist. For a discussion of these restrictions, see the *PC Support/400 Technical Reference for DOS and OS/2*.

Managing Folders Using the Configuration Program

You can use the PC Support/400 configuration program to assign and release drives, and to specify values that can increase performance when using the shared folders function.

To use the configuration program to work with folders, do the following:

1. Display the PC Support Configuration menu. Refer to "Starting the PC Support/400 Configuration Program" on page 12-2 for information on displaying this menu.
2. Select **Folders** from the list of functions on the PC Support Configuration menu. The following display appears:



Assigning and Releasing Drives

You can use the PC Support/400 configuration program to assign or release one or more drives and save the changes so that these tasks are done automatically each time you start PC Support/400.

The Use Folders on Host System display shows the current drive definitions. (See "Managing Folders Using the Configuration Program" on page 14-2 for instructions on how to access this display.)

To assign or release drives from this display, do the following:

1. If you want to work with an existing drive definition, place the cursor on the drive definition.
2. Press the Enter key or F10 (Actions) and select Options from the list of actions. A window is shown.
3. From the window, you can select to change, add, delete, or move a drive definition.

You can also use the FSPC or CFGFLR commands from the command prompt or from a batch file to assign and release drives. For information on using these commands, refer to the manual *PC Support/400: DOS User's Guide*, SC41-8199.

Performance Tuning

You can use the PC Support/400 configuration program to specify options and values that can help improve the performance of the shared folders function when accessing data stored in folders on the AS/400 system.

To specify these values, select Performance tuning from the list of actions on the Use Folders on Host System display. (See "Managing Folders Using the Configuration Program" on page 14-2 for instructions on how to access this display.)

On the Work with Shared Folders Function Type display, you can specify the following:

- The shared folders function type to use (if using the basic DOS option of PC Support/400). See “Understanding the Types of Shared Folders Function” on page 14-8 for information about shared folders function types.
- The size of the cache to use. See “Understanding the Concept of a Memory Cache” on page 14-10 for information about cache sizes.
- The size and location of the communications buffer. The size of the buffer can be from 1KB to 64KB. The buffer location can be either expanded or conventional memory.

Securing Folders

Because the shared folders function makes it possible for programs and data stored in folders to be shared by multiple users, you may want to use the AS/400 security functions to limit access to certain folders or files. In addition, you should take steps for preventing and detecting PC viruses that may be introduced into programs stored in folders.

Controlling Access to Folders

To control access to objects stored in AS/400 folders, you can use:

- Resource security

This type of security is used when a system is fully secured with security level 30 or higher. For each object, you can determine specific authority or public authority.

- Specific authority describes the authority for individual users.
- Public authority describes the authority for all users who do not have specific authority.

Resource security is stored with each object. You can assign resource security in different ways:

- Specify the public and specific authority for a folder. Then, let the objects within the folder use the same authority.
- Secure each document or file within a folder individually with either public or specific authority.
- Use authorization lists to authorize a group of users at a time. If you need to add or delete a name from the group, you make the change in the authorization list.
- Use a group profile to specify the same kind of authority to a group of users. When you give specific authority for an object to the name of a group profile, every member of the group has the same authority for the object.

- Special authority security

This type of security overrides any specific or public authority given to an object. Special authority is specified in your user profile.

- Working for another user

This type of authority allows a user to work with the mail and folders of another user. When you have authority to work for another user, you have all the authority of that user.

- User exit programs

User exit programs can be used with the above security types to further define access to folders or files. See the *PC Support/400: DOS and OS/2 Technical Reference*, SC41-8091 for information about user exit programs. The QIWSTOOL folder also contains a sample exit program. See Appendix E, “The PC Support/400 Tools Folder” for information on how to use this folder.

See the *Security Reference* for more information on securing folders.

You must be authorized to use the AS/400 Create Folder (CRTFLR) command before you can create a folder using the personal computer Make Directory (MKDIR) command.

Preventing and Detecting PC Viruses in Folders

A computer **virus** is a program that can modify other programs to include a copy of itself. The other programs are then said to be *infected* by the virus. In addition, the virus can perform other operations that can take up system resources or destroy data.

PC viruses can infect PC programs stored in folders. These viruses can then spread to programs in other folders and to personal computers that use the infected programs.

Note: Although these viruses can be very damaging to programs on the attached personal computers, there are no known PC viruses that damage AS/400 programs or destroy the integrity of AS/400 databases.

To help keep programs in folders secure, you should follow good security practices. Control access to system resources and keep backup copies of all important data. You should also establish methods for preventing, detecting, containing, and recovering from viruses. For more information about these topics, refer to the IBM publication *Coping with Computer Viruses and Related Problems*, G320-9913.

The following sections contain suggestions for preventing and detecting viruses in folders and on personal computers using programs in folders.

Preventing PC Viruses in Folders

The following suggestions can help you prevent PC viruses when using the shared folders function:

- Control access to folders as described in “Controlling Access to Folders” on page 14-4.
- Restrict access to folders containing PC programs.

Store PC programs (files with extensions of .COM, .EXE, .OVL, .DLL, and so on) in different folders from data files. Secure the folders containing PC programs so that these folders are read only (*USE).

Note: This does not restrict users with system administrator (*ALLOBJ) authority. The history log (QHST) does not record Access denied messages for these users.

- Use a secure user ID to make program updates.

When you need to make updates to PC programs in folders, use a user ID specifically reserved for this purpose. You should run a virus scan program immediately before and again immediately following the update.

- Use exit programs on the AS/400 system.

You can use an exit program to help prevent unintentional storing of a program that has been modified or to prevent the user ID used to run a virus scan program from doing any updates.

Detecting PC Viruses

The following suggestions can help you detect PC viruses:

- Use a virus scan program to detect any known viruses.

Periodically run a virus scan program against the AS/400 folders that contain programs. You can do this from any personal computer with a shared folders function drive assigned to all folders on the system. Also run the virus scan program on each personal computer that uses PC Support/400 and the shared folders function.

Note: The possible risk of introducing a virus with the virus scan program must be weighed against the possibly greater exposure of not performing the scan. To minimize this risk, you can either store the virus scan program on a write-protected diskette and start the personal computer from that diskette when you run the program, or use a user ID with read-only access to the folders being scanned.

- Use the audit journal to detect authority failures.

Authority failures are logged in the audit journal on the system when the audit level is set to *AUTFAIL. The authority failures can be selected from the journal receiver by requesting entries of type AUTHORITY FAILURE (AF). For more information about audit journals, see *Security Reference*, SC41-8083.

- Monitor Access denied messages on the system.

Once the programs in folders have been write protected, any attempt to update them generates an Access denied message that is logged in the user job log and in the system history log (QHST). Multiple occurrences of this message could indicate the presence of a virus. To help detect possible viruses, you can monitor for this message on the system or scan user job logs on a regular basis.

- Use the last change date on documents to detect unauthorized updates.

PC programs stored in folders have the OS/400* object type of *DOC (document). Documents, like other OS/400 objects, have a last change date that can be used to determine when the object was last modified. The last change date for an object is automatically updated by the system when the object is modified. The last change date cannot be reset.

Notes:

1. A limitation of using the last change date for an object is that it is updated whenever a change is made by any program, not just by a virus.
2. Documents also have a revision date that is changed less frequently than the last change date. This date can be reset to its previous value by another program, so you should not use this date for detecting a virus.

The system object change date for all *DOC objects can be stored in a database file using the OUTFILE option of the Display Object Description (DSPOBJD) command. The following command creates a database file named OBJD for all documents stored in the system.

```
DSPOBJD OBJ(QDOC/*ALL) OBJTYPE(*DOC) OUTPUT(*OUTFILE) OUTFILE(OBJD)
```

The object name from the DSPOBJD command is generated by the system and is not meaningful to users.

Both the system object name and the user-assigned name can be retrieved into a database file using the Query Document Library (QRYDOCLIB) command. The following command creates a database file named QRY for all documents in all folders.

```
QRYDOCLIB FLR(*ALL) OUTFILE(QRY)
```

Note: Depending on the number of documents in the system, the DSPOBJD and QRYDOCLIB commands can take a long time to run and should be submitted as batch jobs. To ensure access to all documents, the batch job should be run using a user ID with *ALLOBJ authority.

After the two database files OBJD and QRY are produced, you can use the system database support to join the two files using the system object name. The following example shows the SQL/400 statements that produce a report containing the last change date and both the system and user-assigned names. The field names from this example can be used in other programs such as Query/400 to produce an equivalent report. You can produce a report with a subset of this information by selecting specific dates.

```
SELECT objd.odl1dat, qry.qd1onm, qry.qd1dm,
       qry.qd1flr
FROM objd, qry
WHERE objd.odobnm = qry.qd1onm
ORDER BY qry.qd1flr
```

The field names from this example can be used in other programs to produce a similar report. If you select changes for specific dates, you can also produce a subset of this report as follows:

Sample report

```
-----
Change  OBJECT      DOCUMENT      FOLDER
Date   NAME          NAME          NAME
071891  EJKN343486     NEWDOC        EVANS
070891  EJKN551026     WOEPS.BAT     EVANS
070891  EJKN561146     STARTRTR.EXE  EVANS
070891  EJST142650     WOEPS.CPY     EVANS
070991  EJLL411130     QHSTPRT       QFOS2950
070991  EJLL411306     QINDUSR       QFOS2950
070991  EJLL411440     QPROFDOC      QFOS2950
070991  EJLL411564     QPROFNOT      QFOS2950
*****  End of data  *****
```

You can use the change dates from this report to determine which PC programs may have been changed by an unknown virus.

Improving Performance

The following suggestions may improve the performance of the shared folders function:

- If you are not already using shared folders function type 2 or the extended DOS shared folders function, consider using one of these types. For information about changing shared folders function types, see "Understanding the Types of Shared Folders Function" on page 14-8.

- If you use the same drive assignments regularly, use the configuration program to add the drive definitions to your configuration file. The configuration file is read by the CFGFLR program, which is usually faster than the FSFC program.
- Increase the size of your shared folders function memory cache. For information on changing your memory cache, refer to "Understanding the Concept of a Memory Cache" on page 14-10.
- If you are using shared folders function type 2 or the extended DOS shared folders function, increase the size of the storage pool associated with the shared folder subsystem QXFPCS. For information about changing this subsystem, see "Working with the Shared Folders Function Subsystem" on page 14-12.
- Allocate a dedicated storage pool for the type 2 shared folders subsystem (QXFPCS).
- Minimize the number of times a file is downloaded or uploaded. For example, a file could be downloaded in the morning and uploaded at the end of the day.
- Backing up files to a folder takes significant AS/400 system resources. You should wait until system activity is low to back up a large number of files to a folder.
- Use write-with-verification only when absolutely necessary. When verification is used, buffering of the write operations is not done by the shared folders function.
- Combine folders where possible.

The following suggestions for improving performance should be considered by those designing PC applications using the shared folders function:

- PC applications should be designed to open a file once, do all the necessary operations, and then close the file.
- Perform read and write operations sequentially, rather than randomly, whenever possible. This method uses shared folders buffers more efficiently.
- If a file is small, store it in the PC memory because accessing memory is faster than accessing the disk or data on the AS/400 system.
- Set the current directory to the appropriate folder to reduce opening folders.
- Searching for a file requires significant time and resources compared with other operations. A PC application should use a create or open operation instead of searching for a file.

For more information on personal computer file sharing, see the *Disk Operating System Technical Reference*.

Understanding the Types of Shared Folders Function

The shared folders function consists of different types of programs utilizing different caching techniques. You can use any of the shared folders function types if you meet the requirements for the type.

The following list should help you determine the type you are currently using.

- If you installed PC Support/400 on your personal computer using the Version 2 Release 1 or the Version 1 Release 3.0 PC Support/400 installation

diskettes and you have not changed your shared folders function type, shared folders function type 2 is installed.

- If you are using the extended DOS option, only one shared folders function type is available. This type is similar to shared folders function type 2, but uses mostly extended memory.
- If you installed PC Support/400 on your personal computer using the Version 1 Release 2.0 PC Support/400 installation diskettes, you have not changed your shared folders function type, and you have not updated to a new release, shared folders function type 1 is installed.
- If you installed PC Support/400 on your personal computer using Version 1 Release 1.0 or 1.2 PC Support/400 installation diskettes, you have not changed your shared folders function type, and you have not updated to a new release, shared folders function type 0 is installed.

Use the PC Support/400 configuration program to change the type of shared folders function you are using. When using basic DOS, you can change the function type by selecting Performance tuning from the list of actions on the Use Folders on Host System display.

The following descriptions will help you decide what type of shared folders function you should use:

Shared Folders Function Type 0

Of the shared folders function types, the type 0 program uses the simplest memory cache. If you are using type 0, your CONFIG.SYS file contains a device driver represented by the statement `DEVICE = FSDD.SYS B = nn`, where *nn* is the size of the memory cache. The values for *nn* can vary from 0 to 34. The value specifies the number of blocks of 1880 bytes you want set aside for the cache size. If you are using type 0 and want to change the size of the memory cache, you should edit your CONFIG.SYS file and change the value of *nn*.

Type 0 can be used with any release of the AS/400 system or with System/36. Type 0 requires less memory than the other types, but may not perform as well. It is not possible to remove type 0 from memory using the RMVPCS command.

Use type 0 when you:

- Do not have enough conventional memory to run the other types (your personal computer cannot use extended DOS or has no extended memory)
- Are satisfied with your current level of performance
- Need to connect to a System/36

Shared Folders Function Type 1

The shared folders function type 1 program uses a more sophisticated memory cache than type 0. As a result, its performance is better. However, it does require more personal computer memory to run than type 0.

Type 1 can be used with any release of the AS/400 system and with System/36. You can remove the type 1 program from memory using the RMVPCS command.

Use type 1 when you:

- Want improved performance and your personal computer has enough memory to run type 1 along with your other application programs

- Want the option of removing the shared folders function from personal computer memory when you are not using it
- Need to connect to a System/36
- Need to connect to an AS/400 system using a release earlier than Version 1 Release 3.0

Shared Folders Function Type 2

The shared folders function type 2 program contains all of the features of the type 1 memory cache. Type 2 also uses a more sophisticated server that provides an improved level of performance over type 1. However, type 2 uses more PC memory than type 1.

Use type 2 when you:

- Want the improved performance of the memory cache together with the more sophisticated file server
- Know your personal computer has enough memory to run type 2 along with your other application programs
- Want the option of removing the shared folders function from personal computer memory when you are not using it
- Have Version 1 Release 3.0 or later installed on your AS/400 system
- Do not need to connect to a System/36

Extended DOS Shared Folders Function Type

The extended DOS shared folders function can be used only on personal computers with an 80286 or higher microprocessor. It requires less conventional memory than any of the other shared folders function types while retaining the memory cache and performance features of type 2. It also allows you to use additional features, such as the shared folders function check-in and check-out functions.

Use the extended DOS shared folders function when you:

- Have an 80286 or higher microprocessor with extended memory
- Want the improved performance of a memory cache together with the more sophisticated server
- Want the option of removing the shared folders function from personal computer memory when you are not using it
- Have Version 1 Release 3.0 or later installed on your AS/400 system
- Want to use the CHKFIL command to check files in or out of a folder
- Do not need to connect to a System/36

Understanding the Concept of a Memory Cache

Programs engaged in frequent read and write operations often can benefit from a memory cache to improve performance. The process involves the reading of large amounts of data from a file into a memory cache. A cache is an area of memory set aside to store data that has been read from a storage device, such as a hard disk. The bigger the cache, the more data that can be stored there. As a program runs, it pulls its data from the memory cache instead of from the original file. This improves the performance of the program.

You can change the size of the cache the shared folders function uses by selecting Performance tuning from the list of actions on the Use Folders on Host System display.

Determining the Size of Your Memory Cache

The key to improving the performance of a program using a memory cache is to determine the appropriate size of the memory cache. The general rule is, the bigger the cache the better the performance. However, for some applications, the additional data moved to your personal computer may not be used and performance is adversely affected as a result of the cache size. In other words, when you increase the size of your memory cache, you reduce the memory available for other operations. If your cache size is so large that your program can never fully utilize it, you give up valuable memory for no real benefit.

You may want to use one of the following methods to determine the appropriate size of your memory cache.

Type 0

- Start with a memory cache of approximately 13K. From there, vary the size of the cache depending on how your PC applications fit into the remaining memory.
- Determine the average size of your read and write operations. Multiply the average size by four and use the product for your cache size. Increase the cache size by multiples of the average size until the performance is satisfactory.
- If you know that your application accesses data randomly, set the cache size to 0.

Types 1, 2, and Extended DOS

- Use a small cache (16KB to 128KB) for applications that access data sequentially in small amounts.
- Use a large cache (128KB or larger) for applications that access data randomly.
- Use a large cache (128KB or larger) for applications that access data both randomly and sequentially.
- The required cache size will vary with the application. Creating a cache larger than necessary may not further improve the performance of that application.
- If you typically run most of your applications once a day and use the data associated with those applications only once, the cache size to choose is the maximum cache size determined for those applications.
- If you typically run some or all of your applications more than once a day and use the data associated with those applications more than once, the cache size to choose is the sum of the cache sizes determined for those applications.

Once you have determined the size of the cache you want to use, you can use the PC Support/400 configuration program to change it. Refer to "Managing Folders Using the Configuration Program" on page 14-2 for more information.

Working with the Shared Folders Function Subsystem

AS/400 systems are made up of different subsystems. Each subsystem has a portion of the AS/400 main storage (called a storage pool) allocated to it in which it can run its jobs. Lack of main storage or too much subsystem activity can cause jobs in particular subsystems to run slowly.

The subsystem is supplied with its own default values for the size of the memory pool and the activity level of the subsystem. You can use the default values supplied or you can change them.

Starting the Subsystem

You can start the QXFPCS subsystem manually or automatically. Starting it manually is faster than letting it start automatically. However, to start it manually you must have physical access to the AS/400 system and must have some knowledge of AS/400 commands.

Note: The subsystem is used only when you are using shared folders function type 2 or the extended DOS shared folders function.

- To start the QXFPCS subsystem manually, the control language (CL) Start Subsystem (STRSBS) command should be entered on the AS/400 system as soon as the PC Support/400 licensed program is installed on the AS/400 system and each time you start the AS/400 system again. The command should be entered as follows:

```
STRSBS QIWS/QXFPCS
```

By entering the command as soon as PC Support/400 is installed, you ensure that the subsystem has the storage it needs. You may want to add this command to your system startup program.

- To start the subsystem automatically, you only need to assign your first shared folders function drive. In most cases, the first assignment to take place is the assignment of drive I to the system folder.

When a drive is assigned, the STRSBS command runs automatically. It may take longer than usual for the first drive assignment to complete, since the QXFPCS subsystem is also being started at that time. Once the subsystem is started, it continues to run until you stop it or until you start your AS/400 system again. If the subsystem is stopped, the next time a drive is assigned you will have to wait for the QXFPCS subsystem to start again.

Note: The remote user who assigns the first drive must have authority to the Start Subsystem (STRSBS) command.

Stopping the Subsystem: If you need to stop the QXFPCS subsystem, use the CL End Subsystem (ENDSBS) command. Enter the following:

```
ENDSBS QIWS/QXFPCS
```

Tailoring the Subsystem

You can use CL commands to tailor the QXFPCS subsystem. Some of the reasons you might want to do this are:

- To allocate a dedicated storage pool for the subsystem
- To change the size of the storage pool
- To limit the number of personal computers that can be attached to the subsystem at any one time, enter the CL Change Routing Entry (CHGRTGE) command, specifying a value for the MAXACT parameter:


```
CHGRTGE SBSB(QIWS/QXFPCS) MAXACT(n)
```

where n is the maximum number of personal computers that can be attached at any one time.

For more information about subsystems and the CL commands you can use with them, refer to the *Work Management Guide*.

Chapter 15. Managing Virtual Printers

Introducing the Concept of Virtual Printers	15-2
Setting Up a Printer with the Configuration Program	15-2
Adding a Printer Definition	15-2
Changing the Way the Virtual Printer Function Starts	15-3
Changing a Virtual Printer Definition	15-4
Deleting a Virtual Printer Defined by the Configuration Program	15-4
Starting the Resident Virtual Printer Function	15-5
Setting Up a Printer with the Interactive Virtual Printer Program	15-6
Assigning or Changing a Virtual Printer	15-7
PC Printer	15-8
System Name	15-8
Printer Device	15-8
Printer File Library	15-8
Printer File	15-8
Printer Data Type	15-9
Characters per Inch	15-9
Characters per Line	15-9
Lines per Inch	15-10
Page Length	15-10
Lines per Page	15-10
Number of Copies	15-10
Time-Out Value	15-10
Command Override	15-11
PC Printer Character Set	15-11
Defer Printing until Output File Closed	15-11
Untranslatable Character	15-12
Changing the ASCII-to-EBCDIC Translation Tables	15-12
Releasing a Virtual Printer	15-12
Closing the Output Files	15-13
Ending the Interactive Virtual Printer Program	15-13
Setting Up a Printer with the Automatic Virtual Printer Program	15-13
Assigning a Virtual Printer	15-14
Releasing a Virtual Printer	15-14
Identifying Batch Error Level Codes	15-14
Understanding the Differences between Virtual Printers and PC Printers	15-14

Introducing the Concept of Virtual Printers

The PC Support virtual printer function allows you to use AS/400 printers from your personal computer while still being able to use PC-attached personal computer printers. This allows you to take advantage of the faster speed and quality of the larger AS/400 printers. The term **virtual printer** means that the printer is controlled using commands very similar to the ones you use for your personal computer printer, although the printer can be attached to the AS/400 system.

Unlike personal computer printers, AS/400 printers are typically used by more than one program or person. Before you can use a host system printer as a virtual printer, you need to **assign** it. This can be done interactively when you want to use the virtual printer or automatically when PC Support is started.

You can define up to three printers to be used from your personal computer. These three printers can all be local personal computer printers, virtual printers, or any combination of the two. All three printers can be active at the same time.

The virtual printer function supports all printers that are supported by the AS/400 system.

Setting Up a Printer with the Configuration Program

If you want to use a virtual printer the same way each time you start PC Support, you can use the PC Support configuration program to set up the printer. When you use the PC Support configuration program, you define how you want the printer to operate. The configuration program adds all the information about starting the virtual printer function and assigning the virtual printers to the batch and configuration files specified in your working set.

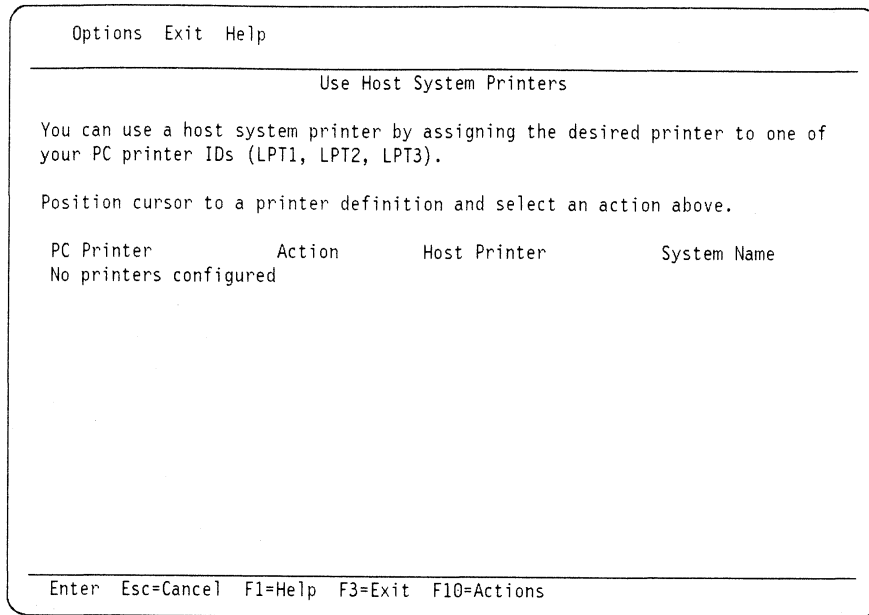
To use this method, you must first start the PC Support configuration program. Refer to "Starting the PC Support/400 Configuration Program" on page 12-2 for instructions on starting the program and displaying the PC Support/400 Configuration menu.

Adding a Printer Definition

When you have displayed the PC Support Configuration menu, follow these steps to add a printer definition. A printer definition tells PC Support how to set up your printer.

1. Select the Printers option from the list of items on the menu.

The following display appears. Any host printers currently defined are shown on the display.



2. Press the Enter key or F10 (Actions) and select Options from the list of actions. A window is shown.
3. Select option 2 (Add printer definition) from the window. The Add Printer Definition window is shown.
4. Enter values for the prompts displayed in the window. Use the arrow keys or the Tab key to move through the prompts displayed in the window.
5. Press the Enter key when you have finished filling in the prompts. You return to the Use Host System Printers display where you can select Exit and save your printer definition.

At this point, the configuration has been changed. The new printer assignments will take place the next time you start PC Support.

The prompts shown in the Add Printer Definition window are described in "Setting Up a Virtual Printer: Example" on page 22-2. When you use the PC Support/400 configuration program to change the virtual printer function, the F4 (Prompt) key is not available.

Changing the Way the Virtual Printer Function Starts

You can have the virtual printer function start automatically each time you start PC Support or you can start it yourself using the CFGVPRT or the SETVPRT command. You can also have the virtual printer function run from your personal computer's hard disk or from your AS/400 system.

If you choose to run the function from your personal computer, files are copied onto your personal computer. If you choose to run the function from the AS/400 subdirectory, files are not copied onto your personal computer.

You can choose to start the function automatically each time you start PC Support/400. If you choose to start the function manually, you need to use the appropriate command from the PC command prompt. To change the way the virtual printer function starts, first display the PC Support Configuration menu. Refer to "Starting the PC Support/400 Configuration Program" on page 12-2 for information on displaying this menu. Then, select Startup options.

Changing a Virtual Printer Definition

If you have used the configuration program to assign a virtual printer, you can change it using the configuration program.

Follow these steps to change a virtual printer definition.

1. Display the PC Support Configuration menu. Refer to "Starting the PC Support/400 Configuration Program" on page 12-2 for information on displaying this menu.
2. Select Printers from the list of functions on the PC Support Configuration menu.

The Use Host System Printers display is shown. Any virtual printers currently defined are shown on the menu.
3. Use the arrow keys or the Tab key to move the cursor to the virtual printer you want to change. This is very important. If you do not specify the printer you want to change, then the printer that is currently highlighted will be changed.
4. Press the Enter key or F10 (Actions) and select Options from the list of actions. A window is shown.
5. Select option 1 (Change printer definition). The Change Printer Definition window is shown.
6. Use the arrow keys or the Tab key to move to the prompt or prompts you want to change. Refer to "Assigning or Changing a Virtual Printer" on page 15-7 for a description of the prompts and the values you can supply for them.
7. When you have completed your changes, press the Enter key. The Change Printer Definition window is removed.
8. Press F3 (Exit) or F10 (Actions) and select Exit. A window is displayed.
9. Select option 1 (Save and exit) to save the changes you have made and exit the Use Host System Printers display. You are returned to the PC Support Configuration menu.

At this point, the configuration has been changed. The new printer definitions will take effect the next time you start PC Support.

Deleting a Virtual Printer Defined by the Configuration Program

If you define a virtual printer using the configuration program, you can use the configuration program to delete it.

To delete a virtual printer using the configuration program, follow these steps.

1. Display the PC Support Configuration menu. Refer to "Starting the PC Support/400 Configuration Program" on page 12-2 for information on displaying this menu.
2. Select Printers from the list of functions on the PC Support Configuration menu.

The Use Host System Printers display is shown. The virtual printers currently defined are shown on the menu.

3. Use the arrow keys or the Tab key to select the printer you want to delete. This is very important. If you do not specify the printer you want to delete, the printer currently highlighted on the display will be deleted.
4. Press the Enter key or F10 and select Options from the action bar. A window is shown.
5. Select option 3 (Delete printer definition). A window is shown.
6. Press the Enter key. The window is removed from the display and the printer assignment is no longer shown.
7. Press F3 (Exit), Esc, or F10 (Actions) and select Exit from the action bar.
8. Select option 1 (Save and exit) to save the changes you have made and exit the Use Host System Printers menu. You are returned to the PC Support Configuration menu.

Starting the Resident Virtual Printer Function

Before you can use the interactive virtual printer program (SETVPRT.EXE) or the automatic virtual printer program (CFGVPRT.COM), the resident virtual printer function must be started. To start the resident virtual printer function, the VPRT.EXE program must be started.

If you selected the virtual printer function when PC Support was installed, the command to start the VPRT.EXE program was added to your STARTPCS file by the installation program. Then, when you start PC Support, the VPRT.EXE program is started automatically.

If you did not select the virtual printer function when PC Support was installed, but want it to start automatically when you start PC Support, use the PC Support configuration program to change the startup method. If you select the automatic option using the configuration program, the VPRT command is automatically added to the STARTPCS file. Refer to "Changing the Way the Virtual Printer Function Starts" on page 15-3 for more information.

If you did not select the virtual printer function during installation or configuration, or if you did not start PC Support, you can start the VPRT.EXE program by entering the following command at the command prompt.

```
[d:] [path] VPRT [d:] [path] [filename.ext] [/z]
```

where d: and path are the drive and directory containing the VPRT.EXE program, and filename.ext is an alternative configuration file containing the information about the printer you want assigned.

/z specifies that the IBM logo and informational messages will not be displayed.

Once the VPRT.EXE program has started, you can assign a virtual printer using one of the following methods:

- The interactive virtual printer program
- The automatic virtual printer program

If you prefer to have the same printers assigned each time, use the PC Support/400 configuration program to define the printers first.

Setting Up a Printer with the Interactive Virtual Printer Program

The interactive virtual printer program SETVPRT.EXE can be used to assign virtual printers or change currently assigned virtual printers. If you do not have any virtual printers currently assigned, it can be used to assign one. It can also be used to change a current virtual printer assignment made using the automatic virtual printer program.

Virtual printers assigned using the SETVPRT program remain assigned until you release them, stop PC Support, or turn off your personal computer. If you want the virtual printer assigned each time you start PC Support, then use the PC Support configuration program to define the printer. Refer to "Setting Up a Printer with the Configuration Program" on page 15-2 for information about using the PC Support configuration program.

The interactive virtual printer program, SETVPRT, prompts you through the steps necessary for assigning or changing virtual printers.

To start the interactive virtual printer program, do one of the following:

- Select the Use printers on host system option from the PC Support/400 Menu.
- Use the SETVPRT command.

When using the SETVPRT command, enter the following at the command prompt:

```
[d:][path]SETVPRT  [/C or /M]  [/H or /S]  [/Z]
```

where the drive [d:] and path [path] contain the SETVPRT program. The drive is required only if the SETVPRT program is not in the current drive. The optional parameters are:

- /C** Specifies a color display mode. If this value is entered, it overrides the value specified on the DSPL identifier in the configuration file for this command. If you want to change the value for all commands, you should change the DSPL identifier.
- /M** Specifies a monochrome display mode. If this value is entered, it overrides the value specified on the DSPL identifier in the configuration file for this command. If you want to change the value for all commands, you should change the DSPL identifier.
- /H** Specifies high-speed writing.
- /S** Specifies slow-speed writing.
- /Z** Specifies that the IBM logo will not be displayed. If you did not specify the /z parameter, the IBM logo appears. If you specified /z, the Current Virtual Printers display appears.

The Current Virtual Printers display shows how the printers are currently assigned. To use the assign, release, close, or exit actions of the virtual printer function, you must press F10 to select an option from the action list. Press F1 (Help) for more information about each option.

The release action is displayed only if there is a printer to release. The close action is displayed only if there are output files to close.


```

Assign Release Close Exit Help

                          Current Virtual Printers

To select an action shown above, first press F10.

                                                                More: |

                                                                LPT1      LPT2      LPT3

System name. . . . . : S58          SYSTEM60
Printer device . . . . . :           P2
Printer type . . . . . :           3812
Printer file library . . . . . : QSYSPRINT1
Printer file . . . . . : 3812FILE
Printer data type. . . . . : 2       3
Printout format
  Characters per inch. . . . . : 15    10
  Characters per line. . . . . : 80    80
  Lines per inch . . . . . : 6        8
  Page length in lines . . . . . : 66   66
  Lines per page . . . . . : 60       60
Printer setup
  Number of copies . . . . . : 1       1
  Command override . . . . . : No      No
Enter  Esc=Cancel  F1=Help  F3=Exit  F5=Refresh  F10=Actions

```

Assigning or Changing a Virtual Printer

To assign a printer using the interactive virtual printer program (SETVPRT):

1. Press F10 (Actions) on the Current Virtual Printers display.
2. Select the option Assign from the action list. The Assign or Change Virtual Printers display is shown.
3. Enter values or select options for the prompts on the display.

For information about the prompts on the displays, refer to “Adding a Printer Definition” on page 15-2 or press F1 (Help) for more information about each. You can also press F4 (Prompt) for a list of selectable values for some of the prompts.

4. Press the Enter key to assign the virtual printer or to have your changes go into effect.

If any problems are found, an error message is shown. Press the Esc key to return to the Current Virtual Printers display. The Current Virtual Printers display shows the values you selected for your virtual printer.

When you assign a virtual printer, you need to provide values for the parameters listed on the Assign or Change Virtual Printers display. The parameters for the printer and the description of each parameter are described below.

When you have provided values for the parameters, press the Enter key to assign the virtual printer.

If any problems are found, an error message is displayed. If an error occurs, press the Esc key to return to the Current Virtual Printers display. The display shows the values you selected for your virtual printer.

PC Printer

The personal computer's name for the virtual printer you want to assign. The personal computer refers to the PC printers and virtual printers by the names LPT1, LPT2, and LPT3. If a virtual printer is already assigned to a name, the assigned values are displayed.

System Name

The name of the host system that the printer you want to use as a virtual printer is attached to. If no system name is entered, the default system name is used. If you are using the interactive virtual printer program (SETPRNT), you can press F4 (Prompt) to select from a list of systems.

Printer Device

The name of the host system printer you want to use as a virtual printer. You must select a printer device or a printer file or both.

Printer File Library

The name of the library that contains the printer file you want to use. If you select a library, you must also select a printer file. If you select a printer file but do not select a library, the host system searches through your library list to find the printer file.

If you are using the interactive virtual printer program (SETPRNT), you can press F4 (Prompt) to select from a list of libraries defined in the user portion (*USRLIBL) of the AS/400 job's library list. You can personalize this list by changing your job description using the Change Job (CHGJOB) command on the AS/400 system.

Printer File

The name of the printer file you want to use. You must select a printer device or a printer file or both. If you select a printer file but do not select a library, the host system searches through your library list to find the printer file.

Note: The AS/400 system uses printer files to control information printed on AS/400 printers. A **printer file** contains information to format and control printing. Printer files are stored in **libraries** on the AS/400 system. A library is used to group related objects on the AS/400 system and to find objects by name when they are used.

If you are using the interactive virtual printer program (SETPRNT), you can press F4 (Prompt) to select from a list of printer files found in libraries defined in the user portion (*USRLIBL) of the AS/400 job's library list. You can personalize this list by changing your job description using the Change Job (CHGJOB) command on the AS/400 system.

If you use a printer file, the supplied default values for characters per inch, characters per line, lines per inch, page length, lines per page, number of copies, and defer printing are determined by the printer file. If you specify a printer device in addition to a printer file, the virtual printer function will change any values supplied by the printer file that are not valid for the printer device you choose.

Printer Data Type

Use this value to determine how you want the virtual printer to handle the data coming from your personal computer program. Select one of the following:

1. SCS data

Select this data type if your personal computer program is supplying data that is already SCS and does not have to be translated from ASCII to SCS. You may select this option if you are using programs that supply final form text (FFT) such as DisplayWrite* 5.

If you select this option and your printed document does not look the way you expect it to, you may want to return to this prompt and select option 3 (Final form text).

2. Convert ASCII to SCS

Select this data type if your personal computer program is supplying ASCII data and you want the data to print on an SCS or IPDS printer.

3. Final form text

Select this data type if you are using any program supplying final form text (FFT), such as DisplayWrite.

If you select this option and the virtual printer you are using cannot print the data in the manner you request it (for example, underlined), the virtual printer will change the data to a printable form.

When you select this option, your text data can be printed on any AS/400 printer. However, because printers vary in their capabilities, your printed document may not look the way you expect it to look. If this happens, you may want to return to this prompt and select option 1 (SCS data).

4. ASCII data

Select this data type if your personal computer program is supplying ASCII data and you want the data to print on a ASCII printer that is connected to the host system.

5. AFPDS

Select this data type if you are using personal computer programs that supply advanced function printing data stream (AFPDS) data (for example, the IBM AFPDS printer driver for Microsoft Windows) and you want to print the data on a printer connected to your AS/400 system using AFP (advanced function printing) support.

Characters per Inch

The number of characters that you want the virtual printer to print per inch.

Characters per Line

The maximum number of characters per line that you want the virtual printer to print. If you do not know the values allowed for the host system printer you are using as your virtual printer, refer to the printer manual for the allowed values. This value must be less than or equal to the characters per inch multiplied by the page width in inches.

Lines per Inch

The number of lines that you want the virtual printer to print per inch.

Page Length

The length of your page in lines. You can enter any number between 1 and 255.

Calculate the length of your page in lines by multiplying the number of lines per inch that you selected times the length of the page in inches. For example, if you selected 6 lines per inch and your page is 11 inches long, your page length is 66 lines.

Lines per Page

The number of lines, between 1 and your page length, that you want the virtual printer to print on each page. A default value is supplied. You can use that value or specify one of your own.

If you select a number less than your page length, the blank lines will be inserted at the bottom of your printed page. If your data is already formatted, you should use the same value as the page length value.

Number of Copies

The number of copies that you want the virtual printer to print.

If you selected option 1 (SCS data), option 2 (ASCII to SCS), option 4 (ASCII data), or option 5 (AFPDS) as your printer data type, you can enter any number from 1 through 255.

If you selected option 3 (Final form text) as your printer data type, you can enter any number from 1 through 99.

Time-Out Value

The maximum number of seconds you want the virtual printer to wait after it stops receiving data and before it closes the output file. A default value of 10 seconds is supplied. You can use the value supplied or specify one of your own.

If the personal computer data contains printer commands to close the output file or the application sends a reset command, the file closes immediately. The output file also closes immediately if you are using the extended DOS version of the virtual print function and the printing application closes the PC printer through interrupt 21. The output file must be closed before it can begin to print on the host system printer (unless you select *No* for the Defer Printing Until Output File Closed option).

For example, if you select 20 seconds, the printer waits for 20 seconds after it has received the last character of data to see if any more is coming. Then it closes your output file and prints it as soon as all the output files that closed before yours have printed.

If your set of data does not print all in one printout but is split up into smaller ones, the time-out value is too short. Increase the number of seconds. If you are getting two or more sets of data combined in one printout, the time-out value is too long. Decrease the number of seconds, or wait longer after sending one set of data to be printed before you send the next.

If you select 0, your output file is not closed by the time-out parameter. If you do not have printer commands in your data that close the output file or the application you are running does not send a reset command to the printer, you must use the SETVPRT program and specify the Close option for an output file sent to the virtual printer to be closed. See “Closing the Output Files” on page 15-13 for more information about the Close option in the SETVPRT program.

Command Override

This value (also known as Application Formatted Data) affects the way the virtual printer handles some personal computer printer commands if you selected option 2 (ASCII to SCS) as your printer data type.

1. Yes.

The virtual printer attempts to print the document as it was formatted by the printing application and uses personal computer printer commands found in the data that change characters per inch (cpi), characters per line (cpl), lines per inch (lpi), lines per page (lpp), and page length (pl) rather than the values you choose when you assign the virtual printer. Superscript and subscript commands are also used. These commands are in effect for the current output file only.

2. No.

This is the default value. The virtual printer uses the values you choose for cpi, cpl, lpi, lpp, and pl when you assign the virtual printer. If you select No, the program ignores the personal computer printer commands that change those values in the data. Superscript and subscript commands found in the data are ignored.

PC Printer Character Set

The printer character set determines how your virtual printer handles ASCII codes. Depending on the character set that you select, the printer expects a command or a printable character.

1. Character set 1.

The virtual printer handles ASCII codes hexadecimal 80 through 9F as printer commands.

2. Character set 2.

The virtual printer handles ASCII codes hexadecimal 80 through 9F as printable characters. This is the default.

For example, in character set 1, the printer handles a hexadecimal 9B as the beginning of a printer command, and the printer expects the next character to be part of a command. But in character set 2, the printer translates a hexadecimal 9B into a printable character.

Defer Printing until Output File Closed

This value lets you choose if you want your data to begin printing on the host system printer immediately or if you want to wait until all of the data has arrived at the host system.

Option 1 (Yes) is the default for this parameter.

1. Yes.

The host system printer waits until the output file is closed before it starts printing the data.

2. No.

The host system printer starts printing your data as soon as it receives the first character, without waiting for the output file to close.

Choosing option 2 (No) can save you time if you are printing a large amount of data. However, other users are not able to print their data until your output file is closed and completely printed.

Untranslatable Character

The EBCDIC hexadecimal code for the character the virtual printer prints if it finds a character it cannot translate from ASCII to EBCDIC. A default value of hexadecimal 40 (blank) is supplied.

Because many personal computers supply ASCII data and many host system printers accept only EBCDIC data, the virtual printer must translate each character of data sent by the personal computer from ASCII to EBCDIC. When an untranslatable character is found, the virtual printer substitutes a printable EBCDIC character.

Changing the ASCII-to-EBCDIC Translation Tables

ASCII-to-EBCDIC translation tables are used by the virtual printers to determine what EBCDIC characters the ASCII characters in the data are translated to when you assign your virtual printer with printer data type 2.

The virtual printer program uses the system's ASCII-to-EBCDIC translation table. You can change the system's ASCII-to-EBCDIC translation table by running the router and specifying a translation table filename identifier (A2ET) in the configuration file. For more information about the A2ET identifier, refer to "Other PC Support Identifiers" on page 24-29.

You can also change just the virtual printer ASCII-to-EBCDIC translation table. When you type the VPRT command, the VPRT.EXE program checks the CONFIG.PCS file or specified alternative configuration file for AEPx identifiers. These identifiers tell the VPRT.EXE program which ASCII-to-EBCDIC translation table to use. If AEPx identifiers are not found in the CONFIG.PCS file or the specified alternative configuration file, the router default translation table is used. The translation tables are loaded again each time VPRT is run.

Releasing a Virtual Printer

When the Current Virtual Printers display is shown, press F10 to go to the action list. Move the cursor to Release on the action list and press the Enter key. You may select the printer or printers you want to release and then press the Enter key. This option is only displayed if you have a virtual printer assigned.

There are some virtual printers you cannot select. Those that cannot be selected are identified with an asterisk (*). The asterisk indicates that, because the virtual printer was never assigned, you cannot release it.

```

Assign Release Close Exit Help

Current Virtual Printers

To select an action shown above, first press F10.

More:

LPT1      LPT2      LPT3

System name. . . . . : S58      SYSTEM60
Printer device . . . . . :      P2
Printer type . . . . . :      3812
Printer file library . . . . . : QSYSPRINT1
Printer file . . . . . : 3812FILE
Printer data type. . . . . : 2      3
Printout format
Characters per inch. . . . . : 15      10
Characters per line. . . . . : 80      80
Lines per inch . . . . . : 6      8
Page length in lines . . . . . : 66      66
Lines per page . . . . . : 60      60
Printer setup
Number of copies . . . . . : 1      1
Command override . . . . . : No      No
Enter Esc=Cancel F1=Help F3=Exit F5=Refresh F10=Actions

```

Closing the Output Files

If an open output file exists, the Close option is shown at the top of the Current Virtual Printers display. To close an output file:

1. Press F10 at the Current Virtual Printers display.
2. Select the Close option.
3. Select the printer or printers you want to close output files for.
4. Press the Enter key.

There are some virtual printers you cannot select. Those that you cannot select are identified with an asterisk (*). The asterisk indicates that there are no output files to close for that virtual printer or the virtual printer is not assigned.

Ending the Interactive Virtual Printer Program

When the Current Virtual Printers display is shown, press F10 to go to the action list. Move the cursor to Exit on the action list, and press the Enter key. On the task option list, you may choose option 1 (Exit virtual printer) or option 2 (Resume virtual printer). Select option 1 if you are through working with virtual printers. Select option 2 if you want to continue working with virtual printers.

Setting Up a Printer with the Automatic Virtual Printer Program

If you want to use the same virtual printer configuration every time you run a particular application, you can have your virtual printers automatically set up using the automatic virtual printer program, CFGVPRT. You can include the CFGVPRT command in a batch file, such as STARTPCS, or you can run the CFGVPRT program from the command prompt. If you select the virtual printer function when you install PC Support, the CFGVPRT command is automatically added to the STARTPCS file.

Assigning a Virtual Printer

To assign a virtual printer using the automatic virtual printer program, use the following PC command:

```
[d:][path]CFGVPRT [c:][path][filename.ext] [/z]
```

where:

d:path

Specifies the drive and an optional path where the CFGVPRT program is located.

c:path

Specifies the drive and optional path where the configuration file is located.

filename.ext

Specifies the name of the configuration file to use. The configuration file must contain configuration identifier (PRNT) entries for the virtual printer function. This parameter is optional. If no file name is specified, the CONFIG.PCS file is used.

/z Specifies that the IBM logo and informational messages will not be displayed.

When you press the Enter key, the automatic virtual printer program searches the CONFIG.PCS file, or the alternative configuration file you specified, for PRNT identifiers to process. For more information about the PRNT identifier, refer to the "Virtual Printer Identifiers" on page 24-21.

If you specify an alternative configuration file, CFGVPRT searches only for PRNT identifiers in the alternative configuration file. Any PRNT identifiers in the CONFIG.PCS file are ignored.

Releasing a Virtual Printer

To release a virtual printer using the automatic virtual printer program, create a PRNT identifier in a configuration file. Specify the name of the virtual printer you want to release as the only parameter for the PRNT entry. Then, run the CFGVPRT program as described in "Setting Up a Printer with the Automatic Virtual Printer Program" on page 15-13. If an AS/400 output file is open when you release a virtual printer, the output file is closed and printed.

Identifying Batch Error Level Codes

If you are running a batch file, CFGVPRT (and VPRT) sets a return code that can be checked by DOS. When all entries are processed successfully, the error level is 0. If an error occurs, but you choose to continue the operation, the error level is set to 10 (hexadecimal 0A). If an unrecoverable error occurs, or if you choose to end the CFGVPRT or VPRT program, the error level is set to 20 (hexadecimal 14).

Understanding the Differences between Virtual Printers and PC Printers

Although you can use a virtual printer as you would use a personal computer printer, there are some differences you should be aware of:

- If emphasized printing is specified for a virtual printer, the printing is done using double strike. This happens because some AS/400 printers do not support the emphasized printing available on a personal computer printer.
- If double-width printing is specified in a file sent to a virtual printer, the printing is expanded by placing a blank after each character to allow correct spacing when the command override prompt for the virtual printer is set to No. If you assigned your virtual printer to an AS/400 printer that supports double-width printing, you can set the command override prompt to Yes. Then, the virtual printer will simulate double-width printing by changing the characters per inch to 5.
- If printer data type 2 is specified for the virtual printer, the virtual printer function assumes that the data to be printed is intended for the IBM Proprinter* 4201 or other compatible personal computer printers. Printer data intended for use with other personal computer printers may not be changed correctly to the appropriate AS/400 printer data stream by the virtual printer function. If you are using a word processing program or spreadsheet program that allows you to select a printer, you should select the IBM 4201 Proprinter.
- If you print on a printer device that supports the FONT parameter and you assigned the virtual printer with a printer file (with or without a printer device), then the CPI value is not used unless the printer file has FONT(*CPI) specified.
- The virtual printer function should not be used with any personal computer print spoolers, such as the DOS PRINT command.
- Files printed on a virtual printer using printer data type 4 (the ASCII data type) cannot be displayed on the AS/400 system.
- The default time-out value of 10 seconds may not be long enough for the personal computer application to generate printer data. If it is not, a single personal computer application output file will become multiple host system printer spool files. To prevent this from occurring you need to increase the time-out value or disable the time-out value by setting it to zero (0).
- If you include KQE.COM (keyboard queue extender) in your IBM DisplayWrite batch file, you must run DWx.BAT (where x is 1, 2, or 3) and exit, or run KQE.COM before loading VPRT.EXE. If you do so, your output files will close properly; otherwise, you must exit the DisplayWrite program for your output files to close properly.
- If you are sending personal computer printer data to a personal computer printer that is emulating an AS/400 printer, you should set the printer data type value to data type 4 (ASCII data) when you assign your virtual printer. Using the ASCII data type assures that the features of the personal computer printer are used. No data conversion is done by the virtual printer function.
- If the virtual printer is assigned with printer data type 2, the lines per page and the page length values are used by the printer to determine when page ejects are inserted into the virtual data. If the value specified for the lines per page value is less than the value specified for the page length value, then the virtual printer detects when to perform a page eject.

However, if your print data contains the commands needed to perform the page breaks, and the lines per page value is less than the page length, the virtual printer may cause extra form feeds to be done. This results in blank pages scattered throughout the printer output.

If your print stream is already formatted by a word processing or spreadsheet program, you should ensure that the values specified for the lines per page and page length values are equal when you assign a virtual printer. This will prevent the virtual printer from inserting any extra form feeds.

If you print data that is not already formatted to produce page breaks, specifying a value for lines per page that is less than the value specified for page length allows the virtual printer to skip the specified number of lines across the page breaks. The number of lines skipped is the difference between the page length and the number of lines per page. If you are using DisplayWrite* 4 you should remove the following command from the DW4.BAT command file:

```
MODE LPT:,,P
```

This command may cause unpredictable results when using virtual printers and should be removed from the DW4.BAT file.

- If you are using data type 3 the PAGRTT field in the printer file is not used and the page rotation attribute of the resulting spooled file will always be zero. To use the page rotation specified in the printer file, print the document using data type 1.
- If you are using data type 5 the Front Side Overlay and Back Side Overlay fields in the printer file are not used.

Chapter 16. Managing Your Work Station Function Sessions

Introducing the Work Station Function	16-3
Understanding Work Station Function Sessions	16-3
Understanding Work Station Function Profiles	16-4
Starting the Work Station Function Configuration Program	16-5
Preparing to Use a Graphics Session	16-6
Installing Graphics	16-6
Editing Your CONFIG.SYS File	16-6
Setting Up a Master Profile	16-9
Changing the General Options	16-9
Changing Your Keyboard Style	16-12
Saving Your Master Profile	16-13
Setting Up a Session Profile	16-13
Selecting Display Session Options	16-16
Changing General Session Options for Display Sessions	16-16
Changing Display Options	16-17
Changing Graphics Options	16-18
Selecting Printer Session Options	16-19
Changing General Session Options for Printer Sessions	16-21
Changing Printer Options	16-22
Saving Your Session Profile	16-26
Setting Up a Keyboard Profile	16-26
Preparing to Configure a Keyboard Profile	16-27
Understanding Keyboard States	16-27
Understanding Keyboard Layers	16-28
Defining the Keyboard	16-28
Creating a Keyboard Profile	16-28
Selecting a Keyboard Type and Style	16-29
Defining Keys with the Define Keyboard Display	16-29
Saving a Keyboard Profile	16-33
Displaying Your Current Keyboard Layout	16-33
Selecting the Special-Character Keyboard Set	16-33
Changing a Keyboard Profile	16-34
Organizing Your Work Station Function Sessions	16-35
Arranging Your Sessions Using the Session Manager Program	16-35
Understanding How the Session Manager Works	16-36
Personalizing the Session Manager	16-36
Using the Session Manager	16-38
Coloring Your Work Station Function Sessions	16-39
Starting the Screen Coloring Utility	16-39
Coloring a Session	16-39
Starting the Work Station Function	16-41
Starting Sessions	16-43
Recognizing the Pre Sign-On Display	16-43
Changing Sessions	16-45
Stopping Sessions	16-45
Using Graphics Sessions	16-45
Initializing Device Drivers	16-45
Starting Graphics	16-46
Using the Print Screen Function	16-47
Displaying Graphics	16-47
Using Local Select Mode	16-48

Using a Plotter	16-48
Using Work Station Function Printer Sessions	16-49
Identifying Printer Operator Panel Status Indicators	16-50
Printing the Display	16-52
Printing on an AS/400 Printer	16-52
Printing on a Personal Computer Printer	16-52
Removing the Work Station Function from Memory	16-52
Identifying Batch Error Level Codes	16-52
Introducing Bidirectional Support	16-53
Starting Cursive Bidirectional Support	16-54
Starting Noncursive Bidirectional Support	16-55
Identifying the Bidirectional Support Status Indicators	16-55

Introducing the Work Station Function

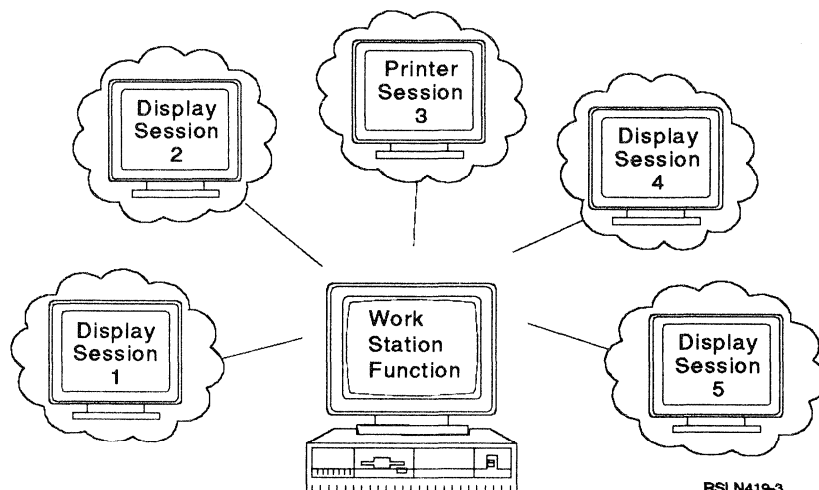
When you use the work station function, you can use your personal computer as any of the following:

- Display work station
- Printer work station
- Graphics work station
- Stand-alone personal computer

The work station function lets you use your personal computer in each of these ways by telling your personal computer when to imitate, or emulate, a nonprogrammable work station. In this way, you can use your personal computer to complete AS/400 system tasks or PC tasks.

Understanding Work Station Function Sessions

When your personal computer emulates a nonprogrammable work station, it does so within a defined profile called a **session**. You can define up to five sessions. Like the diagram shows, it is as if you had five AS/400 work stations rather than one personal computer.



You can define your sessions on the same AS/400 system or on as many as five separate AS/400 systems.

There are three kinds of sessions: display sessions, printer sessions, and graphics sessions.

- A **display session** means your personal computer can function as a display station attached to an AS/400 system. It will display the information you send to and receive from the AS/400 system.
- A **printer session** means your PC printer can function as an AS/400 printer and your personal computer can function as the control panel for that printer.

Note: The purpose of a work station function printer session is different from the purpose of the PC Support virtual printer function. You use a work station function printer session when you want your PC printer to function as an AS/400 printer. You use the virtual printer function when you want an AS/400 printer to function as a PC printer.

- A **graphics session** means your personal computer can emulate the graphics capabilities of an IBM 5292 Model 2 display station.

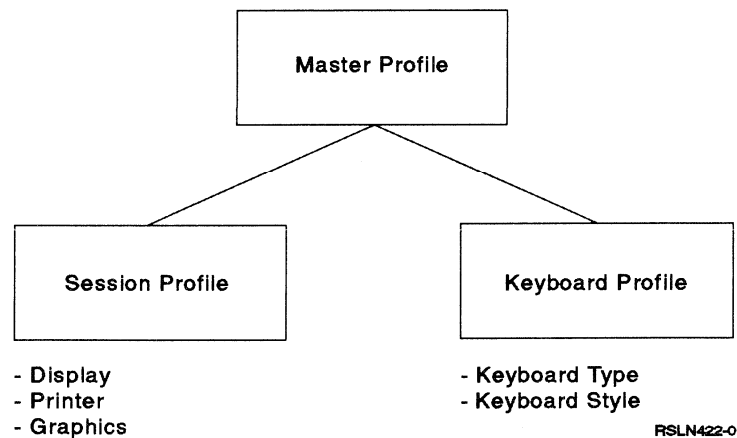
The term **active session** refers to the session currently on the display.

If the work station function was chosen when PC Support was installed and the programs that run the work station function were not changed, you will have one display session and a 5250 keyboard style defined for you already. If you would like to change this or define more sessions, you can do so by running the work station function configuration program (CFGWSF.EXE). The configuration program helps you tailor the work station function for your own use. For example, you could change the function of a key on your keyboard, request to bypass the AS/400 Sign On display, or change the paper size used by your printer.

You can also assign specific colors to your work station function sessions or organize your sessions so you can view all of them at one time on your display. Coloring your sessions is done with the work station function color program, WSFCOLOR. Organizing your sessions on your display is done with the session manager program, SM5250.

Understanding Work Station Function Profiles

As mentioned earlier, you have the option of defining the kind of session and keyboard type you use. The information about each display, printer, or graphics session is stored in a session profile. The information about each keyboard type is stored in a keyboard profile. Session and keyboard profiles are, in turn, stored in master profiles. The following diagram shows the relationship between these profiles.



To enhance and expand the operation of the work station function on your personal computer, you can change the values provided for your profiles to values more suitable to your operation.

Before you can start configuring the work station function, you must decide which options and their values need to be changed. You can make these decisions by using the option descriptions in each function and the information in "Planning Work Station Function Configuration" on page 25-2. As you decide which options need to be changed, you can record your choice on the work sheet. Use the work sheet to assist in planning or recording the entries as you configure work station function. Changing these options and their values affects

the operation of your personal computer. The tables provide information that closely follows the displays presented to you in the configuration program.

If you create several master profiles, you can change the way your display, keyboard, and printer operate by selecting different master profiles.

Starting the Work Station Function Configuration Program

Before you can change the work station function, you must start the work station function configuration program (CFGWSF.EXE). You can start the program from your DOS command line or from the PC Support/400 menu.

- To start CFGWSF from the DOS command line, enter the following command after the DOS prompt.

```
[d:][path]CFGWSF
```

where d: and path are the drive and directory containing the work station function configuration program.

- To start CFGWSF from the PC Support/400 menu, select the Configure PC Support/400 option. A window is displayed. Select option 2 (Work station function configuration) from the options in the window.
- To start CFGWSF for administering PC Support/400, enter one of the following commands:

```
CFGWSF USER=xx DRIVE=yy
```

```
CFGWSF MODEL=xx DRIVE=yy
```

where xx is the name of the configuration you want to use and yy is the letter of the drive where the user configuration is stored.

The following display is shown.

```
      Create      Change      Exit      Help
-----
                    Work Station Function Configuration

To select an action shown above, first press F10.

This program allows you to build the following profiles for use with the work
station function program:

--Session profiles, which define the type of work station or printer a session
will imitate.

--Keyboard profiles, which define the type and style of keyboard you will use
in a session.

--Master profiles, which contain a keyboard profile and information to be used
by up to five session profiles.

You should complete the work station function checklist found in the
PC Support/400 DOS Installation and Administration Guide before continuing.

-----
Enter   Esc=Cancel   F1=Help   F3=Exit   F10=Actions
```

Preparing to Use a Graphics Session

Any work station function display session can be configured for graphics. All five sessions can be graphics sessions if the personal computer has enough memory to accommodate them. For information on memory requirements, refer to Appendix B, "PC Support Memory Requirements" on page B-1.

Do not configure more graphics sessions than are absolutely necessary. A graphics session takes considerably more memory than a nongraphics display session. Consequently, applications you want to run in personal computer mode may not have the memory they require.

If the personal computer does not have sufficient memory for the graphics sessions you configure, a message appears when you attempt to start the work station function. When this occurs, you should configure for the number of graphics sessions that the personal computer can accommodate.

To configure a session for graphics, specify that the session type is a display with graphics (see "Setting Up a Session Profile" on page 16-13 for instructions). Graphics defaults are provided for use in the graphics session. However, you may want the graphics session to have different characteristics than those provided.

You can run CFGWSF to tailor the graphics session characteristics further. You can check the default graphics values by running CFGWSF and observing the values that appear on the display as defaults.

Graphics plotter configuration is done with the configuration program, CFGWSF. It lists the information you must provide about the plotter.

If you plan to use a graphics session, you should read the following sections.

Installing Graphics

The following rules apply when you install graphics:

- DOS reads the CONFIG.SYS file for the device drivers when you start the operating system. These device drivers must be available for DOS at start time.
- You may need to run the INIT_VDI program to initialize the device drivers before you start the work station function.

This section explains how to edit CONFIG.SYS and use the INIT_VDI program. After you edit the files, you must start the personal computer again before you can use or configure graphics.

Editing Your CONFIG.SYS File

Before you use graphics, you need to edit the system file, CONFIG.SYS, located in the root directory of the disk or diskette that DOS is started from. There are three basic steps you must do to add the device driver information for graphics support:

1. Edit your CONFIG.SYS file
2. Copy the device drivers from the QIWSFLR or QIWSFL2 folder
3. Start the personal computer again

This section explains each step.

1. The CONFIG.SYS file must contain at least two entries, and they must be entered in the order listed in the example:

```
DEVICE=d:\path\driver.SYS /R
DEVICE=d:\path\VDI.SYS
```

where d: is the disk drive that contains the VDI drivers, path is an optional directory, driver is the graphics driver you select from Table 16-1, and /R is an optional parameter that states the driver is to remain resident in memory. If you use the /R parameter, make sure you precede the slash (/) with two spaces and use a capital R.

Table 16-1 (Page 1 of 2). Graphics Session Options

Display/Adapter	Resolution	Colors or Gray Shades ^{1, 4}	Device Driver
5151 with EGA	640 by 350	2 colors	VDIDY00F
5153 with CGA	640 by 200	2 colors	VDIDY006
5153 with CGA	320 by 200	4 colors	VDIDY004
5153 with EGA	640 by 200	16 colors	VDIDY00E
5153 with EGA	320 by 200	16 colors	VDIDY00D
5154 with EGA	640 by 350	4 colors	VDIDY010
5154 with EGA	640 by 350	16 colors from a palette of 64K ²	VDIDY010
8503, 8507, 8512, 8513, 8514, or 8515 with VGA ⁵ or XGA*	640 by 480	2 colors	VDIDY011
8503 or 8507 with VGA ⁵ or XGA	640 by 480	16 gray shades from a palette of 64K	VDIDY012
8512, 8513, 8514, or 8515 with VGA ⁵ or XGA	640 by 480	16 colors from a palette of 256K	VDIDY012
8503 or 8507 with VGA ⁵ or XGA	320 by 200	64 gray shades	VDIDY013
8512, 8513, 8514, or 8515 with VGA ⁵ or XGA	320 by 200	256 colors from a palette of 256K	VDIDY013
8503 or 8507 with MCGA	640 by 480	16 gray shades from a palette of 64K	VDIDYA11
8512, 8513, 8514, or 8515 with MCGA	320 by 200	256 colors from a palette of 256K	VDIDYA13
8503 or 8507 with MCGA	640 by 480	16 gray shades from a palette of 64K	VDIDYA13
8507 with MCGA	640 by 480	16 gray shades from a palette of 64K	VDIDYA13
8512, 8513, 8514, or 8515 with MCGA	320 by 200	256 colors from a palette of 256K ³	VDIDYA13

Table 16-1 (Page 2 of 2). Graphics Session Options

Display/Adapter	Resolution	Colors or Gray Shades ^{1, 4}	Device Driver
8503 or 8507 with PS/2* 8514/A Display Adapter or IBM XGA Display Adapter	640 by 480	16 gray shades from a palette of 64K	VDIDYAFL ⁶
8512, 8513, 8514, or 8515 with PS/2 8514/A Display Adapter or IBM XGA Display Adapter	640 by 480	16 or 256 colors from a palette of 256K ³	VDIDYAFL ⁶
8503 or 8507 with PS/2 8514/A Display Adapter or IBM XGA Display Adapter	1024 by 768	16 gray shades from a palette of 64K	VDIDYAFH ⁶
8512, 8513, 8514, or 8515 with PS/2 8514/A Display Adapter or IBM XGA Display Adapter	1024 by 768	16 or 256 colors from a palette of 256K ³	VDIDYAFH ⁶

Notes:

- 1 A value of 2 in the Colors or Gray Shades column indicates a monochromatic display. The 2 colors are for **background** and **foreground**.

When the 5151 monochrome display is attached to the EGA and the VDIDYEGA driver is in use, 4 colors can be configured:

- Background
- Foreground
- Foreground flash
- Foreground highlighted

- 2 The IBM EGA 128K Memory Expansion option is required for full 16-color support.
- 3 The IBM 8514 Memory Expansion Kit must be installed for 256 colors.
- 4 The host data stream limits the display to eight colors or shades on any display at any one time.
- 5 **VGA** refers to the built-in display adapter for the PS/2 (not including the Models 25 and 30), and also to the IBM PS/2 Display Adapter available for the IBM PC, XT*, and AT*.
- 6 If you are using an 8514/A or an XGA adapter, the following must be installed in addition to the PC Support/400 device drivers:
- For 8514/A: HDILOAD.EXE
 - For XGA: XGAIDOS.SYS

These programs are supplied with the respective adapters.

The following example shows the entries necessary for the 5153 with CGA, and with the VDI files copied to the VDI directory on the personal computer hard disk.

```
DEVICE=C:\VDI\VDIDY004.SYS /R
DEVICE=C:\VDI\VDI.SYS
```

2. Copy the necessary device drivers from the QIWSFLR or QIWSFL2 folder to the drive and directory you indicated on the DEVICE command entries in CONFIG.SYS.

If necessary, see the DOS manual for instructions on copying and editing files.

If you want to include INIT_VDI in the AUTOEXEC.BAT file, edit that file before you reset the personal computer.

3. Start the personal computer operating system again so that DOS will read the updated CONFIG.SYS and AUTOEXEC.BAT files.

Setting Up a Master Profile

To create a master profile, complete the following steps.

1. Select F10 (Actions) on the Work Station Function Configuration menu.
2. Select Create from the list of actions in the action bar. A window showing several options is displayed.
3. Use the Arrow keys to highlight Option 3 (Create master profile) and press the Enter key to select the option. A window is shown.
4. Type the name of the master profile you want to create and press the Enter key.

You do not have to create names for the master profiles you want to use. The work station function configuration program provides names for all profiles. You can use the names provided or create your own. Whichever you do, you should remember to record the names on the work sheets.

5. When you press the Enter key, the Create Master Profile display is shown. It provides the name of the master profiles you are working with as well as information about any sessions assigned to the master. You can select to change your general options or your session information.

Changing the General Options

General Options are the options that affect all the display and printer sessions you run from one personal computer.

To change the General Options for this master profile, complete the following steps.

1. Press F10 (Actions) on the Create Master Profile menu.
2. Select General Options from the action bar. A window is shown.
3. Select option 1 (General options). The General Options menu is shown. It contains several prompts.
4. Use the Arrow keys or the Tab key to highlight the options you want for each prompt and then press the spacebar to select the option. The following list provides the prompt names, their descriptions, and the values you can select for each.

Options	Description
Display Save Area	Use this option to specify the size of the area in personal computer memory you want reserved for work station function. Note: If you are using the extended DOS option, this option is ignored. The display save area will always be 16K. If enough extended memory is available, this area will be in extended memory.

You may choose from the following options:

- Text Buffer

Select option 1 (Text Buffer) if you are not using graphics or programs that require the fourth graphics page of the graphics display adapter. The fourth graphics page is one of the graphics adapter memory areas provided by the adapter for the storage of text and graphics information.

The text buffer option reserves a portion of PC memory large enough to store the entire DOS display when it is in text mode. If you use the fourth graphics page, you can use this option as long as you specify option 2 (No) for the Use background graphics adapter memory option.

- Graphics Buffer

Select option 2 (Graphics Buffer) if you are using graphics and programs that require multiple pages of the display adapter.

If you are using a 132-column display session, the work station function automatically enters a font table in the first character set area. The graphics buffer also saves your DOS font. The size of the graphics buffer varies with the size of your personal computer adapter type.

Use Background Graphics Adapter Memory

Use this option to save the DOS display in the graphics adapter area.

Note: If you are using the extended DOS option, this option is ignored.

You can use this option if you have:

- Installed a graphics adapter or
- Specified option 1 (Text Buffer) for the Display save area option or
- Put your monitor in a mode other than graphics mode (for example, text mode)

Use 8514/A adapter This option indicates if your 8514/A adapter should be used for a 132-column display. If you select Yes, but the 8514/A adapter is not attached or the DOS session is using the 8514/A, your selection is ignored.

Monitor Attached to Graphics Adapter

If you have a graphics adapter, use this option to indicate whether you are using a color or non-color monitor. Select color for a color monitor. Select non-color if the monitor cannot display multiple colors. The default setting is color.

Note: If you are using a monochrome monitor attached to a graphics adapter, you should select non-color. Otherwise, the characters displayed in your work station function sessions may be dim and difficult to read.

Printer Session Online Information

This option allows you to choose whether you want the online help information available for printer session displays. The online help information is moved into the personal computer memory when you select the Yes parameter. When you are familiar with the printer session options, you can change this to No to not move the online help information into the personal computer memory. The online help information uses additional personal computer memory. For more information on memory requirements, see Appendix B, "PC Support Memory Requirements." Select the No option if you require additional personal computer memory for DOS and other applications.

Bypass Pre sign-on Screen

The Pre sign-on screen shows the status of sessions as they are starting. The word Starting flashes as each session is started. Once all sessions have started, you press any key to continue to the AS/400 Sign On display for your first session. If you select this option, you do not need to press a key to continue (unless an error has occurred starting a session). The AS/400 Sign On display for the first session appears automatically after all sessions have started.

Immediate Hot Key to DOS

This option allows you to switch to personal computer mode, instead of the first session, immediately after you load the work station function.

You can use this option in conjunction with the Bypass Pre sign-on Screen option to load work station function from a batch file and then to return automatically to the batch file processing.

Use Expanded Memory

This option allows work station function to use expanded memory. Your personal computer needs an expanded memory specification (EMS) device driver and an EMS capable hardware adapter. When you use this option, more conventional memory is available for DOS and other applications.

Note: This option is ignored for display sessions using the extended DOS option. If a printer session is requested, EMS may be used for the printer session. If the user has no printer session specified in the master profile, this option is ignored.

For more information on using expanded memory, see Appendix A, "Using Expanded or Extended Memory with PC Support/400."

Keyboard Click

This option allows you to choose whether the clicking noise your keyboard makes is audible while you enter data. If you choose Yes, the clicking noise is audible.

If you choose No, it is not. The default for this option is No.

Host Data Stream Buffer Size

This option allows you to specify the size of the buffer used by the work station function when sending commands to the personal computer for controlling the keyboard and the display. Valid values are 6 to 64 kilobytes. The default size is 6 kilobytes. You should specify a larger buffer size only if the work station function resets a session each time you try to show the same display. If your master profile has a graphics session this memory will be allocated in conventional memory. This option is used only if you are using the extended DOS option of PC Support/400.

Auto-Dim

If you select this option, the work station function program dims the display after it has been inactive for a specified number of minutes. Consider using this option if you leave the display unattended, but do not want to stop sessions. This prolongs the life of the display equipment. This option does not function in personal computer mode. If you select Yes for this option, you are prompted for the auto-dim interval in minutes.

5. Press the Enter key when you have finished assigning values for the prompts. You are returned to the Create Master Profile menu.

Changing Your Keyboard Style

You can also change the keyboard style you use with this master profile. Keyboard style refers to the kind of keyboard you want your personal computer keyboard to imitate while using work station function. (This is different from the keyboard type, which refers to the actual *kind* of keyboard attached to your personal computer.)

To change your keyboard style, complete the following steps.

1. Press F10 (Actions) on the Create Master Profile display and select General options from the action bar.
2. Use the Arrow keys to highlight option 2 (Keyboard style) and press the Enter key to select the option. The Keyboard Style menu is shown.
3. Use the Arrow keys to select the keyboard style you want to use. The following list describes the options on this menu.

- 5250-style layout.

Functions and characters are placed in the same locations as found on the keyboard of a 5250 display station.

Note: This option is valid for IBM PC and PC AT keyboards only. For enhanced keyboards, this option is ignored and the keyboard style defaults to a PC-style layout. To use a 5250-style layout with an enhanced keyboard, you need to create and use a keyboard profile. For more information, see "Setting Up a Keyboard Profile" on page 16-26.

- PC-style layout.

Functions and characters of the 5250 keyboard are placed in locations that more closely compare to the keyboard found on a personal computer.

- User defined

Functions and characters are placed on the keyboard where you define them. If you select option 3, you are asked to enter the name of the keyboard profile.

4. When you have selected the keyboard style you want to use, press the Enter key. You are returned to the Create Master Profile menu.

Saving Your Master Profile

If you are finished selecting the general options and keyboard styles you want to use for your master profile, you should save the master profile. To do this:

1. Press F10 (Actions) on the Create Master Profile menu and select Exit from the action bar.
2. Select the exit option you want to use:
 - Select option 1 (Save master profile and return) to save your master profile and continue using the work station functions configuration program.
 - Select option 2 (Save master profile and exit work station function configuration) to save your master profile and exit the work station function configuration program.
 - Select option 3 (Return without saving master profile) to discard any changes and to continue using the work station function configuration program.
 - Select option 4 (Exit work station function configuration) to discard any changes and exit the work station function configuration program.
 - Select option 5 (Resume work station function configuration) to return to your current position in the work station function configuration program.

If you select any of the options that result in saving a master profile, a window is shown containing the name of a master profile. Confirm or change the name of the master profile you want saved. Press the Enter key.

When the Enter key is pressed, another window is shown containing the name of the batch file you want changed to include the new master profile. Press F4 (Prompt) to display a list of batch files from which you can choose. This determines which master profile is read and the type of sessions established when work station function is started.

Setting Up a Session Profile

Now that you have created a master profile, you should create a session profile to store in it. Session profiles control the operation of your work station function sessions. Follow these steps to create a session profile.

1. Press F10 (Actions) on the Work Station Function Configuration menu.
2. Select Create from the action bar. A window is shown.

3. Select option 1 (Create session profile) from the window. Another window is shown containing the name of the session profile you want to create.
4. Press the Enter key if you want to use the name provided in the window. Type a new name and then press the Enter key if you want to use a different name. When you press the Enter key the Create Session Profile menu is shown.

```

                                Create Session Profile

Select options, press Enter.

Profile name . . . . . : D:\PCS\PRT.DAT

Type of session . . . . . ▶ 1. Display
                             2. Printer

Display device . . . . . ▶ 1. Standard
                             2. 132 column
                             3. Graphics
                             4. Graphics with plotter

System type . . . . . ▶ 1. AS/400 System
                             2. S/36

-----
Enter   Esc=Cancel   F1=Help   F3=Exit   Spacebar

```

This menu contains the name of the session profile you are working with and several prompts. The values you select for each prompt determine how your work station function sessions operate when using this session profile.

5. Use the Arrow keys to highlight the option you want to select for each prompt. Then, press the spacebar to select the option. Use the Tab key to move to the next prompt. The options are:

Type of session

Select the type of device you want your session to imitate. You can select Display or Printer. The default is Display.

When Display is selected, the Display device option is shown.

Display device

This option is shown only if Display is selected as the type of session. You can select from the following display devices:

- Standard

Your display functions like a 3196 or 3197 display. You can display text, but not graphics.

Note: If you are using PC Support/400 with the Microsoft Windows program you must choose Standard for your display device.

- 132 Column

Your display functions like a 3180 model 2 display. There are two forms of 132-column support. The first form shows all 132 columns of text at one time. The second form shows either the first 80 columns or the last 80 columns of the 132 columns of text. Your current

equipment determines if you can use 132-column support and, if so, which type of support.

You must meet the following requirements to use this support:

- Full 132-column support needs:
 - a. an 8514 display and
 - b. either an 8514/A adapter or an XGA adapter and
 - c. 75K of PC memory.

To use full 132-column support with an XGA adapter, the master profile should be configured as follows:

- a. Select Text Buffer for the Display save area prompt.
- b. Select No for the Use Background Graphics Adapter Memory prompt.

or

- a. Select Graphics Buffer for the Display save area prompt.
- Partial 132-column support needs:
 - a. A video graphics adapter (VGA), a monochrome graphics adapter (MCGA), or an extended graphics adapter (EGA)
 - b. A compatible display
 - c. 75K of PC memory

If you use the partial 132-column support, use the toggle key sequence (pressing and holding the Alt key, and then pressing the 7 key on the numeric key pad) to shift between the first 80 and the last 80 columns of text. You can also use the cursor to display the text not currently shown. The cursor does not shift the display, but shows either the next character or the next field of text.

- Graphics

Your display functions like a 5292-2 display. Select this device when you want AS/400 graphics display support.

- Graphics with plotter

Your display functions like a 5292-2 display. Select this device when you want AS/400 graphics display support, and you want to use a plotter attached to your personal computer.

System type

Select the type of system you will be communicating with while using the work station function. The options are AS/400 or System/36.

6. When you have selected the options you want for each prompt on the Create Session Profile menu, press the Enter key.

If you selected Display as the type of session, a Display Session menu corresponding to the selected display device is shown. If you selected Printer as the type of session, the Select Printer Model menu is shown.

Selecting Display Session Options

If you selected standard display, 132 column support, graphics display, or graphics display with plotter for your device type, you can change your General session options and Display options from your Display Session menu.

If you selected graphics display or graphics display with plotter as your device type, you can also change your graphics options from your display session menu.

Changing General Session Options for Display Sessions

General session options apply to all display sessions and graphics sessions. To change your general session options, complete the following steps.

1. Press F10 (Actions) and select General session options from the action bar. A window is shown.
2. Select option 1 (General session options). The General Session Options menu is shown. This menu contains several prompts for changing the features of your display sessions. The following list describes the options on the menu and the values you can provide for each.

Buffer Keystrokes

This option allows you to *type ahead*, that is, continue typing when the keyboard is locked. If keystroke buffering is configured for a session and the Input Inhibited (II) indicator is ON (meaning the keyboard is locked), up to 32 keystrokes are stored and then processed when the Input Inhibited indicator is OFF. If more than 32 keys are pressed, an alarm is sounded for each key and the keystroke is discarded. As the buffer space is freed, additional keystrokes sent to the AS/400 system can be buffered.

System Name

You can establish each of the five sessions with different AS/400 systems. These sessions can be with an AS/400 system attached directly to the IBM Token-Ring Network, or with a twinaxial connection, or a remote AS/400 system attached through APPN. To do this, specify in each session profile the name of the AS/400 system you want to connect to.

If you leave the AS/400 name field blank, it defaults to the router default link specified in the configuration file. (The default link can be changed with the STARTRTR command.)

See the AS/400 administrator for AS/400 names you can use. The names you use must match the system name used on the AS/400 system.

Display Station ID

The display station ID identifies the session to the AS/400 system. If you do not select a display station ID, the AS/400 system assigns one when you use the session. The display station ID changes if you change the number of sessions or the location name of the personal computer. The display station ID must meet the following requirements:

- The length must be 1 to 10 characters
- The first character must be a letter, #, \$, or @
- The remaining characters can be letters, numbers, #, \$, @ or underscore (_)

Request to Bypass AS/400 Sign On Screen

This option allows you to access the initial application screen by using your user ID to automatically sign-on the host system. Then, you can have direct access to all PC Support applications without the need for the sign on display. You can select this option only if your host system is an AS/400 system. This option only appears when you are configuring a display session.

Note: If you have chosen to operate in a System/36 environment, you do not receive the Bypass AS/400 Sign-on Screen option.

3. Press the Enter key when you have supplied values for each of the prompts on the General Session Options display.

Changing Display Options

You can also change your display options. These apply only to display sessions. To do so, complete the following steps.

1. Press F10 (Actions) on the display session menu.
2. Select Display options from the action bar. A window showing several options is displayed. The following options are available for each session you have configured as a display:

EBCDIC to ASCII Table

The EBCDIC-to-ASCII table provides the translation of EBCDIC values 00 through FF to ASCII. The default table supports all standard AS/400 applications.

This option allows you to change the translation of AS/400 EBCDIC characters to personal computer ASCII characters. Changing the table affects only the appearance of characters displayed on the personal computer, not what is sent to the AS/400 system.

EBCDIC values X'20' through X'3F' are reserved for field attributes.

As an example, you could assign the ASCII line-drawing characters to unassigned EBCDIC codes to display lines and box corners in a display session.

Note: This table assumes that the personal computer is using the personal computer ASCII code page selected when PC Support was installed on the AS/400 system. If it uses any other code page when work station function is started, you may notice that some characters may not appear as you expected.

Colors and Attributes

This option allows you to change the display attributes (blink, column separator, high intensity, normal, reverse, underscore, and color).

Note: If you prefer, you can use the work station function coloring utility (WSFCOLOR) to color your sessions. This interactive utility is described in "Coloring Your Work Station Function Sessions" on page 16-39. However, this utility can be used only by individual users. An administrator cannot use WSFCOLOR.

You can specify both color attributes and monochrome attributes for each session. The work station function uses either the color attributes or the monochrome attributes for the session based on the type of display specified in the master profile.

If your personal computer has two display adapters installed, the work station function selects which display attribute table to use based on which display adapter is active when you use the hot-key sequence to exit the DOS session. It then displays the hexadecimal values of the personal computer attributes and allows you to change the attributes.

The AS/400 attribute codes X'20' and X'21' determine the appearance of the status line indicators and the printer operator panel. X'20' determines their appearance when they are off, and X'21' determines their appearance when they are on (displayed in reverse image). You cannot assign X'20' and X'21' the same attribute value.

For technical information about the display attributes, see *PC Support/400: DOS and OS/2 Technical Reference*, SC41-8091.

Column Separator Character

This option allows you to change the character used by the personal computer to imitate 5250 column separation. You can also change the character that appears in an AS/400 entry field when you type a blank.

Normally, work station function displays the column separator only when there is a null (hex 00) value at that position. This option allows you to display the column separator character instead of a blank in that position.

Print Screen Character Set

This option allows you to specify the number of characters used when you print the display. For example, the IBM Graphics Printer and Proprinter can print 255 characters, while the IBM Matrix Printer prints 127. If you use DOS graphics, you need to specify the 255 character set.

3. Press the Enter key when you have finished. You are returned to the display session menu.

Changing Graphics Options

If you selected graphics display or graphics display with plotter as your device type on the Create Session Profile menu, you can also change your graphics options. To do so, complete the following steps.

1. Press F10 (Actions) on the Graphics Display Session menu.
2. Select Graphics options from the action bar. A window showing several options is displayed. The options you can work with are preceded by a number. Those you cannot work with are preceded with an asterisk (*).
3. Use the Arrow keys to highlight the option you want to work with and press the Enter key. The following list describes the options and what you can do with them.

The INIT_VDI file must be loaded to change the graphics session characteristics with CFGWSF. For information about loading this file, see "Installing Graphics" on page 16-6.

Width/Height Ratio (Aspect Ratio)

This parameter is ignored if your host system is an AS/400 system. The AS/400 system tailors the graphics data to the characteristics of your personal computer configuration.

VDI Buffer Size

The default virtual device interface (VDI) buffer size is 20KB. In most cases, this amount of memory is sufficient. However, complex pictures can cause a VDI buffer overflow condition.

The VDI buffer overflow condition is signaled by local error L1 on the status line accompanied by a beep. The condition has no effect on the current picture unless you use Local Select 1 to erase and redraw the graphics display, or if you leave the session and return to it with the hot-key sequence. If VDI buffer overflow has occurred, only the portion of the picture that was drawn since the last L1 error occurred is drawn again.

Any increase in VDI buffer size over the 20KB default is additional memory required by the graphics session. This reduces the amount of memory available to other applications.

Line Styles

The default line style mapping matches the AS/400 line style mapping as closely as possible. Altering the default line style mapping may result in charts that are difficult to read if a line style other than a solid line is used to draw the graphics text. VDI must be installed before you can use this option.

Writing Modes

With this option you can select how the foreground colors mesh with the background colors. VDI must be installed before you can use this option.

Note: Changing the writing modes may cause unexpected results.

Color Index Mapping

For personal computers that display less than eight colors, this option allows you to decide what color is substituted for a color that cannot be displayed. VDI must be installed before you can use this option.

Compressed Mode

This option is ignored if your host system is an AS/400 system.

4. Press the Enter key when you have completed all of the prompts. You are returned to the Graphics Display Session menu.

Selecting Printer Session Options

If you selected Printer as your session type on the Create Session Profile menu, the Select Printer Model menu is shown as follows:

```

                                Select Printer Model
                                More: ↓

Select options, press Enter.

Printer manufacturer
▶ 1. IBM
  2. HP
  3. Epson
  4. NEC
  5. Okidata
  6. Other

Printer model
▶ IBM 2380 Personal Printer Series II
  IBM 2381 Personal Printer Series II
  IBM 2390 Personal Printer Series II
  IBM 2391 Personal Printer Series II
  IBM 3812 Pageprinter
  IBM 3816 Pageprinter
  IBM 4019 LaserPrinter
  IBM 4019 LaserPrinter - HP Mode
  IBM 4019E LaserPrinter E

Enter Esc=Cancel F1=Help F3=Exit Spacebar

```

Use the spacebar to select the following:

Printer manufacturer

Select the manufacturer for the printer you are using. If the manufacturer is not included in this list, or if you want to define your own printer, select Other.

Printer model

Select the model of the printer you are using. This option automatically displays the list of supported printers for the manufacturer you select. If you selected Other for the manufacturer, the printer model is listed as User defined. You can then specify whether the printer is a laser printer or a non-laser printer.

When you have selected the printer model, press the Enter key. The Current Personal Printer Options display is shown similar to the following:

```

General session options  Printer options  Exit  Help
-----
Current Personal Printer Options
More: |
Below is the current configuration for your personal printer. To change
these values, select the action 'Printer options' and then select 'Personal
printer options'.

Printer function
table file name. . . . . : D:\PCS\IBM4019.PFT

Printer alarm. . . . . : Yes
Begin Printer
Session Suspended. . . . . : No
Form Feed on Suspend . . . . . : No
Initial font . . . . . : Courier 10
Prompt to
change font. . . . . : No
LAN directed print . . . . . : None
Number of
cut sheet drawers. . . . . : 2
Drawer one paper size. . . . . : 8.5x11
Drawer two paper size. . . . . : 8.5x11
-----
Enter Esc=Cancel F1=Help F3=Exit F10=Actions

```

From this display, you can change your general session options or printer options.

For most situations, the default configuration determined by the printer model selected is sufficient. In this case, you can save your printer session profile and exit. If, however, the settings selected do not match your particular configuration, you may change these values as outlined in the next section.

See Chapter 22, "Printing with PC Support: Example" for examples of:

- Setting up an IBM 4029 LaserPrinter as a work station function printer
- Setting up an IBM 4029 LaserPrinter so it can be shared by several people

Changing General Session Options for Printer Sessions

To change the general session options for a printer session, do the following:

1. Press F10 (Actions) on the Current Personal Printer Options display.
2. Press the Enter key to select General session options. A window is shown.
3. Press the Enter key to select General session options from the window.
4. Specify the values you want to use for each option:

Buffer Keystrokes

This option allows you to *type ahead*, that is, continue typing when the keyboard is locked. If keystroke buffering is configured for a session, up to 32 keystrokes are stored and then processed. If more than 32 keys are pressed, an alarm is sounded for each key and the keystroke is discarded. As the buffer space is freed, additional keystrokes sent to the AS/400 system can be stored in the buffer.

System Name

You can establish each of the five sessions with different AS/400 systems. These sessions can be with an AS/400 system attached with a twinaxial connection or directly to the IBM Token-Ring Network, or a remote AS/400 system attached through APPN. To do this, specify in

each session profile the name of the AS/400 system you want to connect to.

If you leave the *System name* field blank, the default router link specified in the configuration file is used. (The default link can be changed with the STARTRTR command.)

See the AS/400 administrator for AS/400 names you can use. The name you use must match the system name used on the AS/400 system.

Printer ID

The printer ID identifies the session to the AS/400 system. If you do not specify a printer ID, the AS/400 system assigns one when you use the session. The printer ID changes if you change the number of sessions or the location name of the personal computer. The printer ID must meet the following requirements:

- The length must be 1 to 10 characters
- The first character must be a letter, #, \$, or @
- The remaining characters can be letters, numbers, #, \$, @ or underline (_)

Changing Printer Options

To change the printer options for a printer session, do the following:

1. Press F10 (Actions) on the Current Personal Printer Options menu.
2. Select Printer options and press the Enter key. A window is shown with the following options:
 - Personal printer options
 - Serial or parallel options
 - Printer initialization string
 - EBCDIC to ASCII tables
 - Host printer options
3. Select option 1 (Personal printer options) to change the way your printer operates. Select the options and enter the values for the prompts you want to change.

Depending on the type of printer model you selected, the following options are available:

Printer Function Table File Name

This is the name of the printer function table (PFT) file to be used for the session. The default file name is the PFT file supplied by IBM for the selected printer model.

Printer Alarm

If the audible alarm is turned on, the work station function sends a BEL command to the personal printer when the AS/400 system sends a BEL command. The audible alarm is turned on by default.

Begin Printer Session Suspended

You can specify that your printer session be suspended when the work station function printer session is started. This is equivalent to taking the *Suspend* option from the operator panel of the work station function printer. The default for this option is No.

Form Feed on Suspend

You can specify whether you want to have your printer perform a form feed when you select the *Suspend* option on the operator panel of the work station function printer. The default for this option is No.

Initial Font

You can specify the AS/400 default font identification (ID). The AS/400 system uses this font for any print job that does not request a specific font. If this value is not supplied, the work station function uses 0B, Courier 10. The initial value set by this option could change as soon as printing starts. You can press F4 for a list of the font values that can be specified for this option.

Prompt to Change Font

You may need to change the physical font element to change the characters per inch (cpi) or the font. This option allows you to indicate if your personal computer printer has this requirement. If you specify that a prompt is required, the work station function requests a font change each time the cpi or font is changed by the AS/400 system. Otherwise, the work station function sends the command to the printer and no user intervention is requested.

The default for this option depends on the printer model selected; normally, it is No.

LAN Directed Print

You can specify to have the work station function open and close LAN network files. Select the type of LAN you are using if the work station function printing is being redirected to a network printer and you want the work station function to create the spooled files for the LAN network. Select None if the work station function printing is not being redirected to a network printer or if you do not want the work station function to create the spooled files for the LAN network. The default value is None.

Initial Paper Handling Equipment

You can specify that the attached printer use continuous forms or individual cut sheet paper. The work station function uses this option to determine how to do page ejection. You may be prompted to change the form-feed device.

Continuous Forms Width

You can specify a paper width of either 8 or 13.2 inches for the attached printer. The work station function uses the paper width value, along with the current characters per inch (cpi) value, to determine how many characters will fit on a line without printing beyond the edge of the paper.

For example, if the paper width is 8 inches and the cpi is 10, the work station function prints a maximum of 80 characters per line. If a line has more than the maximum number of characters, the remaining characters are printed on the next line.

The default value depends on the printer model selected.

Number of Cut Sheet Drawers

Select the number of paper drawers on the personal printer. The default value depends on the printer model selected.

Drawer xxx Paper Size

This option is used to tell the work station function printer what size paper will be fed from drawer one and drawer two. You can select one of 10 common paper sizes. The default is letter size (8.5 inches wide by 11 inches long).

Form Size Control

You can choose to have the work station function send a form size command to the personal printer with each host job. Select *Host* to send a form size command to the printer based on the paper width and depth values received from the host. Select *Configured* to send a form size command to the printer based on the configured paper size for drawer one and drawer two. Select *None* if you do not want the work station function to send a form size command to the printer.

Envelope Hopper

You can specify whether your personal computer printer has an envelope hopper. The default value for this option depends on the printer model selected.

Drawer xxx Orientation

You can specify the default page orientation individually for paper drawer one and paper drawer two. The possible values are portrait, landscape, and computer output reduction (COR). COR is the default orientation for each drawer. The *Drawer xxx Orientation* value is used with the value specified for the *Automatic Print Adjustment* option to adjust your host print job to fit on the configured paper size.

Automatic Print Adjustment

You can specify to have the work station function adjust your host print job to best fit on the configured paper size. The selection you make is only used if the host print job specifies a rotation of *AUTO or *DEVD.

Select *Yes* to have the work station function calculate your paper orientation. The work station function compares the paper size specified in the host print job with the paper size specified in the work station function configuration. If the host print job cannot fit on the configured paper in either portrait or landscape orientation, the *Drawer Orientation* value is used to adjust the host print job. If your printer is not capable of rotation, the work station function compares the configured paper width with the width specified in the host print job. If the host print job cannot fit on the configured paper, the work station function changes the print job to use a smaller pitch.

Select *No* to have the work station function print your job using the value specified for *Drawer Orientation*. If your printer is not capable of rotation, no adjustment is made to the host print job.

The default value is *Yes*.

4. Select option 2 (Serial or parallel options) to change your printer's attachment type or port.

- **Parallel Attachment Options**

If the personal computer printer has a parallel attachment, you can specify LPT1, LPT2, or LPT3 as the port used to communicate to the printer. The default port is LPT1.

The virtual printer function can share the printer port with work station function. Use a virtual printer when you want to use the printer functions of the AS/400 system, such as print spooling.

- **Serial Attachment Options**

To configure a serial (asynchronous) attached printer, you need to know the following information:

- Asynchronous port name (COM1 through COM4; default = COM1)
- Communications speed (baud rate; default = 1200)
- Number of data bits per frame (7 or 8; default = 7)
- Number of stop bits per frame (1 or 2; default = 1)
- Use of parity bit (none, even, or odd; default = none)

This information depends on how your serial attached printer is configured. Your serial printer should be configured to support the data terminal ready (DTR) controlled protocol. Work station function does not support the xON/xOFF protocol. For specific information, refer to the operator's guide for the printer.

Note that work station function cannot detect not-ready and end-of-forms conditions for serial attached printers. If either of these conditions occurs, work station function will try the data transmission continuously until it is successful. No error messages appear either at the AS/400 system or on the printer operator panel.

5. Select option 3 (Printer initialization string) to change the data the work station function sends to initialize your printer.

You can specify up to 64 bytes of initialization data.

6. Select option 4 (EBCDIC-to-ASCII tables) to work with translation tables.

Work station function maintains two EBCDIC-to-ASCII translation tables: one for word processing applications and one for data processing applications. Any EBCDIC-to-ASCII translation modifications you make affects both tables.

The Session Profile EBCDIC To ASCII Table menu is shown. The language and symbol translation tables currently assigned are shown on the menu. From this menu, you can add, change, or delete a translation table.

To add, change, or delete a table:

- Press F10 (Actions) and select the Options option from the action bar. A window is shown.
- Select the option you want to use depending on if you want to add, change, or delete a table.
- Complete the remaining prompts.

7. Select option 5 (Host printer options) to change your message queue name or message queue library name. The Host Printer Options menu is shown.

Message Queue Name

The name of the AS/400 message queue where the operational messages for the printer are to be sent.

A message queue exists for each display station and has the same name as the work station ID. The work station ID of a display session may be used to route printer related messages to a specific display session. The supplied message queue name is QSYSOPR.

Message Queue Library Name

The name of the AS/400 library where the named message queue is located. The supplied library name is *LIBL.

If you have chosen to operate in a System/36 environment, your host printer options differ from those of an AS/400 environment. System/36 options include the following:

Subconsole session number

Specifies the display session or system console you want designated as the subconsole for your printer.

Separator pages

Specifies the number of separator pages to use between different jobs sent to your printer as spool files.

Printer name

Specifies the name of the printer to which you want your output sent.

Printer type

Specifies how the System/36 will recognize the printer session. If you select the option Convenience, the printer session is not stored when the work station function is ended. If you select the option Network, the printer session is stored by the host system when the work station function is ended.

Saving Your Session Profile

When you have provided the information necessary for the prompts on the appropriate displays, you need to save your session profile. To do so, press F10 (Actions) and select Exit from the action bar. Choose one of the options shown to save your session profile.

Setting Up a Keyboard Profile

Keyboard profiles allow you to change the function of the keys on the keyboard. When work station function is loaded, the keyboard profile is read, and the functions and characters that it contains are assigned to the corresponding keys on the keyboard. This section explains how to create a keyboard profile or to modify an existing file.

If you are upgrading from an earlier release of PC Support, you should upgrade any keyboard profiles existing from those earlier releases. To do this, you should:

1. Start the configuration program, CFGWSF.
2. Choose Change from the list of options.
3. Change and save the old profiles.

The WFKMAST.KBD file must be accessible to upgrade your keyboard profiles from earlier releases.

Note: Keyboard profiles affect the use of the keyboard only in work station sessions, not in personal computer mode.

Preparing to Configure a Keyboard Profile

You can set up your keyboard profiles through a series of menus and options in the CFGWSF program. Use a keyboard profile to accomplish the following:

- Add playback sequences, including delay functions and pause functions, to your keyboard layout.
- Move keyboard functions to other locations.
- Add any EBCDIC character to your keyboard layout.
- Add functions to your keyboard layout that are not in the default keyboard layout. For example:
 - Set up the key sequences Alt + F1 through Alt + F5 to hot key directly to sessions 1 through 5
 - Select the special-character keyboard layer
 - Assign the resume function to a key

For each key, you can assign a function, a character, or a series of functions and characters (called a playback sequence) for the *base*, *shift*, *alt*, and *Alt-graphics* keyboard states. You can also modify the keyboard profiles you have created. You can create and change keyboard profiles at any time. You can save the keyboard profiles in an AS/400 shared folder so that several users have access to the same keyboard layout. You can send your keyboard layout to a printer so you always know your keyboard arrangement. For instructions on printing your keyboard layout, see “Displaying Your Current Keyboard Layout” on page 16-33.

You need to know the name of the master profile that you use to run work station function. You must put the keyboard profile name into the master profile if you want to use it. Press F4 (Prompt) for a list of the master profile names you can use. If you are changing a keyboard profile, you need to know the name of the keyboard profile before you run the work station function configuration program.

Note: Do not use WFKMAST.KBD as the name of a keyboard profile because this is the name of the master keyboard profile for work station function.

Understanding Keyboard States

The keyboard states are as follows:

Base state

The definition of the key when you press only that key.

Shift state

The definition of the key when you press and hold down a Shift key and then that key. The shift state definition can also be used when Shift Lock, Caps Lock, or Num Lock is being used.

Alt state

The definition of the key when you press and hold down an Alt key and then that key. If you are using the PC Enhanced keyboard or the convertible keyboard, the Alt state is in effect only when you press the left Alt key.

Alt-Graphics state

The definition of the key when you press and hold down an Alt key and Shift key and then the special-character key. If you are using a PC Enhanced or PC Convertible keyboard, this is achieved by pressing and holding the right Alt key and then pressing the special-character key.

Understanding Keyboard Layers

If you are using bidirectional, Greek, or Thai language support, you have the option of using additional keyboard layers. Those keyboard layers include:

Language layer

An additional keyboard layer containing special characters associated with the Greek, Hebrew, Arabic, and Thai languages. These characters are etched on the top and front faces of the keyboard keys. If you are using bidirectional or Thai support, you can access the language layer by pressing and holding the Alt key and then pressing the right Shift key. If you are using Greek support, you can access the language layer by pressing and holding the Alt key and then pressing the left Shift key. When you are in the language layer, the LS or TH status indicator at the bottom of your display is shown in reverse image.

Latin layer

An additional keyboard layer containing English characters. If you are using bidirectional or Thai support, you can access the Latin layer by pressing and holding the Alt key and then pressing the left Shift key. If you are using Greek support, you can access the Latin layer by pressing and holding the Alt key and then pressing the right Shift key. When you are in the Latin layer, the LS or TH status indicator at the bottom of your display is not shown in reverse image. For more information on bidirectional support, see "Introducing Bidirectional Support" on page 16-53.

Special-character keyboard layer

Contains characters and symbols. Some of these symbols include the tilde accent and the international currency symbol. For a complete list of the symbols available and instructions for selecting this keyboard layer, refer to "Selecting the Special-Character Keyboard Set" on page 16-33.

Defining the Keyboard

This section provides instructions on:

- Creating a keyboard profile
- Selecting a keyboard type and style
- Defining keys, including:
 - Selecting a key to define
 - Assigning a single function to a key
 - Assigning a playback sequence to a key

Creating a Keyboard Profile

The master profile contains the name of the keyboard profile that is used when sessions are started. You can create a keyboard profile or use the default keyboard profile provided by work station function.

To create a new keyboard profile:

1. Press F10 (Actions) and select the Create option from the action bar. A window is shown.
2. Select option 2 (Create keyboard profile). Another window is shown indicating the default keyboard profile name.
3. Use the name provided or enter one of your own. You can press F4 (Prompt) for a list of choices.

When you press the Enter key, the Create Keyboard Profile menu is shown.

Selecting a Keyboard Type and Style

After you indicate that you want to create a new keyboard profile, you are prompted to select a keyboard type. Keyboard type is the physical type of keyboard that the personal computer has. You can select one of the following keyboard types:

- Personal computer-type keyboard
- AT-type keyboard
- Enhanced personal computer-type keyboard
- Convertible-type keyboard

You are also prompted to select a keyboard style. Keyboard style refers to the style of keyboard you want your personal computer keyboard to imitate. You can select one of the following:

- 5250-style layout
- Personal computer-style layout
- Predefined

If you select the PC or AT type, you must then select a keyboard style (PC or 5250). A keyboard diagram based on your selections appears. The Define Keyboard display allows you to display and change the function of each key in any of the keyboard states.

Defining Keys with the Define Keyboard Display

The Define Keyboard display shows a diagram of the keyboard. A symbol of each key is shown in the location where it would be found on an actual keyboard.

There are three basic steps in defining keys:

1. Select the key that you want to define. A display appears that shows you the current assignment for that key in the *base*, *shift*, *alt*, and *Alt-Graphics* states.
2. Type in the new key assignment you want (single function, character function, or playback sequence), or select a function from the function list. Press F4 (Prompt) to display the function list. You may want to page through the functions to find out what is available to you.
3. Save the keyboard profile after you define all the keys you want to change.

The following sections provide detailed instructions for each step.

Selecting the Key You Want to Define: There are two methods for selecting the key you want to define:

- Use the personal computer keyboard

Press the key you want to define while holding down a Shift key. This method works whether or not the keyboard you are using matches the keyboard you are defining. However, some keys may not be highlighted in the same physical location as the keys you are using. For example, if the F1 key is on the left side of the keyboard you are using, you can press Shift + F1 to define the F1 key even if it is located on the top row of the keyboard assignment diagram.

Note: The convertible keyboard has its numeric pad overlaid on the rest of the keyboard. It is accessed by pressing the function key and the desired key at the same time. When you define one of these keys,

both the function key and the desired key are highlighted on the keyboard assignment diagram.

- Use the key assignment display layout

Move the cursor to the symbol of the key you want to define and press the Enter key.

The selected key is highlighted on the keyboard diagram and entry fields with the current definition for the four states appear at the bottom of the display. You can assign a single character, a single function, or a series of characters and functions to each state. The cursor is in the field for the *base* state of the key. To change the assignment for the *shift*, *alt*, or *Alt-graphics* states, press the Tab key or the Up or Down Arrow keys to move the cursor to the input field you want.

Notes:

1. The state of some keys cannot be changed. If you try to move the cursor into one of these fields, you will hear a beep. The keys are displayed so that you will know the definition of the keys.
2. You can define the Alt, Ctrl, and Scroll Lock keys only in the *base* and *shift* states. You cannot assign a definition to these keys in the *alt* state.

Assigning a Single Function to a Key: After you select a key, you enter the new function. If you need to see a list of valid functions, press F4 (Prompt). The functions window lists the names of all of the functions you can assign. The functions are organized into groups. For example, all the cursor movement functions are displayed in a group called Cursor Functions.

- To move to the next group of functions, press and hold the Ctrl key and then press the Page Up key or the Page Down key.
- To move to the next display, press the Page Up or Page Down key.
- To move to the next function within a group, use the Arrow keys.
- To display the definition of a function, move the cursor to the function and press F1.

To assign a single function to a selected key, use the following procedure:

1. Move the cursor to the input field for the key state you want to define (*base*, *shift*, *alt* or *Alt-Graphics*).
2. Type the name of the function, which you want to assign to the key, inside square brackets.

Or, press F4 to display the function list. Move the cursor to the function you want to use and press the Enter key. The function is written in the input field. (If you do not want to select a function, press the Esc key. The cursor returns to the input field.) For example, move the cursor to the BASE STATE field and type:

[F2]

In this example, the command 2 function is the new assignment for the *base* state of the key.

You can also assign other functions to *shift*, *alt*, and *Alt-graphics* states. For example, to assign the key sequence Alt + 1 to the hot-key sequence that switches directly to session 1, select the key to define (in this example, 1), then move the cursor to the *ALT STATE* field and type:

[HOT KEY1]

3. After you type in the function name you want to assign, or select a function from the list, press the Enter key to record the new key assignment.

If you plan to use the pause function in a playback sequence, you must assign the resume function to a key. A default resume key is not provided.

4. To assign the resume function to a key:
 - Select the key you want to define.
 - Move the cursor to the input field and enter the following:

[RESUME]

You must include the brackets ([]).

5. Repeat these steps for all keys you want to have single functions.

Assigning a Playback Sequence to a Key: Playback sequences consist of assignments containing multiple characters, multiple functions, or combinations of both that you assign to a single key. After you assign a playback sequence to a key, whenever you press that key, all keystrokes are entered for you. The maximum number of characters in a playback sequence is 490.

For example, you can assign a playback sequence that allows you to switch from one session to another (hot key), then continue with the playback request. If the playback sequence contains a hot-key function name and more data follows the hot-key request, the playback sequence continues in the new session. However, if the requested hot key is to a personal computer mode, the playback sequence ends. Playback sequences do not function in personal computer mode.

To assign a playback sequence, do the following:

1. Select a key from the Defined Keyboard display. See "Selecting the Key You Want to Define" on page 16-29 for more information.
2. Type the names of the functions and character strings you want to use.
 - Put square brackets around each function name.
 - Put quotation marks around each character string. You may use either an apostrophe (') or quotation (") marks. If it is a special character not found on the keyboard, you may also press and hold the Alt key, and type the ASCII code for the desired character using the numeric pad keys. The character must still be enclosed in matching quotation marks. If you use a quotation mark within a character string, use the other style quotation mark to begin and end the string.

Example

For a playback sequence that displays the message queue when you press Alt + m, select the *m* key to define, then type in the *ALT STATE* field:

"DSPMSG" [ENTER]

In this example, the playback sequence is assigned to the *alt* state. You can also assign other playback sequences to the *base*, *shift*, or *Alt-graphics* states.

If you need to assign a playback sequence that is longer than the input field, press F5. A new display appears that allows you to enter more characters. Press the Esc key to discard your changes or press the Enter key to save them.

3. Press the Enter key to record the playback sequence after you type the playback sequence you want to assign.

You may find it useful to add a delay or pause function to a playback sequence. For example, you could define a playback sequence to:

1. Start 3270 emulation
2. Delay for processing
3. Send commands to sign on the system
4. Send your user identification
5. Pause while you enter your password and press your defined resume key
6. Delay for processing
7. Start a 370 application

When work station function encounters a pause function, it does not accept another playback sequence until you press the Resume key. You must define a Resume key since no default exists. You can tell when a pause function is active by checking the status indicator line on your display. The KB indicator is replaced with the PS indicator when a pause function is active.

To add a delay function to a playback sequence:

1. Select a key from the Define Keyboard display. Refer to "Selecting the Key You Want to Define" on page 16-29 for instructions.
2. Enter the following as part of your playback sequence:
[DELAY]
3. Press the Enter key. A default time value of 1 second is supplied. You can use the default or change it.

To change the default time:

- Press F10 (Actions) on the Define Keyboard display.
- Select the Keyboard Options option from the action bar. The Keyboard Options window is shown.
- Enter a number from 1 to 255 in the Delay time value in seconds prompt.
- Press the Enter key. The window is removed.

To assign a pause function to a playback sequence:

1. Select a key from the Define Keyboard display. Refer to "Selecting the Key You Want to Define" on page 16-29 for instructions.
2. Enter the following as part of your playback sequence:
[PAUSE]
3. Press the Enter key.

Do not forget to assign the resume function to a key.

Note: You can also use the Immediate Reset function (pressing and holding the Alt key and then pressing the Scroll Lock key) to reset the keyboard when a pause function is encountered. However, when you use the Immediate Reset function, the remaining playback characters and any buffered key-strokes are discarded.

Saving a Keyboard Profile

To save a keyboard profile, do the following:

1. Press F10 and select Exit from the action list at the top of the Define Keyboard display. A window is shown.
2. Select the option to Save keyboard profile and add to a master. (If you select the option Return without saving keyboard profile, the changes are not saved.) The Verify keyboard profile name display appears.
3. Press the Enter key to save the keyboard profile. Or, type another keyboard profile name and then press the Enter key. The Add Keyboard Profile to Master display is shown.
4. Press the Enter key to add the keyboard profile to the master profile shown. Or, if you do not want to use the master profile name shown, type another master profile name and then press the Enter key. You are returned to the Work Station Function Configuration menu.

Displaying Your Current Keyboard Layout

When you have finished defining the keyboard, you can send a copy of it to a printer, display, or file. To do so:

1. Press F10 (Actions) and select the option Keyboard Layout from the action bar on the Define Keyboard display. A window is shown.
2. Select option 1 (Display keyboard layout). A window is shown.
3. Enter the name of the keyboard profile you want to view.
4. Select option 1 (Display) to send the output to your display.
5. Select option 2 (Printer) to send the output to your printer for printing.
6. Select option 3 (File) to send the output to a PC file. If you select this option, you must provide a PC file name.
7. Press the Enter key. When you press the Enter key, a copy of your keyboard layout is sent to the display, a printer, or a file.

Selecting the Special-Character Keyboard Set

You have the option of selecting the special-character keyboard set. You can do this from the Define Keyboard display.

1. Select the Keyboard Options option from the top of the display. A small window is shown.
2. Select option 1 (Keyboard options). A window is shown in the center of your display.
3. Select the Special-character keyboard set option.

The special-character keyboard set provides the following characters:

Table 16-2. Special-Character Keyboard Set

Character	Character
Logical not (¬)	One superscript (¹)
Two superscript (²)	Three superscript (³)
One-quarter (¹ / ₄)	One-half (¹ / ₂)
Three-quarters (³ / ₄)	Left brace { }
Left bracket ([)	Right brace (})
Right bracket (])	Backslash (\)
Cedilla accent (¸)	At sign (@)
Paragraph symbol (¶)	o slash (DOS)
Thorn icelandic (þ)	diaeresis accent
Tilde accent (~)	grave accent (`)
ae diphthong (Æ)	Sharp s
eth Icelandic (ð)	Acute accent (´)
Circumflex accent	Grave accent (`)
Logical or ()	Left angle quotes
Right angle quotes	Cent sign (¢)
Micro symbol (µ)	Middle dot
Inverted exclamation point (¡)	Pound sterling (£)
International currency sign (¢)	Plus or minus sign (±)
Degree symbol (°)	Inverted question mark (¿)
Registered trademark (®)	Yen sign (¥)
Overcircle accent	Macron
Section symbol (§)	O underscore (ˆ)
Ampersand (&)	Broken vertical bar
Less than sign (<)	Greater than sign (>)
Copyright symbol (©)	A underscore (ˆ)
Multiply sign (×)	Divide sign (÷)
Number sign (#)	Dollar sign (\$)

The accent keys start the diacritic processing which requires two keystrokes to form one character.

Online help information is available for this keyboard set.

Changing a Keyboard Profile

To change an existing keyboard profile, do the following:

1. Press F10 (Actions) on the Work Station Function Configuration display.
2. Select Change from the list of actions.
3. Press the Enter key. The Change display appears.
4. Select option 2 (Change keyboard profile). A prompt is displayed asking for the name of the keyboard profile you want to change.
5. Type the name of the file you want and press the Enter key. The Define Keyboard display from the keyboard profile you requested appears.
6. Change the key assignments the same way you defined the key assignments when you created a new keyboard profile.
7. Save the modified keyboard profile as described in "Saving a Keyboard Profile" on page 16-33.

Organizing Your Work Station Function Sessions

Once you have set up your work station function sessions, you may want to organize them for easier use. You can do this using the session manager program and the work station function session color program, WSFCOLOR.

By using the session manager program, you can display all of your work station function sessions in windows. The windows can be shown together on your display so you can monitor the events taking place in each window. The windows can also be dynamically sized and rearranged using this program. For instructions on temporarily changing the appearance of the windows, see the *PC Support/400 User's Guide for DOS*. The following section describes the steps you should follow to configure the session manager program so the same window arrangement appears each time you start work station function and the session manager program.

By using the work station function coloring program, you can assign colors to each of your sessions to help you differentiate between each one. The coloring program allows you to color different parts of the display session.

Arranging Your Sessions Using the Session Manager Program

The session manager allows you to do the following:

- View up to five emulated text display or printer sessions in text windows on your display.
When emulating a printer session, the session manager automatically moves the printer session window to the foreground when a printer attention occurs.
- Dynamically size, move, scroll, or maximize the windows on your display.
- Mark and copy information from any windowed session to any other windowed session including DOS.
- Use a mouse if attached to the Personal System/2* or IBM Personal Computer.
- Display activity in all windowed sessions in real time.
- Use the full 50-line text mode for VGA and MCGA devices and the 43-line mode for EGA devices.
- View the emulation cursor in the foreground window unless you are using the scroll option. In this case, the emulation cursor may or may not be present.
- Use expanded memory support (EMS) if you have EMS capable hardware.
- Use the 8514/A adapter support or the XGA adapter support to display a full 132 columns of text.
- Save your window arrangements using the PC Support configuration program.

A mouse is recommended when using the session manager. The mouse driver should be installed and started before the 5250 session manager is started. If the software support for the mouse is present, you cannot use the keyboard to control window functions. The session manager uses the programming interface defined in the *IBM Mouse Technical Reference*. Several other mice use this same programming interface. Check the technical information about the mouse you want to ensure it supports this same interface.

Understanding How the Session Manager Works

The session manager program is a DOS resident program. It uses the work station function on your IBM personal computer or Personal System/2 to do the windowing function. It does not affect the functions of the work station function. For example, the session manager does not change any of the work station function keyboard, printer, or display definitions. Instead, the work station function provides all configured display information to the session manager program.

The only time the session manager appears to be active is when the work station function is running in the foreground. This means that, when you use the work station function hot-key sequence to return to DOS, the session manager program appears to be suspended until you use the hot-key sequence to return to an emulation session.

Personalizing the Session Manager

If you want the same window arrangement shown each time you start the session manager program, use the PC support configuration program to set up and save the windows. You are not limited to the arrangement you configure. You can also dynamically change your window arrangement while using work station function and the session manager program.

Work station function must be started before personalizing your work station function sessions. Refer to "Starting the Work Station Function" on page 16-41 for instructions on starting the work station function.

Follow these steps to personalize your sessions.

1. Start work station function.
2. Display the PC Support/400 Configuration menu. For information on displaying the menu, refer to "Starting the PC Support/400 Configuration Program" on page 12-2.
3. Select the Work station function option on the PC Support/400 Configuration menu. The Work Station Function menu is shown.
4. Select the Work with session windows option. The Work with Session Windows display is shown.
5. Select Change session options. The Session Options display is shown.
6. Use the Arrow keys to highlight the option you want to change, and press the spacebar to select the option for each of the following prompts:

- Use more than 25 lines

The typical work station function window contains 25 lines of data. You can choose to display 43 or 50 lines of data if you have the correct display adapter.

- Select option 1 (Yes) to use a display mode that is greater than 25 lines.
- Select option 2 (No) to use a display mode equal to 25 lines. Option 2 is the default.

- Use fixed foreground window

You can choose to always have your active session shown in a window that remains in the foreground. Then, as you use the hot-key sequence

to move to a new session, the new session is shown in the foreground window.

- Select option 1 (Yes) if you want to use a fixed foreground window.
 - Select option 2 (No) if you do not want to use a fixed foreground window. This is the default.
- Automatically display session after starting

You can have either your first active work station function session shown or the DOS prompt shown after session manager is started.

 - Select option 1 (Yes) if you want your work station function session shown.
 - Select option 2 (No) if you want the DOS prompt shown. This is the default.
 - Always use EMS if available

The session manager program always tries to use expanded memory support (EMS). If you have the appropriate hardware, EMS is used unless you specify option 2 (No) for this prompt. For more information about EMS, see Appendix A, “Using Expanded or Extended Memory with PC Support/400.”

 - Select option 1 (Yes) to use EMS. This is the default.
 - Select option 2 (No) to override the default.
 - Use 8514/A or XGA adapter

You can choose to use the 8514/A adapter with the session manager if the adapter is available on your personal computer. The 8514/A adapter is a high resolution graphics adapter that allows you to view up to 132 columns of text in a session. If you select this option, you should use the work station function configuration program to configure your sessions to use 132-column support. See “Changing the General Options” on page 16-9 for more information about configuring your general session options to use 132-column support.

 - Select option 1 (Yes) to use the 8514/A adapter.
 - Select option 2 (No) to not use the 8514/A adapter. This is the default.

7. Press F3 (Exit) and select option 1 (Save and exit to Work with Session Windows display).
8. Select the Size windows option. The Session Manager Configuration menu is suspended in the background and your current window arrangement is shown in the foreground. This may take a few moments to happen.
9. Move the mouse cursor to the window you want to work with by moving the mouse or by pressing and holding the Alt key and then pressing an Arrow key. Where you place the mouse cursor in the window depends on how you want to change the window. For example:
 - To change the width of the window, place the cursor on either the left or right border.
 - To change the height of the window, place the cursor on either the top or bottom border.
 - To change both the height and width at the same time, place the cursor on a corner.
 - To move the window, place the cursor anywhere on the window.

Once you have moved the mouse cursor to the window you want to work with, you need to select an option from the Options window.

10. Press the left mouse control key, or press and hold the Shift key and then press the Esc key to display the Options window.
 - Select Size to change the size of the window.
 - Select Move to change the position of the window.
 - Select Quit to end any action previously selected.
11. Move the mouse cursor until the window is the size you want it or in the position you want it in.
12. Press the left mouse control key to display the Options menu again, and select:
 - Save, to save the window arrangement you have set up and return to the Work Station Function Configuration menu. If you select this option, your new window arrangement is saved as well as any changes you made on the Session Manager Configuration menu.
 - Exit, to return to the Session Manager Configuration menu. If you select this option, your arrangement is not saved.
 - If you want to save the changes you made on the Session Manager Configuration menu, press F3 (Exit) and select option 1 (Save and exit to Work with Session Windows display).
 - If you do not want to save the changes you made to the Session Manager Configuration menu, press the Esc key. You are returned to the Work Station Function Configuration menu.
13. Press F3 (Exit) on the Work Station Function Configuration menu and select option 1 (Save and exit). This saves any changes you have made to the startup option of work station function. You are returned to the PC Support/400 Configuration menu.
14. Press F3 (Exit) and select option 1 (Exit configuration). You are returned to the point from which you started the PC Support configuration program.
15. Enter the start session manager command (SM5250) to start the session manager program with your new configuration if the session manager program was not running when you started the configuration program.
16. Use the remove PC Support function (RMVPCS) to remove the session manager program from memory if the session manager program was running when you started the configuration program. Then, enter the session manager command (SM5250) to start the session manager program with your new configuration.

Using the Session Manager

You can use the session manager program to:

- Mark and copy information between windows
- Swap window contents
- Work with a printer session
- Temporarily change the size and order of your window arrangement

For information on starting the session manager program and working with the windows on your display, see the *PC Support/400 User's Guide for DOS*.

Coloring Your Work Station Function Sessions

Once you have defined your work station function sessions, you can use the work station function screen coloring utility to assign colors to the sessions. The coloring utility provides an interactive interface that does not require you to change host applications.

To use the coloring utility, the work station function program must be running. It is not necessary to start the work station function program again after you have finished coloring the sessions. The colors immediately take effect.

Before you start the coloring utility, consider the following:

- You can only use the screen coloring utility with standard display sessions or graphics capable sessions running in text mode. You cannot use it in graphics mode sessions. You cannot use it to color printer sessions or 132 column display sessions.
- You must have a color adapter to use the coloring utility.
- You cannot save the colors permanently if you start work station function without a master profile.
- You should ensure the organizer hot key is enabled if you start the coloring utility from the PC Support Organizer menu. If it is not, you cannot color the session which calls the coloring utility.
- You cannot color a session you have stopped with the STOPWSF command.

Starting the Screen Coloring Utility

To start the work station function screen coloring utility using PC commands, do the following:

1. Use the WSF command to start the work station function.
2. Use the WSFCOLOR command to start the coloring utility.

To start the work station function screen coloring utility using PC Support/400 menus, do the following:

1. Start work station function.
2. Display the PC Support/400 Configuration menu. For information on displaying the menu, refer to Chapter 12, "Configuring PC Support with the Configuration Program."
3. Select the Work station function option on the PC Support/400 Configuration menu. The Work Station Function menu is shown.
4. Select the Work with session colors option. The screen coloring utility is started, and a menu is shown. You can now color a session.

Coloring a Session

Once you start the screen coloring utility, the Work Station Function Screen Coloring Utility menu is shown. The menu shows the work station function sessions currently assigned. You can select to color any of the sessions preceded by a number. If a session is preceded by an asterisk, you cannot select it. Follow these steps to color a session.

1. Use the Up and Down Arrow keys or the mouse to select the session you want to color and then press the Enter key. The Select Initial Colors window is shown.

2. Use the Up and Down Arrow keys or the mouse to select the initial color profile you want to use.
 - If you select the Current colors option, the next display shown consists of the current AS/400 display (host window) using the colors currently defined for the session you are working with.
 - If you select the IBM default colors option, the host window is shown with the IBM default colors.
 - If you select any of the colored background options, the host window appears with the specified background color. It is not possible to delete any text when using the colored background option. Foreground colors are changed to contrast with the background colors.
 - If you select the User defined option, the Session profile window is shown. Enter the name of the session profile containing the colors you want to use. The default name is the name of the profile for the session you are coloring. If you are coloring the default display session, then the prompt is blank. Press F4 (Prompt) for a list of session profile names you can enter.

3. Press the Enter key.

A copy of the current screen for the display session you selected is shown with the initial color scheme. The copy of the display session is called the *host window*. In the middle of the host window is the Coloring Session window. As soon as you press a key or move the mouse cursor, the Coloring Session window is removed.

The Coloring Session window serves as a reminder that you are looking at a copy of the session and not at the session itself. The emulation cursor is not shown in the host window. Since it is a copy, you cannot enter any information on the displayed session.

However, you can use the work station function hot-key sequence to switch to any of your currently assigned work station function sessions. You can work with the session and then return to the screen coloring utility when you are ready to continue. The host window is updated when you select a new color combination, or use the hot-key sequence to return to the host window.

4. Use the Arrow keys or the mouse to move the coloring cursor to the area of the host window you want to color. Press the Enter key.

A window is shown displaying the different background and foreground combinations you can choose. The current color combination is indicated by an asterisk surrounded by brackets ([*]).

5. Use the Arrow keys or the mouse to move the bracket to the asterisk you want to select. Press the Enter key.

The window is removed from the display and the new color combination is shown.

6. Move the coloring cursor to another area of the display and repeat steps 4 and 5 again.

7. Move the coloring cursor to the text and press the Enter key if you want a portion of the text to flash. When the color combination window is shown, press F9 (Flash). Then press the Enter key. The window is removed and the text begins flashing.

Repeat the step again to stop the text from flashing.

8. Reset the display to its original colors, if you want to, by pressing F5 (Reset). You are returned to the initial coloring display. You may select a new background or start over using the original colors.
9. Press F3 (Exit) when you have finished selecting your new color combinations. A window is shown.

- Select option 1 (Save colors in session profile) if you want the color combination to be shown each time you start the work station function.

If you select this option, the Session profile window is shown. A default session profile name is provided. The default name is the name of the profile for the session you are coloring. You can save the color combinations in the default profile or provide the name of another. Press F4 (Prompt) for a list of profile names you can use. Press the Enter key when you have supplied a name.

Note: You cannot select this option if you are coloring the default display session.

- Select option 2 (Save colors for current session) if you want the color combination to be in effect until you start the work station function again. If you select this option, the colors become the current colors. The next time you start the work station function, these colors are gone and your original color combination is shown.
- Select option 3 (Return without saving) if you want to return to the original color combination shown when you started the screen coloring utility.
- Select option 4 (Exit without saving) to leave the screen coloring utility. If you select this option, your original color combination remains in effect.
- Select option 5 (Resume coloring) to continue coloring with the combinations currently shown on the display. This option is the same as pressing Esc.

If you select options 1, 2, or 3, you are returned to the Work Station Function Screen Coloring Utility display. You can go on to color another session or exit the utility.

10. Press F3 (Exit). A window is shown.
11. Select option 1 (Exit screen coloring utility) to end the screen coloring utility. The emulation cursor is returned. You may work with the session or use the hot-key sequence to change to another work station function session.

Starting the Work Station Function

The work station function program, WSF.EXE (or WSFBIDI.EXE if you have bidirectional support), resides on the folder QIWSFLR (for basic DOS) and QIWSFL2 (for extended DOS). The STARTPCS.BAT file starts the PC Support router, links to the appropriate folder, and starts the work station function (if work station function was selected at installation time). If you do not use the STARTPCS command to start PC Support or if you did not select work station function when you installed PC Support, follow these steps to start the work station function:

1. Make sure all devices attached to the personal computer system unit are turned on before you start the work station function.

2. Make sure you are in the drive and directory containing the work station function program.

3. Start the PC Support router by entering the following command:

```
STARTRTR
```

4. Start the shared folders function and assign the necessary shared folders:

```
STARTFLR  
CFGFLR
```

5. Start the work station function by entering the following command:

```
WSF [master profile] [/S] [/T] [/NP] [/NOAER] [/Z]
```

where master profile, /S, /T, /NP, and /Z are as follows:

master profile

This is optional. If you do not include a master profile name, the work station function looks for the default master profile, WSF.DAT. If it cannot find this file, the work station function uses the default configuration of a single display session with a PC keyboard style.

If you include a master profile, you can include a drive and a path to identify the profile location. For example, the following command loads work station function from the folder (drive I:) and uses the master profile named MYPROF.DAT found on the personal computer hard disk in the subdirectory MYSUBDIR:

```
I:WSF C:\MYSUBDIR\MYPROF.DAT
```

/S This option overrides the keyboard profile specified in the master profile and uses a 5250 style keyboard profile. (This option is primarily for service personnel to use a known keyboard style with any configuration.)

/T This option allows you to switch immediately to the personal computer mode after the work station function comes online with the AS/400 system. This is equivalent to using the hot-key sequence after the AS/400 Sign On display is shown, or to selecting Yes for the option Automatic hot key to DOS. This function is provided to help the organizer start running without waiting for the operator to switch to the personal computer mode when the work station function is loaded.

Note: When using the /T parameter, if the System Available indicator for the first session is not on, the work station function does not switch to personal computer mode.

/NP

Specifies that no screen painting is to be done. The work station function performs screen painting by default for synchronous data link control (SDLC) and asynchronous communications only. This parameter has no effect for other communications types.

The screen painting operation shows portions of the display as the data is received over the communications line. When you specify the /NP parameter, the work station function waits for all data to be received before showing the display. This option is useful when the screen painting operation appears to be very slow or when the communications line sends data fast enough so that screen painting is unnecessary.

/NOAER

Turns off the automatic error reset function. Automatic error reset occurs when the session is in an operator error situation and the user presses a cursor movement key or an aid generating key, such as Tab, New Line, Enter, and so on.

/Z Reduces the informational messages.

Starting Sessions

Use the STARTWSF program of work station function from the DOS prompt to start or restart a session on the AS/400 system. STARTWSF resides on the folders QIWSFLR and QIWSFL2.

The following are reasons for using STARTWSF:

- To start a session you were unable to start when the work station function was first started due to an AS/400 system problem. You can start sessions again after the AS/400 system problem is corrected.
- To start a session stopped with STOPWSF.
- To start sessions stopped when the PC Support router was stopped on either the AS/400 system or the personal computer. You can start sessions again once the PC Support router is running again.
- To start a session on a different AS/400 system.

Note: STARTWSF may only be used to start sessions that are currently stopped.

STARTWSF uses two positional parameters separated by a comma. Do not use spaces before or after the comma. Parameters within brackets ([]) are optional. The command has this format:

```
STARTWSF S[,System name] [/Z]
```

where:

S Specifies the session number to start. This parameter is required. The number you use may range from 1 to 5. You must have already configured the session.

System name

Specifies the system name known to the PC Support router that the session is connected to. Each session may be connected to a different AS/400 system. If an AS/400 name is not specified, the name is assumed to be the router's default AS/400 system. Use this option to connect to more than one AS/400 system.

/Z Reduces the informational messages.

Recognizing the Pre Sign-On Display

When starting work station function without the /Z option, the pre sign-on display shows the master profile and keyboard profile along with the status of each of the configured sessions. The following example shows two display sessions and one printer session. If an error occurs while a session is starting, a message appears next to the session number. The status of a session flashes Starting... as it is started on an AS/400 system. When the session is successfully started, the status changes to Started (as shown). Printer sessions start first followed by

display sessions. The AS/400 name for a session is also shown when it has been started.

Your pre sign-on display may look similar to the following:

```
AS/400 PC Support Work Station Function
Copyright IBM Corp. 1987, 1990
Release 3.0 Level 00

Master profile name:
WSFTTEST.DAT

Keyboard profile name:
KEYBRD.KBD

Session      Type      Status      System
1            Display  Started     System1
2            Display  Started     System4
3            Printer  Started     System1

Press a key to continue
```

Notes:

1. For more information on the work station function option values, refer to "Changing the General Options."
2. At the pre sign-on display, the keyboard has not been mapped to the configured layout. After you press a key on the pre sign-on display, the keyboard is defined by the layout.
3. If you configured *Bypass Pre sign-on Screen* for the master profile, you do not need to press a key to continue (unless an error has occurred when starting a session). The sign-on screen for the first session appears after all the sessions have started.
4. You can press the Ctrl key plus the Break key on the pre sign-on display to end the work station function and return all the memory it uses to DOS.
5. All of the resident memory used by the work station function can be returned to DOS. To do this, you must:

- a. Sign off all of your work station function display sessions.
- b. Enter the following command:

```
[d:][path]RMVPCS WSF
```

For more information on the remove PC Support function (RMVPCS), see the *PC Support/400 User's Guide for DOS*.

Changing Sessions

The hot-key sequence allows you to switch sessions within the work station mode and from the work station mode to the personal computer mode.

The default hot-key sequence is Alt+Esc. Each time you press this sequence, the next session in the rotation appears on the display.

Stopping Sessions

STOPWSF is a program of the work station function used in the personal computer mode to stop one session at a time on the AS/400 system. STOPWSF resides in the folders QIWSFLR and QIWSFL2.

Use STOPWSF if you have started sessions (either with STARTWSF or WSF) and want to stop one or all of the sessions and then start them again on the same or a different AS/400 system. Before you stop a session, be sure to sign off the AS/400 system.

STOPWSF has one required parameter, session number, and one optional parameter, force. The command has the following format:

```
STOPWSF S [/F] [/Z]
```

where:

- S** Is the session number to stop. This number may be in the range of 1 to 5. You must have already configured the session.
- /F** Is the Force parameter. The optional /F parameter inhibits a message that allows you to cancel the stopping of a session.
- /Z** Reduces the informational messages.

Using Graphics Sessions

After you install device drivers and do any desired configurations, you can use the graphics session. Refer to “Installing Graphics” on page 16-6 for information on installing graphics device drivers and “Changing Graphics Options” on page 16-18 for information on configuring graphics sessions.

This section explains how to:

- Initialize graphics device drivers
- Start graphics
- Use the display
- Use local select mode
- Use a plotter

Initializing Device Drivers

The INIT_VDI command initializes the device drivers in the CONFIG.SYS file. If you intend to use work station function graphics, you must run this command each time you start the personal computer. Be sure to run this command before you start work station function.

To accomplish this, you can include the command in the AUTOEXEC.BAT file, the STARTPCS.BAT file, or a batch file you have created. If you do not include the

command in a batch file, you must run the **INIT_VDI** program from the DOS prompt before you use graphics.

1. INIT_VDI resides on the QIWSFLR and QIWSFL2 folders. You can copy INIT_VDI from the folder to the root directory of the personal computer start disk, or to another drive and path.

Note: If you run INIT_VDI from the folder, you must first start the router and use the shared folders function to assign drive I to the QIWSFLR or QIWSFL2 folder. (The STARTPCS.BAT file includes these commands.)

2. Include the command in a batch file in this format:

```
d:\path\INIT_VDI
```

The drive (d:) and path are optional. If you do not include a drive and path, DOS will search for INIT_VDI on the current drive and directory.

See your DOS manual for instructions for copying files and creating an AUTOEXEC.BAT file.

Starting Graphics

WFGSHOW.COM is a DOS program that starts graphics. This program must be running in the DOS session before you can process graphics data. WFGSHOW is necessary because the WFGVDI.OVL program and the VDI.SYS program do DOS function calls. WFGSHOW keeps the personal computer mode in a steady state and prevents other programs or functions in DOS from making their own DOS function calls. This could cause unpredictable results to be shown on the DOS display when running a graphics program. This does not affect programs used by the work station function.

You can use the hot-key sequence to switch to the DOS session and start WFGSHOW at any time before displaying graphics with the work station function. If you request graphics before WFGSHOW has been started, the Enable Screen Graphics menu offers you a choice to use the hot-key sequence to go to DOS.

You can use the following methods to start work station function graphics sessions:

- Using INIT_VDI.

INIT_VDI is only needed if your VDI device drivers specified in CONFIG.SYS are stored on a diskette. You must make sure that the PC Support router has been initialized before the INIT_VDI program is run, and you must have access to the INIT_VDI program on the folder.

- Using work station function graphics support every time you use work station function.

If you use the STARTPCS.BAT file to start the router and the work station function, you can add the INIT_VDI entry to this file. Or, you can add INIT_VDI to the AUTOEXEC.BAT file, in which case VDI files are initialized every time you start the operating system, whether you use work station function or not. In this case, you must make INIT_VDI available to the AUTOEXEC.BAT file. You can copy it to the personal computer disk or diskette and include a drive and path, if necessary.

- Using work station function graphics support occasionally.

Do not add INIT_VDI to either the AUTOEXEC.BAT file or the STARTPCS.BAT file. You might want to make your own version of the STARTPCS.BAT file

that contains the INIT_VDI entry. This file could initialize PC Support, VDI, and work station function, and use a specific profile for graphics.

You can initialize VDI by typing INIT_VDI at the DOS prompt.

Consider the following as you start your graphics sessions:

- The graphics cursor

The graphics cursor is always an underline and cannot be changed.

The graphics cursor appears to flash while the GM indicator is on (graphics data is being processed from the host system). This flash, which is intermittent, is normal and is due to several factors. The cursor is never displayed unless work station function graphics is idle and waiting for more data to process. Therefore, the cursor appears when the work station function is waiting for the host system to provide more graphics data.

Cursor movement keys move the cursor when the type of display being shown allows it. However, because the cursor is drawn by VDI, it cannot keep up with the rapid cursor movement, which makes the cursor appear to move at an irregular pace until VDI can catch up with the cursor location.

- Switching sessions

You can use the hot-key sequence at any time to switch sessions. If the session you are leaving has a graphics picture displayed, it is preserved and is redrawn when you return to the session. However, if the picture is complex and consumes the VDI buffer (indicated by the L1 or L2 error on the status line accompanied by a short beep), part of the picture may not appear when you return. You can end WSF and use CFG\WSF to increase the size of the VDI buffer. The default size is the minimum, 20KB; 64KB is the maximum size. Any size increase will be additional memory required by the work station function for the session.

When you use the hot-key sequence to leave a graphics session, all graphics operations (except for displaying the picture) continue. If you have requested graphics from the host system, the data is processed even if you are in another session. The resulting picture is shown when you use the hot-key sequence to return to the session.

Plotter operations continue in background sessions until the operations are completed.

Using the Print Screen Function

The print screen function is handled for graphics in CGA-compatible mode. The DOS GRAPHICS command must be used in DOS before you use the print screen function to print graphics.

Displaying Graphics

The host system data stream restricts the display to eight colors on the display and 512 color table entries. The work station function supports these same capabilities for graphics sessions or as many of these capabilities as the display you use allows.

The graphics display on a personal computer is not identical to the IBM 5292 graphics display.

Using Local Select Mode

The local select mode lets you use the keyboard for several functions while the display is in the graphics state. The only local select function you can use for displays that are not in the graphics state is the function to change your text data into graphics.

To enter local select mode, do one of the following:

- Press Alt + F10
- Use the local select key sequence you configured

The local select keys and their functions are as follows:

- The 1 key (on the top row, not the number pad) switches the graphics display on and off. If the personal computer is *not* in a graphics session, pressing this key converts all text data into graphics and places the display in graphics display mode.

If the L1 graphics error code was displayed at any time during graphics mode (the GM indicator was on), the graphics buffer overflowed. This function redraws only the graphics data that was not lost. To avoid this condition, use CFGWSF to make the buffer size larger than 20KB.

This is the only local select function you can use when the display is not in graphics state, but is showing text only.

- The 2 key switches the status line on and off.
- The 3 key switches between the default aspect ratio and the aspect ratio you configured. The change has no effect until the next chart is requested from the host system. The presence of the C indicator (adjacent to the G graphics indicator) shows that the session is operating with a reduced aspect ratio. For the AS/400 system, the picture always uses the optimum aspect ratio; therefore, this key has no effect.
- The 9 key erases any graphics from the display. This key clears all graphics orders from the session memory. Local select 1 does not redraw the graphics, but it does redisplay any text.
- The 0 (zero) key erases any graphics from the display and ends graphics. This key functions only while the graphics mode (GM) indicator is on.

During local select mode, any keys other than the correct local select keys cause a beep and are cleared.

Using a Plotter

To use a plotter with a graphics session, you must configure the display session type as host graphics support with a plotter attached. You may configure any graphics display session for a plotter. However, if more than one session is configured for the same communications port, you can only use a plotter for one session at a time. Plotters attached to separate communications ports can operate simultaneously.

Work station function supports the following plotters:

- IBM 6180 Plotter
- IBM 7371 Plotter
- IBM 7372 Plotter

The plotter requires the use of an asynchronous communications (serial) adapter. Work station function does not support any plotter that is not directly attached to the personal computer.

The graphics data stream generated by the host system uses an IEEE-488 protocol. The work station function removes IEEE-488 protocol commands and sends the remaining data to the plotter by way of the interface. The VDI commands are not used.

Note: The work station function cannot support a plotter when both an asynchronous communications adapter and an SDLC or BSC adapter are used at the same time.

Using Work Station Function Printer Sessions

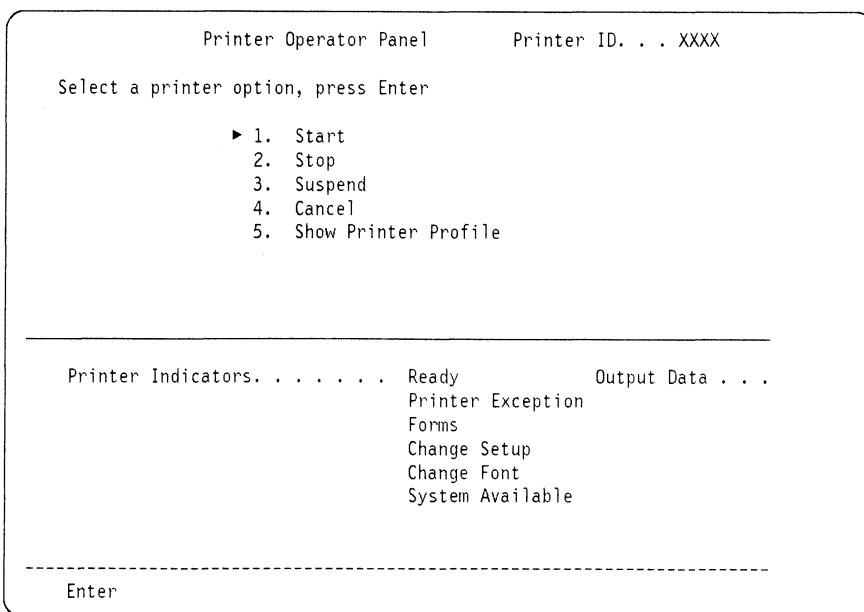
When you use a work station function printer session, your PC printer can imitate the functions of an AS/400 printer. You must first set up a printer session using the work station function configuration program, CFGWSF. For details, see "Setting Up a Session Profile" on page 16-13.

When a printer session is active, your display acts as the operator panel for the AS/400 printer being imitated. You should not control your printer session from the operator panel on the printer. You should control it from the printer operator panel displayed in your printer session.

Printer sessions use the same keyboard arrangement as display sessions. If you have configured a help key, you can display help information by pressing the key on your keyboard that functions as the AS/400 Help key.

Using your display and keyboard, you can control various printer options, such as starting and stopping the printer, suspending the printer, or canceling a printed job.

To control printers from your printer operator panel display, select the option you want to use. The control panel is displayed as follows:



The following options can be selected from your printer operator panel:

- Start** Readies the printer session. If the Ready indicator is on, you do not have to use this option.
- Stop** Stops printing while you make adjustments to the printer, such as changing the paper, and then resets any error conditions. To continue printing, you must use the Start option.
- Suspend** Stops the AS/400 printing session and allows you to use the printer as a PC printer.
- Cancel** Notifies the AS/400 system that you want to cancel the print request.

Show Printer Profile

Displays the values in the printer profile used to define the printer session. Using this option, you can only view the configuration information. To change any of the values, you must use the work station function configuration program (CFGWSF).

Note: If any of the fields show an asterisk (*) instead of a valid value, you are running with a printer session profile from a previous release of PC Support/400. You should use the work station configuration program to change the profile so it can be updated to the current release.

To select an option on the display, type the number of the option you want to use or move the cursor to that option and press the Enter key. A box to the left of an item on the display indicates you can select that item. Items without boxes are not available for your use.

Note: Remember that the printer operator panel has the same keyboard arrangement as your display session.

Identifying Printer Operator Panel Status Indicators

A work station function printer session has status indicators that appear on the lower half of the display. When an indicator is on, it is highlighted. The following section describes the status indicators that can appear on your printer operator panel display.

Output Data Provides information related to the Printer Exception, Forms, and Change Setup indicators. These indicators are explained in more detail below.

Ready Turns on when you successfully start a printer session. It tells you that the printer is ready and waiting to receive data. This indicator turns off when the printer needs you to take some action, such as changing a printer font or paper. When you select the Stop or Suspend option on the printer operator panel, the Ready indicator turns off.

Printer Exception

Turns on when a printer exception occurs. A two-digit code explaining the exception is displayed on the work station function printer operator panel in the output data field.

When the Printer Exception indicator is highlighted, the following message appears on the work station function printer operator panel:

6271 Error xx has been detected

where xx is the hexadecimal code for the exception that exists.

The possible exceptions are:

Code Message

- 10 Unsupported single byte control
- 11 Line length violation
- 12 Indexing violation
- 13 No line ender in the data stream, buffer full
- 14 Unprintable graphic character
- 16 Top margin violation
- 17 Nested BUS, EUS, BOS, EOS, BES, EES
- 20 Multi-byte control in invalid position
- 21 Indent level violation
- 22 Horizontal tab with no tab defined
- 23 Justify violation
- 24 Attempt to backspace past leftmost print position
- 25 Page depth violation
- 26 Justify control option
- 30 Unsupported/invalid multi-byte control
- 31 Required multi-byte parameter missing
- 32 Unsupported multi-byte parameter detected
- 40 Invalid parameter value in multi-byte control

Forms

Turns on when the printer runs out of paper or when the paper must be fed manually. When the Forms indicator is highlighted, one of the following messages appears on the work station function printer operator panel:

Code Message

- 01 6272 Host system is requesting paper drawer 01
- 02 6272 Host system is requesting paper drawer 02
- 0E 6273 Host system is requesting envelopes

Change Setup

Turns on when the paper feed method needs to be changed. When the Change Setup indicator is highlighted, a message is displayed on the work station function printer operator panel. The message and the two-digit code displayed in the output data field tell you the type of paper feed needed. It can be any of the following:

Code Message

- 01 6269 Install manual forms
- 02 6268 Install continuous forms
- 03 6267 Install automatic cut sheet forms

Change Font

Turns on when you need to change the print wheel or the font cartridge. When the Change Font indicator is highlighted, the following message is displayed on the work station function printer operator panel:

6270 Host system is requesting typestyle xxxxx

where xxxxx is the type style number in decimal. The type styles that may be requested are determined by the host device. These typestyle numbers are defined in the *Guide to Programming for Printing*, SC41-8194.

System Available

Turns on when you successfully start the printer session. It turns off whenever communications with the AS/400 system ends.

Printing the Display

You can print the display during the work station mode at either an AS/400 system or a personal computer printer.

Printing on an AS/400 Printer

When you press the key that is functioning as the AS/400 Print key, the work station function sends a print request to the AS/400 system. The AS/400 system either sends your display to the printer immediately or temporarily stores (spools) the display until the system is ready to send it to the printer.

Printing on a Personal Computer Printer

When you press the key that functions as the personal computer PrtSc key, the personal computer printer prints the display. All characters on the display are sent to the printer as *is*. See the instructions for your printer to determine the action taken.

Note: The print screen function can print graphics data while in the graphics state. You need to load a support program, such as the GRAPHICS command of DOS, to convert the display image for your particular printer. You can use the key that functions as the PrtSc key during the AS/400 sessions mode to print alphanumeric information or pictures produced by the graphics support of the work station function.

Removing the Work Station Function from Memory

The STOPWSF program, described in "Stopping Sessions" on page 16-45, stops work station function sessions. Even if you stop all sessions, the work station function program remains in your personal computer's memory.

If you want to stop the work station function and remove the work station function program from your personal computer's memory:

1. Sign off all of your work station function display sessions.
2. Run the RMVPCS command. Enter the following after the DOS prompt:

```
[d:][path]RMVPCS WSF
```

For more information, see the *PC Support/400 User's Guide for DOS*.

Identifying Batch Error Level Codes

If you are using a batch file, the following error level codes may be set:

- Work station function sets a return code that can be checked by the DOS batch file command, IF ERRORLEVEL. If work station function is started successfully, the error level is 0. If an error occurs, but work station function is able to continue, the error level is 10. If an error occurs and work station function cannot continue, the error level is 20.

- STARTWSF sets a return code that can be checked by the DOS batch file command, IF ERRORLEVEL. If STARTWSF is started successfully, the error level is 0. If an error occurs but STARTWSF is able to continue, the error level is 10. If an error occurs and STARTWSF cannot continue, the error level is 20.
- STOPWSF sets a return code that can be checked by the DOS batch file command, IF ERRORLEVEL. If the process was successful, the error level is 0. If the process was not successful, the error level is 20.

If you want to use bidirectional support, you must first run the WSFBIDI.EXE program. WSFBIDI.EXE replaces the WSF.EXE program described in “Starting the Work Station Function” on page 16-41.

Bidirectional support provides printing capabilities for cursive and noncursive languages.

Introducing Bidirectional Support

Bidirectional support provides the following capabilities:

- Full support of the four-quadrant and front-face keyboard states. All states can be defined by the user.
- Data entry from right to left as well as from left to right. This directional capability can be used with either displays or fields:

Displays The directional capability defines the order in which fields are processed on the display.

Fields The directional capability defines the default direction for data entry in a field.

Application programmers can specify right to left or left to right for the directional capability of displays or fields.

- Cursive support includes an automatic character-shape determination function. In cursive script, the shape of each character depends upon its position within the word. The automatic character-shape helps to correctly display cursive script by shaping each character as you enter it.
- Special key functions:

Latin layer entry

To enter the Latin layer, press and hold the Alt key and then press the left Shift key. When you are in the Latin layer, the LS status indicator is not shown in reverse image.

Language layer entry

To enter the language layer, press and hold the Alt key and then press the right Shift key. When you are in the language layer, the LS status indicator is shown in reverse image.

Reverse key

Pressing this key allows the operator to reverse the current cursor direction. It functions as follows:

- The cursor is repositioned according to the current cursor direction. When right to left, the cursor is placed at the current left bound location. When left to right, the cursor is placed at the current right bound location.

Note: The cursor is not repositioned if the last key pressed was cursor up, down, left, fast left, fast right, or character backspace.

- The cursor direction is then reversed, and the shift lock status of the new keyboard layer is restored.
- Insert mode is reset.

Close key

By pressing the Close key, data entered in one keying direction is joined with data that was previously entered in the opposite direction. This function operates as follows:

- All embedded null characters are removed from the current line (or field, if the field is contained on one line).
- Joined text is moved to the right bound of the field if the field direction is right to left, or to the left bound if the field direction is left to right.
- The remainder of the line (or field, if contained on the same line) is padded with null characters.
- The cursor direction is set to the field direction.
- If the cursor direction is now left to right, the cursor is positioned at the first null character to the right of the joined text.
- If the cursor direction is now right to left, the cursor is positioned at the first null character to the left of the joined text.
- Insert mode is reset.

Base key Pressing the Base key stops the automatic character-shape determination function. Pressing the Base key again starts this function. The Base key only applies to cursive support.

Screen reverse key

Pressing the screen reverse key allows you to reverse the image of the host screen. This function is similar to an image in a mirror. The input fields also change direction orientation. The left-to-right fields become right-to-left and the right-to-left fields become left-to-right.

WSFBIDI.EXE is the main program for starting work station function with bidirectional support. It replaces the program WSF.EXE used to start work station function without bidirectional support. If you choose to use bidirectional support, you must run the WSFBIDI.EXE program rather than the WSF.EXE program.

You can start either cursive bidirectional support or noncursive bidirectional support.

Starting Cursive Bidirectional Support

To start cursive bidirectional support:

1. Load version 4.2 of the Cursive X/Basic National Supplement that comes with the cursive keyboard.

2. Start the work station function with the configured profile that calls for the loading of cursive right-to-left support. This supplement is provided with the cursive/English keyboard.

If the supplement is not loaded, the work station function displays the following message:

```
6494 The DOS Language Supplement is not loaded.
```

Starting Noncursive Bidirectional Support

To start noncursive bidirectional support:

1. Load the Hebrew National Supplement version 4.2.

This supplement is provided with the noncursive/English keyboard. If the supplement is not loaded, the work station function displays the following message:

```
6494 The DOS Language Supplement is not loaded.
```

2. Load noncursive font EGAHEB.COM if you are using an EGA adapter.

Start PC Support and work station function, specifying a noncursive keyboard profile.

To change the display orientation from right-to-left to left-to-right (and switch to Latin keyboard layer), press and hold the Alt key and then press the left Shift key.

Identifying the Bidirectional Support Status Indicators

The following display shows an example of the status indicator line of a work station function session using bidirectional support:

```
This is line 1 with the cursor on line 10.

_This is line 10 of the sample display.

This is line 24. The status line below is on line 25.
10-01 SA MW LS KS → IM ↔ II Sn aaaaaaa KB
```

Figure 16-1. Sample Bidirectional Support Display

The following information describes the status indicators shown in the sample display above:

Normal Content	Description of Field or Indicator
blank	Operator error code
RR—CC	Cursor position (row and column)
SA	System available
MW	Message waiting
LS	Language shift
KS	Keyboard shift
← or →	Screen direction
IM	Insert mode
←← or →→	Cursor direction
II	Input inhibited
Sn	Session number
aaaaaaaa	Host name
KB	Keyboard buffer indicator

Chapter 17. Managing the Organizer

Introducing the PC Support Organizer	17-2
Preparing to Use the Organizer	17-2
Configuring Work Station Function Sessions	17-2
Using the Configuration Program to Change the Organizer	17-3
Changing Your Session Information	17-3
Changing the Characteristics of the PC Support/400 Organizer	17-4
Changing the Organizer with Command Line Parameters	17-5
Selecting a Text Editor	17-6
Using the PC Text-Assist Function	17-6
Editing a Document Created Using Another Editor	17-7
Understanding How the Organizer Functions	17-7
Using the PC Keyboard with the Organizer	17-7
Using Programs That Stay in Memory	17-8
Controlling Display Information	17-8
Tracing Errors When the Output Is Directed to NUL	17-8
Passing Through to Another System	17-8
Personalizing Your PC Support/400 Organizer Menu	17-9
Ending the PC Support Organizer	17-10

Introducing the PC Support Organizer

As you read this chapter, you should keep in mind the programs you use most often. Careful planning and preparation can make installing and using the PC Support organizer easier.

This chapter shows you how to set up and tailor the organizer so you can use your needed programs quickly and efficiently. The following list outlines the steps you should follow in doing this.

- Prepare PC Support for use with the organizer.
- Personalize your PC Support Organizer menu, if desired.
- Change your configuration file.
- Select an editor of choice.

You should complete these steps before using the organizer. The following sections discuss each of these steps individually.

Preparing to Use the Organizer

To prepare PC Support for use with the organizer, you should configure your work station function sessions. The work station function must be started before you can use the organizer.

Configuring Work Station Function Sessions

The organizer runs in all of your configured work station function display sessions. The work station function provides defaults for each session. If you do not want to use the defaults, use the configuration program to change them.

When you configure your personal computer, you identify how you want to use your work station function sessions. If you want your personal computer to imitate a display station or a printer, you configure your work station function session as a **display session** or a **printer session**. An AS/400 **display session** allows you to do AS/400 activities, such as creating documents with OfficeVision/400. A **printer session** allows your personal computer printer to be used as a printer attached to the AS/400 system. For example, you can create an OfficeVision/400 document and print it on the personal computer printer. Each display or printer session uses a unique work station ID on the AS/400 system.

The number and kind of sessions you configure depends on the type of tasks you want to do. If you are using the work station function, you can configure up to five sessions. You can choose printer sessions or display sessions. You can switch from one session to another using the hot-key sequence (pressing and holding the Alt key, and then pressing the Esc key). For additional information on using the hot-key sequence, refer to "Changing the Characteristics of the PC Support/400 Organizer" on page 17-4. When the organizer is started, a system drive may be assigned automatically for its use. The system drive remains assigned even after the organizer has been stopped.

For information on configuring a session, choosing a keyboard profile, and assigning work station addresses, see Chapter 16, "Managing Your Work Station Function Sessions."

Using the Configuration Program to Change the Organizer

Using the PC Support/400 configuration program, you can change your session information, including:

- The menu displayed when the organizer is started.
- The startup options for the organizer.

You can also change the organizer options, including:

- Allowing the hot-key sequence
- Loading the PC text-assist function
- Loading the advanced PC text-assist function
- Setting the input-inhibited time value

Changing Your Session Information

To change your session information, start the PC Support/400 configuration program and display the PC Support Configuration menu. Refer to "Starting the PC Support/400 Configuration Program" on page 12-2 for information on starting this program.

When you have displayed the PC Support Configuration menu, complete the following steps.

1. Select Organizer from the list of functions on the PC Support Configuration menu. The Organizer display appears.
2. Select General organizer options. The following display appears:

```
Sessions  Exit  Help
-----
                        General Organizer Options
Select options, press Enter.

Allow hot key to DOS prompt . . . . . 1. Yes
                                         2. No

Input inhibited time value,
(0, 1 to 3600) seconds. . . . . [30 ]

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  F10=Actions  Spacebar
```

3. Press F10 (Actions) and select Sessions from the list of actions. A window is shown. From this window, you can select the session you want to change.
4. Select the option showing the session number you want to change. A window is shown.
5. Enter the command or commands you want to run in the session.

For example, if you want the organizer started and the Organizer menu displayed in a session, enter the following:

STRPCO
GO PCOMNU

Note: If your user profile has the *Limit capabilities* parameter set to *YES, specify STRPCO as the only command to run. This is because users with the *Limit capabilities* parameter set to *YES cannot use the GO command. If you want to display the Organizer menu when you sign on to the AS/400 system, specify PCOMNU for the *Initial menu* parameter in your user profile.

6. If you need to add more lines, press F9 (Insert line).
7. When you have finished, press F3 (Exit) and select the option to exit.
8. Press F10 (Actions) and select Exit. A window is shown.
9. Select option 1 (Save and exit) to save your changes and exit. You return to the Organizer menu.
10. Press F3 to return to the PC Support Configuration menu.

Changing the Characteristics of the PC Support/400 Organizer

You can use the PC Support/400 configuration program to change the hot-key sequence, the text-assist function, and the input inhibited time value in your configuration file. To use the configuration program, display the PC Support/400 Configuration menu. Refer to Chapter 12, "Configuring PC Support with the Configuration Program" for information on displaying this menu. When you have displayed the menu, complete the following steps:

1. Select Organizer from the list of options on the PC Support/400 Configuration menu. The Organizer menu is shown.
2. Select General organizer options. The General Organizer Options display appears.
3. Use the Arrow keys or the Tab key to highlight the value you want for each prompt on the display. Press the spacebar to select the value. The following describes the prompts on the menu.

- Allow hot-key to DOS prompt

The default for this prompt is to inhibit your ability to use the hot-key sequence (pressing and holding the Alt key, and then pressing the Esc key) to access the work station function session from which the DOS session was started. If you want to use the hot-key sequence to exit a DOS session, you should select option 1 (Yes) for this prompt. By selecting yes, the hot key is enabled each time the organizer is started.

When you enable the hot key, you should remember that you can only use the hot-key sequence to go to a DOS session if something is running in the DOS session. When you are finished running an application or command, you should exit from the DOS session rather than use the hot-key sequence.

- Input inhibited time value

The default for this prompt is 30 seconds. The input inhibited time value (PTIM) specifies the number of seconds the organizer waits for input inhibited to become inactive. If input inhibited does not become inactive in the specified time, the organizer displays a message that communications have been lost to the host system. A value of 0 specifies no time-out. A value from 1 to 3600 seconds (1 hour) is allowed.

4. When you are finished, press F3 (Exit) and select option 1 (Save and exit). You return to the Organizer display.
5. Select Word processing editor options.
6. Use the Arrow keys or the Tab key to highlight the value you want for each prompt on the display. Press the spacebar to select the value. The following describes the prompts on the menu.

- Load editor when PC Support/400 is started

The default for this prompt is to not load the text-assist function when the organizer is started. If you want the text-assist function loaded in a work station function display session, you should select option 1 (Yes) for this prompt. If you are using the basic DOS option of PC Support/400, the text-assist function is loaded in the first work station function session in which the organizer is started.

- Editor type

This prompt is only displayed if you are configuring for a user of the basic DOS option. The default for this prompt is to not load the advanced version of the text-assist function. The advanced text-assist function requires more PC memory, but contains additional functions you may find useful. If you want to use the advanced text-assist function, select option 2 (Advanced) for this prompt.

Note: The adapted word processing function provides you with basic editing functions. You receive the adapted word processing function instead of the text-assist function in the following instances:

- When you try to start one of the word processing functions when the organizer is not running.
- When there is not enough memory to start the selected text-assist functions.
- When you are using DOS for another application.
- When you are using the basic DOS option of PC Support/400 and the text-assist function is already started in another work station function display session. (If you are using the extended DOS option of PC Support/400, you can use the text-assist function in up to five work station function sessions as long as none of the other restrictions listed here apply.)
- When the Word processing choice value on your OfficeVision/400 enrollment information on the AS/400 system is set to *ADAPTED.

Changing the Organizer with Command Line Parameters

The PCO command starts the organizer function. You can enable the hot key and load the text-assist function using command line parameters. When you use command line parameters to change the organizer, the changes are not saved when you end the organizer function. If you want the hot key enabled and want the text-assist function loaded each time you start the organizer, you should use the PC Support configuration program to save your changes.

You can use the PCO command at the DOS prompt as follows:

```
PCO [/HOTKEY] [/LOADTA] [/TA1]
```

where:

- /HOTKEY** Enables the hot-key sequence.
- /LOADTA** Loads the text-assist function when the PCO command is run. If this parameter is omitted, the text-assist function is loaded the first time it is requested.
- /TA1** If you are using the basic DOS option of PC Support/400, this parameter indicates that the advanced text-assist function (type 1) is to be used. If this parameter is omitted, the default is to use the basic text-assist function (type 0). If you are using the extended DOS option of PC Support/400, this parameter is ignored. (When using the extended DOS option, the equivalent of the advanced text-assist function is always loaded.)

Selecting a Text Editor

When you select a text editor, you tell the organizer which word processing program you plan to use. Option 3 (Select editor of choice) on the AS/400 PC Support Organizer menu helps you choose an editor. You can choose one of the following:

- DisplayWrite 4, Version 1
- DisplayWrite 4, Version 2
- DisplayWrite 5
- OfficeVision/400

The DisplayWrite editors are personal computer word processing functions that allow you to create and change documents, create footnotes, type outlines, do mathematical functions in documents, mark changes from one draft to the next, use voice audio annotation, print documents on an AS/400 printer in addition to PC printers, merge information from a PC file or from an AS/400 database file, and change and view documents created by OfficeVision/400.

Note: If DOS is currently in use, you cannot request DisplayWrite 4 or DisplayWrite 5 as your editor of choice.

OfficeVision/400 is an AS/400 word processing function that allows you to create, change, view, and print documents. You can merge information from one document with another. Using OfficeVision/400, you can merge information from a file. You can also merge information between documents and from database files. OfficeVision/400 also allows you to edit notes.

When using the organizer, the OfficeVision/400 Edit display is enhanced to provide easier editing and faster performance.

Using the PC Text-Assist Function

If you use the text-assist function with the OfficeVision/400 word processing function, the following requirements exist:

- You must be using a personal computer.
- You must be using the work station function.
- You must be using the organizer.
- You must be enrolled in Office using the administration function.

There are some limitations when you use the text-assist function:

- You cannot use OfficeVision/400 line commands.

- You cannot use some OfficeVision/400 column operations. However, you can still use column functions by using the table layout function of OfficeVision/400 to define existing text as a table or to define new tables.
- You cannot check spelling interactively on the Edit display.

Editing a Document Created Using Another Editor

If you create a document using DisplayWrite 4, but you want to edit it using OfficeVision/400, do the following:

1. Convert the document to revisable-form text using DisplayWrite 4.
2. Using OfficeVision/400, specify that you want to edit the document that is now in revisable form. For more information about using OfficeVision/400 to edit a document, see the manual *Using OfficeVision/400* Word Processing*.

Option 3 (Select editor of choice) on the PC Support/400 Organizer menu allows you to select the text editor you want to use. When you select option 3, the Select Editor of Choice display is shown.

When you use DisplayWrite 4, DisplayWrite 4 Version 2, or DisplayWrite 5 with the organizer, you may notice differences in printing.

For example, the organizer allows you to take advantage of AS/400 printer functions without using the PC Support virtual printer function. You no longer have to change your document to final form before printing.

If your document is in the revisable form called RFTDCA, you are shown the Print Options display. If your document is in the revisable form called RFTDW, you are asked if you want to print using the personal computer or the AS/400 system. If you choose to print using the AS/400 system, you are shown the Resolved Document Print Options display. This special support for printing is flexible; you can print a whole document, a single page, or a range of pages. Otherwise, you print as you normally would using DisplayWrite 4.

Understanding How the Organizer Functions

If you are already familiar with the personal computer and personal computer products, you might want to consider the following information when you use the organizer.

Using the PC Keyboard with the Organizer

Personal computer keyboards differ from the keyboards used on other display stations attached to the AS/400 system. Because of this, some of the keys do different functions when you are operating your personal computer as an AS/400 display station.

The best way to handle this difference is to make your keyboard continue to function as a personal computer keyboard, even when you are operating your personal computer as an AS/400 display station. To do this, you need to use the personal computer keyboard profile that is provided with work station function. Using your keyboard as a personal computer keyboard makes the transition between the AS/400 system and personal computer applications easier and greatly increases the productivity of users who do not use PC Support frequently. If you want more information on changing your keyboard, see Chapter 16, "Managing Your Work Station Function Sessions."

Using Programs That Stay in Memory

While the organizer is running, you should not start a program that runs and then stays in memory on the personal computer. Memory may be fragmented, and there may not be enough adjoining memory left for the organizer to continue running personal computer programs. If you want to use a program that runs and then stays in memory, it should be started before the organizer is started.

Controlling Display Information

Starting personal computer applications from the organizer may result in delays while the personal computer loads the application, and it may also cause extra messages to appear on the display while the application is being started.

When setting up batch files for programs to be called by the organizer, you can reduce the number of extra messages displayed by:

- Using the DOS ECHO OFF command. This command prevents commands in a batch file from being displayed while the file is being processed.
- Using an @ sign in front of commands.
- Sending the display output to the NUL device. After each DOS statement in the batch file, type:

```
>NUL
```

Messages sent to the NUL device do not appear on the user's personal computer.

Simple informational messages can be displayed to tell the user what is happening, especially during a long program load or a copy operation. For example, a batch file might contain:

```
@ECHO OFF
rem Turn off the batch file display
ECHO COPY OPERATION IS IN PROGRESS...
rem The copy message is stopped from appearing.
COPY FILE1 FILE2 >NUL
ECHO FILE COPY HAS COMPLETED...
```

In this example, the batch file displays the following:

```
COPY OPERATION IS IN PROGRESS ...
FILE COPY HAS COMPLETED ...
```

If an error occurs at this point, an error message is shown on your display.

Tracing Errors When the Output Is Directed to NUL

If you have redirected the output of a batch file to the NUL device and the file does not run correctly, print the file, and then run each meaningful command from the PC command prompt to help you identify errors.

Passing Through to Another System

If you try to run the organizer from a pass-through display session, the following restrictions apply:

- Do not run a DisplayWrite edit session from the organizer.
- If you start the organizer only in the pass-through display session, the organizer program remains active on your personal computer until you sign

off the display. Entering the EndPasThru command does not end the organizer program on the personal computer.

- If you start the organizer in the main display session, pass through to a second system, and then start the organizer from the pass-through display session, the organizer program is ended on your personal computer for both sessions when you sign off the pass-through display session. You cannot run any programs in the main display session if the programs require the organizer.

Personalizing Your PC Support/400 Organizer Menu

Once you have installed PC Support and the programs required by the organizer and have configured your work station emulation sessions, you can change the options on the PC Support Organizer menu to meet your specific needs.

The first time you see the PC Support/400 Organizer menu, it looks like this:

PC SUPPORT/400 ORGANIZER

Select one of the following:

Perform Office Functions

1. OfficeVision/400
2. Work with documents in folders
3. Select editor of choice

Use PC Support/400

4. PC Support/400 PC tasks
5. PC Support/400 host system tasks
6. PC command prompt
7. Start a PC command

90. Sign off

Selection or command
====> _____

F3=Exit F4=Prompt F9=Retrieve F12=Cancel
F13=User support F16=System main menu

Whether you use the Organizer menu as is, or change it to meet your own needs, you should keep the following items in mind:

- To use option 1 (OfficeVision/400), OfficeVision/400 must be installed.
- To use option 2 (Work with documents in folders) with the AS/400 editor, OfficeVision/400 should be installed. If OfficeVision/400 is not installed, the functions available with option 2 (Work with documents in folders) are limited.
- If you are planning to migrate from DOS to OS/2 and have tailored your Organizer menu to meet your specific needs, you must be sure to change your menu during migration to show your new OS/2 programs.

The appearance of the Organizer menu can be changed using the screen design aid (SDA) function. For example, if you frequently use a spreadsheet application, you can use the SDA function to add an option to the menu for creating spreadsheets. Your tailored menu might look like this:

```
PC SUPPORT/400 ORGANIZER

Select one of the following:

1. Work with documents in folders
2. Work with spreadsheets
3. Work with calendar
4. PC command prompt
5. PC Support/400
6. Sign off

Selection or command
===> _____

F3=Exit F4=Prompt F9=Retrieve F12=Cancel
F13=User support F16=System main menu
```

The following general steps must be taken to modify the default Organizer menu:

- Copy the Organizer menu (source members PCOMNU and PCOMNUQ in file QMENSURC in library QIWS) to a personal library
- Change the Organizer menu with SDA
- Change CONFIG.PCS so that the organizer function uses the new menu

For more details on creating and changing your own menus, see the *SDA User's Guide and Reference*. Online help information is also available for all SDA displays.

Ending the PC Support Organizer

To end the PC Support Organizer:

- Exit out of your DOS session, if applicable.
- Sign off all work station function sessions. You are returned to the DOS prompt.

For more information about using the PC Support organizer, see the *PC Support/400 User's Guide for DOS*.

Chapter 18. Managing Your Messages

Introducing the Message Function	18-2
Configuring the Message Function	18-2
Changing Message Function Options	18-2
Creating an Alternative Configuration File	18-4
Improving the Performance of the Message Function	18-4
Recognizing Incompatible Programs	18-4

Introducing the Message Function

The PC Support message function:

- Allows you to communicate with other display stations, personal computers attached to your AS/400 system, and other users.
- Displays any message that has been sent on the AS/400 system for you or your personal computer.

You have the option of changing the way the message function operates. For example, you could:

- Run the message function from your personal computer or the AS/400 system
- Start the message function automatically when you start PC Support
- Start the message function only when you enter the STARTMSG command or start the message function from the PC Support/400 Menu
- Place the messages under the control of another host system
- Change the message receive interval
- Change the message display interval

You can change the way the message function operates using the PC Support/400 configuration program or the PC Support editor. When you use the configuration program, the changes you select are added for you to your CONFIG.PCS file or specified alternative configuration file. If you use the PC Support editor, you must make the changes in the configuration file yourself.

Notes:

1. The PC Support router must be running before you can start the PC Support message function.
2. The work station function and the message function use the same message queue. Therefore, if you start the work station function before you start the message function, you can only use the message function to send messages. If you started message function first, you can receive messages only if you sign on to the 5250 session with the same user ID as you used on the router.

Configuring the Message Function

You can use the PC Support/400 configuration program to:

- Change message function options
- Create an alternative configuration file

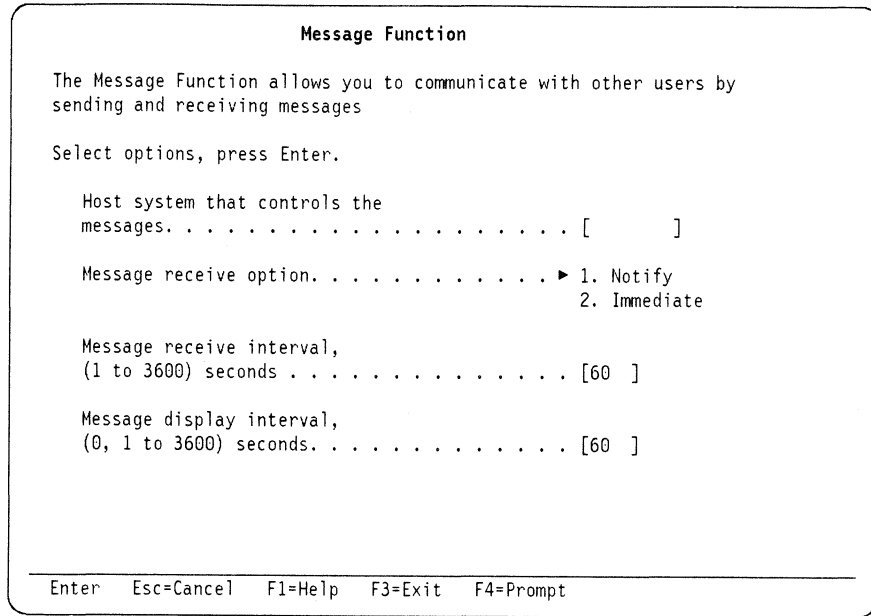
Changing Message Function Options

You can use the PC Support/400 configuration program to change:

- Which system controls your messages
- How you want to receive your messages
- The frequency at which you receive your messages
- The length of time your messages are displayed

When you change the configuration, the changes are not in effect until the next time you enter the STARTMSG command. On the PC Support/400 Menu, select the Configure PC Support option. When the PC Support Configuration menu is shown, complete the following steps.

1. Select Messages from the list of items on the menu. The Message Function Configuration menu is shown.



2. Enter values for the following prompts:

Host system that controls the messages

Enter the name of the system you want to send messages to and receive messages from. If you do not specify a system name, your default system will be used.

Message receive option

This prompt determines how you will receive your messages. If you want to be notified by an alarm when messages are waiting, select option 1 (Notify). If you want to be notified by an alarm and then have the message or messages displayed, select option 2 (Immediate).

Message receive interval

This is the number of seconds that you want the message function to wait before checking the AS/400 system for new messages. A default value of 60 seconds is specified for this prompt. You can enter a number from 1 to 3600.

Message display interval

This is the number of seconds that you want the message to remain on your display. This option is used only if you select Immediate for the *Message receive option* prompt.

3. When you have specified values for the appropriate prompts, press F3 (Exit).
4. Select option 1 (Save and exit) to save your changes and exit. You are returned to the PC Support Configuration menu.

Creating an Alternative Configuration File

If you are planning to use an alternative configuration file with the STARTMSG command, you can create the file using an editor (such as EDLIN) or the PC Support configuration program. This configuration file is not in effect until you enter the STARTMSG command with the alternative configuration file name parameter.

Improving the Performance of the Message Function

If you use the MSG or RCVMSG command to use the message function without using the STARTMSG command, the send, receive, and display functions dynamically allocate and deallocate the sessions to the AS/400 system each time the functions are selected. This causes the send, receive, and display functions to run more slowly.

If you use the STARTMSG command, a send session and a receive session are established to the AS/400 system. Whenever the MSG or RCVMSG command is used, the current session is used, which removes the need to allocate and deallocate the session each time the commands are used. This improves the performance of the message function.

It is highly recommended that you use the STARTMSG command. By using the STARTMSG command, you:

- Know when a message has been received by the AS/400 system.
- Receive messages that are sent as *ALLWS or *ALLACT by a local user.
- Receive messages that were sent to your PC location.

When using the STARTMSG command, you can affect the performance of other applications by following these guidelines:

- Set the message receive interval (MMRI) parameter carefully. The MMRI parameter determines how often the AS/400 system is checked for messages. If you specify a small MMRI value, applications currently running are frequently interrupted and their performance decreases. If performance is a consideration, specify a high value for the MMRI parameter. The default for this parameter is 60 seconds.
- Set the message display time (MTIM) parameter carefully. The MTIM parameter determines how long a message is shown on the display when the message function is configured to give you immediate notification of messages received. If an application is running when a message is received, the application is interrupted until the MTIM value is reached or you press a key to clear the display. If performance is a consideration, specify a low value for the MTIM parameter. The default value for the MTIM parameter is 60 seconds.

Recognizing Incompatible Programs

Some programs may affect the way you receive messages. If you specified either Notify or Immediate for the Message receive option, your selection may be overridden by programs that:

- Do not use DOS function calls for standard input or output.
- Do not use BIOS keyboard support.
- Do not pass on keystrokes, for example, display station emulators.

Chapter 19. Managing Access to Data Queues

Introducing the Data Queues Function	19-2
Starting the Data Queues Function	19-2
Configuring the Data Queues Function	19-3
Changing the Communications Buffers Size	19-3
Removing the Data Queues Function from Memory	19-4

Introducing the Data Queues Function

To use the data queues function, you must be using the extended DOS option of PC Support/400.

A **data queue** is an object on the AS/400 that is used to store messages. AS/400 applications can communicate with each other by sending messages to and receiving messages from a data queue.

The PC Support/400 data queues function allows you to work with data queues on the AS/400 system from a personal computer to develop cooperative processing applications. Using the PC Support/400 data queues function from a personal computer, you can:

- Create a data queue (CRTDTAQ)
- Delete a data queue (DLTDTAQ)
- Clear a data queue (CLRDTAQ)
- Send messages to a data queue (SNDDTAQ)
- Receive messages from a data queue (RCVDTAQ)
- Query the attributes of a data queue (QRYDTAQ)
- Stop the data queues conversation with the system (STPDTAQ)

There is an application program interface (API) for data queues available for use. For more information about this, see the *PC Support/400: Application Program Interface Reference*, SC41-8254.

For instructions on how to use the data queues function, see the *PC Support/400: DOS User's Guide*, SC41-8199.

Starting the Data Queues Function

You can start the data queues function either automatically or manually.

To start the data queues function manually, use the LOADDQ command on the personal computer.

To start the data queues function automatically each time you start PC Support/400, you can do either of the following:

- When you install PC Support/400, select data queues from the list of functions to be started automatically. The steps for this procedure are described in "Installing PC Support/400 on Each Personal Computer" in each install chapter.
- Use the configuration program to specify the startup option for the function. For information about the configuration program, see Chapter 12, "Configuring PC Support with the Configuration Program."

When you start the data queues function, two communications connections are started with the AS/400 system. One connection is for sending messages, the other is for receiving. You can use the configuration program to specify the size of the communications buffers used for these connections.

You can start data queues support to up to 16 different AS/400 systems. You cannot use the data queues function with a System/36 or System/38. Data queues support is available on AS/400 systems at Version 2 Release 1 or later release levels.

Configuring the Data Queues Function

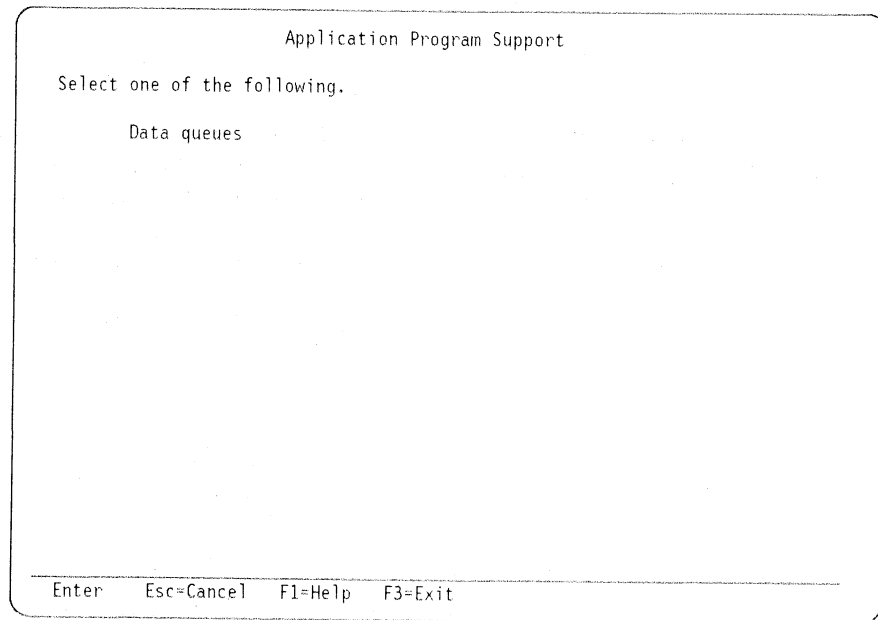
You can use the PC Support/400 configuration program to change the startup options for the data queues function (automatic or manual) and to change the location of the data queues programs (AS/400 system or personal computer). For information about the configuration program, see Chapter 12, "Configuring PC Support with the Configuration Program."

You can use the PC Support/400 configuration program or the PC Support/400 editor to change the size of the communications buffers used by the data queues function.

Changing the Communications Buffers Size

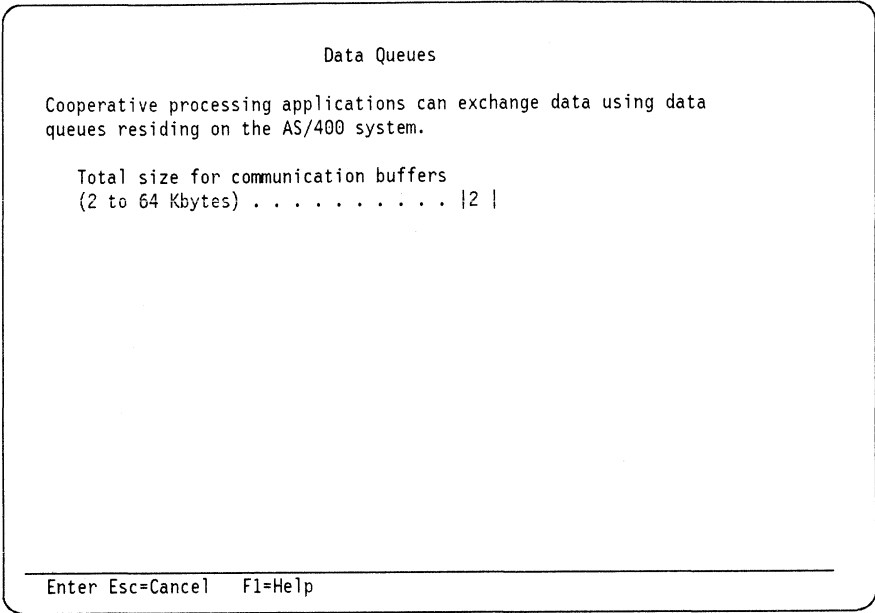
To change the size of the communications buffers used by the data queues function, do the following:

1. Start the PC Support/400 configuration program and display the PC Support Configuration menu. Refer to Chapter 12, "Configuring PC Support with the Configuration Program" for information on displaying this menu.
2. Select the *Application program support* option from the PC Support/400 Configuration menu. The following menu is displayed:



```
Application Program Support
Select one of the following.
Data queues
Enter  Esc=Cancel  F1=Help  F3=Exit
```

3. Select *Data queues*. The following display appears:



4. Specify the value (in kilobytes) to use for the total size of the communications buffers. The default value is 2 (1KB for each connection). Valid values are from 2 to 64.

Notes:

- a. The value you specify is used as the total size of the two connections set up for sending and receiving. For example, if you specify 7KB for the total size, the buffer size for each connection is 3.5KB.
 - b. The value you specify is the maximum amount the data queues function will use. The data queues function will interact with the Router to find the optimal size and use that value so that memory is not wasted. The actual amount used may be less than the amount you specify.
5. Press F3 (Exit), then select option 1 (Save and exit). You are returned to the PC Support/400 Configuration menu.

Removing the Data Queues Function from Memory

You can use the Remove PC Support/400 Function command (RMVPCS) to remove the data queues function from memory. See "Removing PC Support Functions" on page B-3 for more information about the RMVPCS command.

Chapter 20. Connecting Your Personal Computer to the AS/400 System

Understanding the Concepts of Routers	20-2
Starting the Router	20-3
Using Optional Command Line Parameters for the STARTRTR Command	20-3
Stopping the Router	20-4
Changing Your Personal Computer Information	20-4
Using the PC Support LAN Router	20-6
Introducing the IBM Token-Ring Network PC Adapter	20-7
Improving Performance	20-7
Changing the Adapter-Shared Memory Address	20-8
Attaching to More Than One System	20-8
Starting Additional Links	20-10
Releasing a Link	20-11
Setting Up Your Token-Ring Connection	20-11
Setting Up Your Token-Ring System Information	20-13
Changing the PC Support Token-Ring Router	20-16
Using the Message Function on Multiple Systems	20-16
Using the Shared Folders Function on More Than One System	20-17
Using the PC Support Twinaxial (TDLC) Router	20-18
Setting Up Your TDLC Router Connection	20-19
Setting Up Your TDLC Router System Information	20-20
Using the Error Notify Option	20-21
Using the SDLC Router	20-22
Setting Up Your SDLC Router Connection	20-22
Setting Up Your SDLC Router System Information	20-24
Connecting with the SDLC Router	20-26
Using Manual Dial Modems with the SDLC Router	20-27
Using Automatic Dial Modems with the SDLC Router	20-27
Using Automatic Answer Modems with the SDLC Router	20-28
Using the Error Notify Option	20-29
Using the Asynchronous Router	20-30
Setting Up Your Asynchronous Router Connection	20-31
Setting Up Your Asynchronous Router System Information	20-32
Connecting with the Asynchronous Router	20-35
Using Manual Dial Modems with the Asynchronous Router	20-35
Using Automatic Dial Modems with the Asynchronous Router	20-35
Using the Error Notify Option	20-36
Initializing an Asynchronous Modem	20-38
Using the Interactive Asynchronous Communications Program	20-39

Understanding the Concepts of Routers

PC Support consists of many programs working together to provide you with a variety of AS/400 system functions on your personal computer. In order for the programs to work, they must communicate with each other. To communicate, they must share a common language. If they do not, the programs must use a special program functioning as an interpreter. In PC Support, the interpreter program is referred to as the *router* program. The router program is responsible for:

- Establishing a connection between your personal computer and the AS/400 system.
- Serving as an interpreter between the PC Support programs running on your personal computer and those running on your AS/400 system.

PC Support provides several different router programs. The one you use depends on the type of connection you want established between your personal computer and the AS/400 system. The different PC Support routers are:

- Local area network router (token-ring or Ethernet)
- 5250 Emulation (TDLC) router
- Synchronous data link control (SDLC) router
- Asynchronous router

Regardless of the router you use, there are certain concepts common to all of them. The first of these is the *PC location name*. In order for the AS/400 system to find your personal computer, your personal computer must have a unique *PC location name*. This is like the relationship between the postal office and your home. If the postal office is to deliver you your mail, it must know where to find you. So, you provide the postal office with your home's unique address. Likewise, you must provide the AS/400 system with your personal computer's unique address. When PC Support was installed, the installation program requested this information. If necessary, you can change it using the PC Support configuration program.

Another concept common to all router programs is the *system name*. In order for your personal computer to find the right AS/400 system, the system must have a unique *system name*. This system name was established when PC Support was installed. If necessary, you can change the system name or add additional systems (links) to your system. Use the PC Support configuration program to do this.

It is also necessary for you to identify yourself to the router program. All of the PC Support router programs request that you provide your user identification (ID) before a connection is attempted. This can be the same user ID you use to sign on to a work station session. If you choose not to provide a unique user ID, the router program uses a common user ID. If necessary, you can use the configuration program to change your user ID.

Establishing the connection between your personal computer and AS/400 system is one of the most difficult tasks to accomplish in PC Support. It is also the most important task. You can do little with PC Support until the connection is established.

Starting the Router

The information in this section applies to all router types.

In most cases, the STARTPCS.BAT file contains the command needed to run the program that starts the router (STARTRTR.EXE). It was entered into the file when PC Support was installed. Therefore, if you start PC Support using the STARTPCS command, the STARTRTR command is processed and your personal computer automatically attempts to establish a connection with the AS/400 system.

If you find it necessary to attempt the connection yourself, enter the following command after the DOS prompt:

```
[d:][path]STARTRTR [configuration file]
```

where *configuration file* is the name of an alternative configuration file you have created as a substitute for CONFIG.PCS. This entry is optional. If you do not specify a configuration file, the CONFIG.PCS file is used.

When the STARTRTR program is run, it determines if the router is active or inactive.

- If the router is active (started), the STARTRTR program processes the identifiers in the configuration file that are appropriate for the router's current state.
- If the router is inactive, the STARTRTR program searches the CONFIG.PCS file or an alternative configuration file specified when the STARTRTR command was entered. As it searches the file, it looks for identifier information corresponding to the PC location name, system name, and router type. Depending on the type of router used, the STARTRTR program may also search the file and process any identifiers appropriate for the router's current state. For a description of the additional identifier information, refer to the specific section in this chapter describing your router type.

When the AS/400 router program is started successfully, the personal computer router program ends and becomes a resident part of DOS.

Using Optional Command Line Parameters for the STARTRTR Command

The information in this section applies to all router types.

You can combine the STARTRTR command with the following command line parameters: /D, /R, /B, /P, and /Z. These commands are entered at the DOS prompt. Table 20-1 shows the function of each of the command line parameters.

Table 20-1. Command Line Parameters for the STARTRTR Command

Command	Function
STARTRTR /D	The status of the router is displayed.
STARTRTR /R	The information in the router error log is reset.
STARTRTR /B	The error notify option within the router is turned on or off. See "Using the Error Notify Option" on page 20-21 for additional information about this option.
STARTRTR /P	The password is not verified until the personal computer begins to interact with the AS/400 system.
STARTRTR /Z	The PC Support/400 router displays only the essential messages.

Be sure to include the slash (/). If the command is entered without one, the router program assumes that any nonblank character after STARTRTR is the name of a configuration file.

Note: You cannot combine a configuration file name with a command line parameter. You can use one or the other. Also, you can only specify one command line parameter at a time.

Stopping the Router

The information in this section applies to all router types.

Use the STOPRTR command to stop the router.

To use the STOPRTR command:

1. Make sure there are no active conversations between your personal computer and the AS/400 system. For example, release any assigned shared folders function drives.
2. Enter the following command after the DOS prompt:

```
STOPRTR [/F] [/Z]
```

where /F is an optional parameter you can use to force an end to any active conversations and /Z reduces the number of informational messages.

Note: If you have virtual printers assigned when you enter STOPRTR, it is recommended that you do not force the router to stop. It is possible that there is data remaining in the storage area that has not been sent to the AS/400 printer. To ensure that all of the data is sent to the printer and the printer file is closed, you must use the SETVPRT command to release the virtual printers. Then enter the STOPRTR command again.

Changing Your Personal Computer Information

The information in this section applies to all router types.

You can use the PC Support configuration program to change the PC location name, default user ID, and software interrupt number. You should consider the following points before making any changes.

- The PC location name is specified during the installation process. In most cases, you do not want to change this.
- You can define a default user ID to use with all of the systems you have access to.
- The software interrupt number is optional. Personal computer applications use this number when communicating with the router.

To change your PC information, complete the following steps:

1. Start the PC Support/400 configuration program and display the PC Support Configuration menu. Refer to Chapter 12, "Configuring PC Support with the Configuration Program" for information about displaying this menu.
2. Select the Connection to AS/400 option from the list of functions on the PC Support/400 Configuration menu. The PC to AS/400 Connection (Router) Configuration menu is shown.

3. Use the Arrow keys, Tab key, or mouse to highlight option 2 (PC information) and press the Enter key to select the option. The Work with PC Information window is shown.
4. Enter values for the prompts in the window. The following list describes the prompts and the values you can enter. Press F1 (Help) for additional help information.

- PC location name.

This value is required. In most cases, you will not change this value from that specified when PC Support was installed. This is the name that uniquely identifies your personal computer in the advanced peer-to-peer network (APPN). It is specified when PC Support is installed. If you need to change it, keep these points in mind:

- The name must be 17 characters or less and consist of two parts joined by a period.
- The first part must match the remote network ID (RMTNETID) specified when the Create Controller Description (APPC) (CRTCTLAPPC) Command was run on the AS/400 system by the host PC Support configuration program. If you change this part to anything other than APPN, you must also change the RMTNETID.
- The second part is the name of your personal computer. It must match the remote control point name (RMTCPNAME) on the APPC controller description for your personal computer. This was specified when the CRTCTLAPPC command was run on the AS/400 system by the host PC Support configuration program.
- Each part must be 8 characters or less and start with a letter, the pound sign (#), the at sign (@), or the dollar sign (\$).
- Do not put any blank spaces in the name.

- Common user ID.

This prompt is optional. If you supply a value for this prompt, it must be 1 to 10 characters long.

- Software interrupt number in hexadecimal.

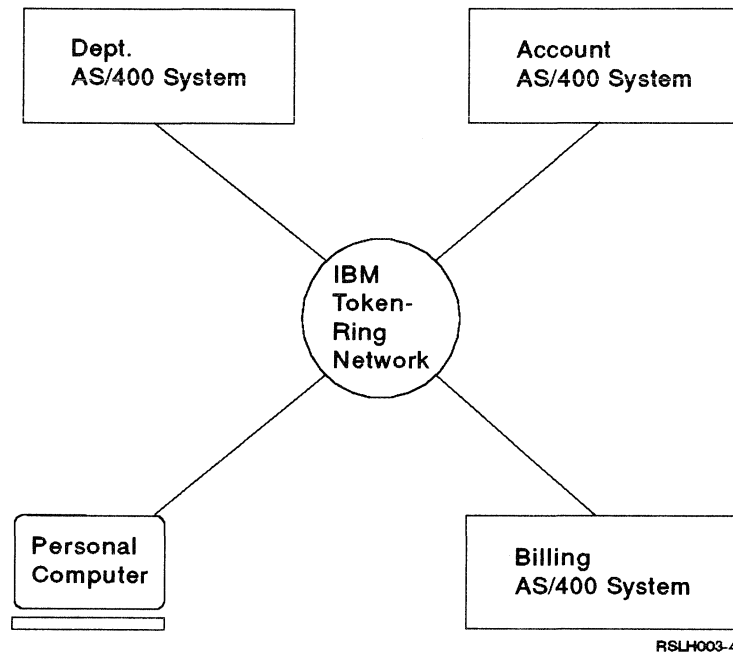
The default for this prompt is 68. This prompt is optional. In most cases, you will not need to change this number. If you do, specify a number between 60 and 68. If you are using expanded memory support (EMS), you should not use 67 for this prompt.

5. Press the Enter key after you have entered the values. The Work with PC Information window is removed.
6. Press F3 (Exit). A window is shown.
7. Select option 1 (Save and exit) to save your changes and exit to the PC Support/400 Configuration menu.
8. Start your personal computer and the router again if the router was already running. Or, use the Remove PC Support Function (RMVPCS) command to remove the router from memory, and then enter the STARTRTR command again.

Using the PC Support LAN Router

Note: The PC Support/400 token-ring router is used for both token-ring and Ethernet connections.

If you use an IBM Token-Ring Network, you have the ability to attach more than one device to the network and have all the devices on the network communicate. On a single token-ring network, you can have more than one personal computer and more than one AS/400 system. When the personal computer communicates with the AS/400 system, it does so directly. It does not need to pass through one system to communicate with another. The following diagram shows how one personal computer connected to a token-ring network can communicate with any of the AS/400 systems on the network.



When you use PC Support with a token-ring network, you are able to communicate with the AS/400 system through the use of the PC Support token-ring router.

Before you can start the personal computer portion of the token-ring router:

- The token-ring network must be installed and functioning.
- The AS/400 APPC program must be ready.
- DOS must be loaded on the personal computer. See the correct DOS manuals to determine how to load DOS.
- The IBM Local Area Network Support (LAN) program must be loaded and the LAN device drivers must be in your CONFIG.SYS file.

Whenever the token-ring router communicates with the token-ring network, requests are made to the local area network support program which then communicates with the token-ring network. Therefore, the local area network support program must be installed before the token-ring router can function.

You can use the PC Support configuration program and the translation table utility without the router being active. However, the router must be active to use any of the other functions of PC Support.

Once the token-ring router has started, a connection is established between your personal computer and the AS/400 system. This connection is called a *link*. Each link to the AS/400 system is made when the STARTRTR command is run. The number of links established and the characteristics of each link is determined by the information in the CONFIG.PCS file. You can have up to six links active and can communicate with up to 32 AS/400 systems at any time.

When PC Support was installed, the basic information needed to establish a link was put in your CONFIG.PCS file. You can operate PC Support using the set up provided, or you can use the PC Support configuration program to add to or change the information in the file. For information on changing your token-ring router, refer to "Setting Up Your Token-Ring Connection" on page 20-11.

Introducing the IBM Token-Ring Network PC Adapter

When the token-ring router is started, it opens the token-ring network PC adapter by sending commands to the local area network support program that communicates directly with the adapter. The token-ring router uses information in the configuration file to determine how the adapter should be set up. The information is in the form of a four-character identifier. Each identifier corresponds to a particular characteristic of the router. The following list shows the configuration file information used to set up the adapter. The actual four-character identifier found in the configuration file follows in parentheses.

- Maximum number of remote links (TRRL)
- Number of additional links (TRAL)
- Number of additional system access point stations, or SAPS (TRAS)
- Maximum frame size (TRMF)

The token-ring network PC adapter can be used by programs other than PC Support. If the adapter has already been opened, the token-ring router tries to use the adapter in its present setup. This keeps the adapter compatible with other programs that may use the token-ring network. The token-ring router does not open the adapter again. This means that any additional links (TRAL) and additional SAPS (TRAS) in the configuration file do not take effect.

If the adapter is already open and you want the TRAL and TRAS identifiers to be used by the token-ring router, start your personal computer and the token-ring router again, making sure that the token-ring router is the program that opens the token-ring network PC adapter.

Note: Stopping and starting the router with the STOPRTR and STARTRTR commands does not cause the TRAL and TRAS identifiers to take effect. When the router is stopped by the STOPRTR command, the adapter remains in an open condition; therefore, the TRAL and the TRAS configuration file identifiers do not take effect if the router is started again.

Improving Performance

Located on the token-ring network PC adapter is an adapter-shared memory that is used for communications between the personal computer and the adapter. The adapter-shared memory is also used for communications between the adapter and the token-ring network itself. The amount of adapter-shared memory remains fixed. The token-ring router supports the token-ring network PC adapter cards that have 16KB of adapter-shared memory.

The adapter-shared memory is divided into two areas. The first area is used to store pertinent token-ring network information. The second area is used to hold

data that is sent to and received from the token-ring network. When the token-ring network PC adapter is set up (opened), the size of these areas is defined. By keeping the area that is used to store token-ring network information small, the area that is used for sending and receiving data is large and the net result is the ability to send and receive more data. Therefore, you should experience an increase in performance by keeping the data send and receive area large and the token-ring network information area small.

The same configuration file information used to open and set up the adapter is used to affect the size of the adapter-shared memory. By changing the identifier for the maximum number of remote links (TRRL), the number of additional links (TRAL), and the number of additional SAPs (TRAS), you may improve your performance.

The default values provided should give you the best performance of the token-ring router. If you increase the values, you may experience a decrease in performance. If you do need to change the values, keep them as small as possible. You can use the PC Support configuration program to change these values. Refer to "Setting Up Your Token-Ring Connection" on page 20-11 for instructions.

Increasing the maximum frame size (TRMF) can improve the performance for 16MB local area networks (LANs). The 16MB LAN environment allows 4K and 8K frame sizes. The large frame sizes require additional PC memory to run.

Changing the Adapter-Shared Memory Address

When the token-ring network PC adapter is started, the personal computer storage that is used to define the adapter-shared memory area may be specified in terms of a segment address. The token-ring router uses the default value for this segment address. If this default area in personal computer storage is already being used, there is a parameter on the command to start the local area network support program that allows you to change the default adapter-shared memory segment address. For the current default values and installation instructions for the token-ring adapter, refer to the *IBM Local Area Network Support Program User's Guide*.

Attaching to More Than One System

If you need to establish connections to more than one AS/400 system, use the PC Support configuration program to add additional links to your CONFIG.PCS file. The configuration program adds links to the CONFIG.PCS file in the form of a token-ring link identifier (TRLI) entry. The links are defined by each TRLI entry in the CONFIG.PCS file.

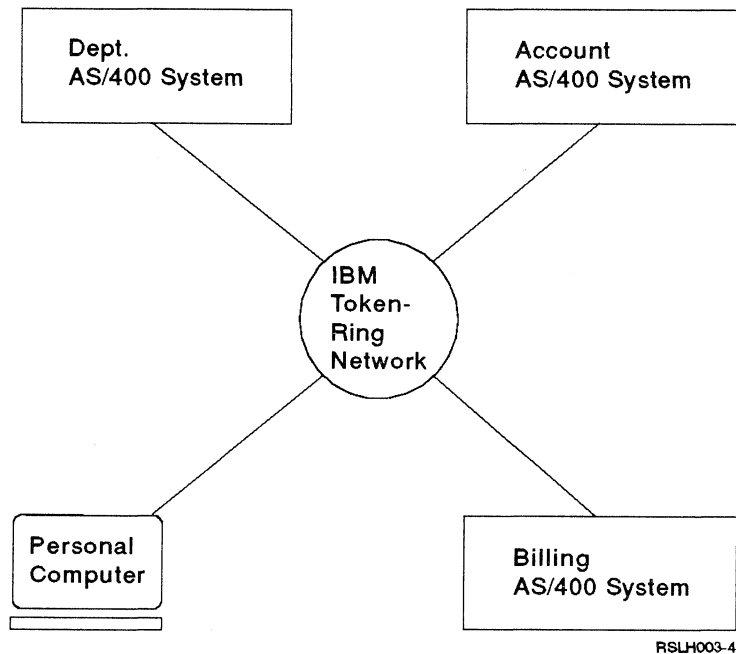
When you add a link using the configuration program, each TRLI entry contains the name of the link you want established and the adapter address of the remote system you want to connect to. It can also contain optional information for controlling the response time, acknowledgement time, inactivity time, and window count. You can use the default values provided or you can change them. For instructions on changing your TRLI entries, refer to "Setting Up Your Token-Ring System Information" on page 20-13. For information on the configuration program, refer to Chapter 12, "Configuring PC Support with the Configuration Program."

When the STARTRTR command is run, each TRLI entry is processed sequentially. The success or failure of each link connection is shown on the display. As one link is successfully established, the next link is attempted.

For example, you want to start a link with three separate AS/400 systems every time you start the token-ring router. You must know the adapter address of each of these systems. (The token-ring network adapter address of a particular AS/400 system may be obtained from the operator for the system.)

For our example, assume that the three systems you are attaching to are:

- System 1: This is your own department's system. It is the one you use most often from day to day. The adapter address of this system is 1000A7001234.
- System 2: This is the accounting department's system. Periodically throughout the day, you need to get files from this system using the PC Support transfer function. The adapter address of this system is 1000A7002001.
- System 3: This is the billing department's system. Periodically throughout the day, you need to transfer files to this system using the PC Support transfer function. The adapter address of this system is 1000A7003579.



To attach to all three systems using one STARTRTR command, you would use the PC Support configuration program to add each link, specifying the link name and system address for each one. The configuration program would place the following TRLI information in your CONFIG.PCS file:

```
TRLI DEPT,1000A7001234
TRLI ACCOUNT,1000A7002001
TRLI BILLING,1000A7003579
```

Note: The first parameter on the TRLI entry is the link name. It is best to give the link a name which you are familiar with and which uniquely identifies the system being attached. The link names you choose should match the local location name (LCLLOCNAME) on the target AS/400 system. For our example, we are attaching to our department's system, the accounting

department's system, and the billing department's system. Thus, DEPT, ACCOUNT, and BILLING are good link names.

With these entries in the CONFIG.PCS file, the STARTRTR command processes each entry one at a time. As each entry is processed, an attempt is made to communicate to the system with the specified adapter address.

The first link started (in this example, the department system) is always the default link. This means that all the virtual print and transfer function requests are directed to this system. Because this is the system you use most often throughout the day, it is important that its TRLI entry be the first in the configuration file.

Starting Additional Links

Perhaps there is an AS/400 system attached to your token-ring network that you access infrequently, perhaps weekly or monthly, or as needed. To access the system, you would have to start a new link to it in addition to the links already active.

To do this, you need to create an alternative router configuration file with the correct token-ring link identifier (TRLI) entry to start a link with that system, and then run the STARTRTR command with that configuration file specified as a parameter. You can create the alternative configuration file using the PC Support configuration file. Just change the configuration file name in your working set and follow the standard instructions for adding links. Refer to "Using the PC Support Configuration Menu" on page 12-3 for instructions on changing your working set and to "Setting Up Your Token-Ring System Information" on page 20-13 for instructions on adding links.

Assume that you already have active links to your department's system, the accounting department's system, and the billing department's system. Now, you have a need to use the high-speed printer that is attached to the shipping department's AS/400 system.

To do this, you specify a different configuration file in your working set, SHIPPING.PCS, and then add a link with a link name of SHIPPING and an adapter address of 1000A5004152. The configuration program would add the following information to the SHIPPING.PCS configuration file.

```
TRLI SHIPPING,1000A5004152  
RTDN SHIPPING
```

Now, when you enter the following command:

```
STARTRTR SHIPPING.PCS
```

the router interprets this as a request to start an additional link and prompts you for your user ID and password for this system.

Because there is also a router default name (RTDN) entry in this file (the RTDN entry is optional), the router also makes SHIPPING the default link so that it is immediately usable to the virtual printer function. Without the RTDN entry, the default link does not change and you would have had to change it in a separate step.

Note: If you want, you can use this method to start all of your links separately instead of placing more than one TRLI identifier in one configuration file.

To do this, enter the STARTRTR command with the name of the configuration file.

Releasing a Link

When you are through using the services of a particular AS/400 system and want to end communications to that AS/400 system to free up resources on the network and on the AS/400 system, or you need to stop a link because you want to start a new link but already have the maximum of six links active, you can release the link to one AS/400 system without affecting the other links you currently have active.

To do so, you must first use the configuration program to set up a configuration file with a token-ring link identifier (TRLI) entry for the link you want released. When you set up the TRLI entry, you can specify an action to be performed on the link. Specify the Release action to release a link. For more information, refer to "Setting Up Your Token-Ring System Information" on page 20-13.

For example, in the previous section, an additional link was started with the shipping department's AS/400 system to use one of its printers. When you are done using this printer, you may want to release any virtual printers you have assigned to it and then stop the link.

To stop the link, you can create a router configuration file by specifying the name SHIPPING.STP as the configuration file name in the working set. Then, complete the steps for adding a link, being sure to specify the Release action. When you are finished, the information in the SHIPPING.STP file would look like this:

```
TRLI SHIPPING
```

Then, when you run the following command:

```
STARTRTR SHIPPING.STP
```

the router interprets this as a request to stop the link it has with the shipping department's AS/400 system. If this were also the default link, the router would search its link table for the first active link. In this case, that is the DEPT link. DEPT then becomes the new default link.

Note: STARTRTR can be used to stop individual active links. STOPRTR on the other hand is used to stop all active links and to make the router that is resident in storage inactive. STOPRTR should be run before restarting or powering off your personal computer.

Setting Up Your Token-Ring Connection

You can use the configuration program to change the set up of your token-ring connection. To do so, follow these steps:

1. Start the PC Support/400 configuration program and display the PC Support/400 Configuration menu. Refer to Chapter 12, "Configuring PC Support with the Configuration Program" for information on displaying this menu.
2. Select PC to AS/400 connection (Router) from the list of functions on the PC Support/400 Configuration menu. The PC to AS/400 Connection (Router) Configuration menu is shown. This menu shows the current set up of your router configuration including:
 - Connection type

- PC location name
 - Link names and their corresponding system names
3. Select option 1 (PC to AS/400 connection information). The Work with PC to AS/400 Connection Information window is shown.
 4. Supply values for the appropriate prompts in the window. The following list describes the prompts and the values you can supply.
 - PC to AS/400 connection type

Since you are using the token-ring router, you should select option 2 (Local area network). Move the cursor to the option and press the spacebar to select it. Press the Tab key to move to the next prompt.
 - IBM Token-Ring network adapter

This prompt does not have a default. When you have more than one adapter installed in your personal computer, you must tell the router which adapter to use. The primary adapter uses 0 as its adapter number. The secondary adapter uses 1 as its number.

Use the Arrow keys to highlight the adapter you want to use. Then press the spacebar to select your choice. Press the Tab key to move to the next prompt.
 - IBM Token-Ring Source SAP in hex

This prompt is optional. The default for this prompt is 4. It designates the service access point (SAP) value used by the token-ring router in your personal computer. You should specify the hexadecimal code for the value you want to use. The value must be divisible by four.
 - IBM Token-Ring maximum number of links

This prompt is optional. If the token-ring adapter is already opened, this value is ignored. The default for this prompt is 3. Specify the maximum number of systems you want to communicate with at one time. Each link takes up personal computer and token-ring network adapter resources. Therefore, you should not specify more links than you need.
 - IBM Token-Ring number of additional links

This prompt is optional. If the token-ring adapter is already open, this value is ignored. The default for this prompt is 0. If you want to reserve links for other PC programs using the adapter, then you should supply a value. The sum of this value and the value specified in the previous prompt cannot exceed 32.
 - IBM Token-Ring number of additional SAP stations

This prompt is optional. If the token-ring adapter is already open, this value is ignored. The default for this prompt is 0. Enter a value to specify the number of additional service access points (SAPs) stations you want reserved, in addition to the one needed by the router, when the token-ring network adapter is started and opened. If you plan to have other PC programs using the adapter, you should specify a value for this prompt.
 - Maximum data hold buffer frame size

The default for this prompt is 2048. This value specifies the maximum frame size allowed on the token-ring for personal computer to AS/400 system communications. The default configuration for a 4MB token-ring

LAN is 2K frames. A 16MB token-ring LAN can use 4K or 8K frames. The larger frame sizes require additional PC memory.

5. Press the Enter key when you have entered values for the prompts you want to change. The window is removed and you are returned to the PC to AS/400 Connection (Router) Configuration menu.
6. If you are setting up your token-ring information for the first time, select option 3 (System information) on the PC to AS/400 Connection (Router) Configuration menu and define the link names and system names you want to use. For instructions, refer to "Setting Up Your Token-Ring System Information."
7. If you are only changing the characteristics of your router connection and already have your link names and systems defined, exit the PC Support configuration program. To exit, press F3 (Exit). A window is shown.
8. Select option 1 (Save and exit) to save your changes and exit to the PC Support/400 Configuration menu.

Setting Up Your Token-Ring System Information

You can use the configuration program to add, change, or delete a link name, add a system name, or designate a system as your default system. If you want to change your AS/400 system information using the configuration program, follow these steps:

1. Start the configuration program and display the PC Support/400 Configuration menu. Refer to Chapter 12, "Configuring PC Support with the Configuration Program" for information about displaying this menu.
2. Select the *Connection to AS/400* option from the list of functions on the PC Support/400 Configuration menu. The PC to AS/400 Connection (Router) Configuration menu is shown.
3. Use the Arrow keys or the Tab key to highlight option 3 (System information). The Work with System Information menu is shown. The menu shows your current router configuration. If you have not yet defined your link or system names, the menu shows that no systems are configured.
4. If you want to add a link, press F10 (Actions) on the Work with System Information menu.
5. Select Options from the action bar. A window showing several options is displayed.
6. To add a link, select option 2 (Add link). The Add link window is shown.
 - Enter values for the prompts in the window. The following list describes the prompts and the values you can supply for each. The actual identifier in the configuration file is shown in parentheses. Press F1 (Help) for additional information when necessary.
 - Link name

This is a required value. It is best to give the link a name which you are familiar with and one which uniquely identifies the system being attached. The name you give must match the Local Location Name on the target AS/400 system. For example, if you are connecting to a system containing your accounts receivable, you could name the link BILLING.
 - System address

This is a required value. Type the address of the token-ring network adapter. The address consists of 12 hexadecimal characters. If you do not know the address, see your AS/400 system administrator.

– Destination SAP

This is an optional prompt. It specifies the service access point (SAP) value equal to the AS/400 system service access point (SSAP) value. Change this value only if the AS/400 system has changed its SSAP value. This number cannot be zero. It must be a hexadecimal number from 04 to FC and be divisible by four.

– User ID

This prompt is optional. Use the same user identification (ID) you would use to sign on a work station. The value can be from 1 to 10 characters. If you choose not to specify a value, the router uses the default user ID.

– Transmit Window Count (MAXOUT)

This prompt is optional. It specifies the maximum number of sequentially numbered blocks of data (I-frames) that may be outstanding at any one time. Enter a value from 0 to 127. If you do not specify a value, the adapter default value is used.

– Receive Window Count (MAXIN)

This prompt is optional. It specifies the maximum number of sequentially numbered blocks of data (I-frames) that may be received prior to an acknowledgement. Enter a value from 0 to 127. If you do not enter a value, the adapter default value is used.

– Response Timer (TIMERT1)

This is an optional value. It controls the length of time the sending station waits after sending a block of data (I-frame) for a response to the frame. This value is used by the local area network.

– Receive Acknowledgment Timer (TIMER2)

This prompt is optional. This timer starts when a block of data is received and stops when an acknowledgement is sent. This timer is used by the local area network.

– Inactivity Timer (TIMERT1)

This prompt is optional. The inactivity timer runs when the response timer is not running. The inactivity timer is used by the local area network.

– LAN Connection Timer (CT1)

This prompt is optional. This timer controls the length of time (in half-second increments) the router waits during a connection attempt before trying to resend a connection frame when no response was received for the previous connection frame. Enter a value from 1 to 255. The following are the default values for each connection phase:

Phase	Default
WaitForLocalTestResponse	6
WaitForBroadcastTestResponse	12
WaitForXIDResponse	18
WaitForSABME	18

If you specify a Connection Timer value, this value is used for all of the connection phases.

– LAN Connection Retry (CN2)

This prompt is optional. This value specifies the number of times the router should try to contact a remote system when that system does not respond to the router's previous attempts to connect. It is used in conjunction with the Connection Timer (CT1) value. Enter a value from 0 to 255. If you do not specify a value, 0 is used for all connection phases except WaitForBroadcastTestResponse, where 2 is used. If you specify a Connection Retry value, this value is used for all of the connection phases.

– Frame Retry (N2)

This prompt is optional. This value specifies the number of times the router tries to resend a sequentially numbered block of data (I-frame) when the previous attempt to send the data failed. This value is used in conjunction with the Response Timer. Enter a value from 0 to 255. If you do not specify a value, 0 will be used.

The Frame Retry value is used by the local area network. Do not change this value unless you have referred to the *Communications: Local Area Network Guide*, SC41-0004.

– Block Number/ID Number

This prompt is optional. This value specifies the SNA Block Number/ID Number portion of the data link control exchange identifier (DLC XID). This value is not typically used to connect to AS/400 systems because the router fills this field with hexadecimal zeroes telling the AS/400 system to ignore the field. However, the AS/400 system or a different remote system may be configured to require a certain value in this field. If that is the case, you cannot connect to the remote system unless you specify the correct value. This value corresponds to the *Exchange identifier* field in the Create Controller Description (APPC) (CRTCTLAPPC) command on the AS/400 system. A valid entry is 8 hexadecimal characters.

- Press the Enter key after you have completed the appropriate prompts. The Add Link window is removed.
7. To change your link information, highlight the link you want to change using the Arrow keys and then press F10 (Actions).
 - Select Options from the action bar. A window with several options is displayed.
 - Select option 1 (Change link) and press the Enter key. The Change link window is shown.
 - Change the values for the appropriate prompts shown in the window. Refer to the descriptions above.
 - When you have completed the prompts, press the Enter key. The Change link window is removed.
 8. To delete a link, make sure the appropriate link is highlighted on the Work with System Information window.
 - Press F10 (Actions) and select Options from the action bar. A window showing several options is displayed.

- Select option 3 (Delete link). The Delete link window is shown.
 - If the window contains the name of the link you want to delete, press the Enter key. If not, press Esc (Cancel). The Delete link window is removed.
9. To add a system, make sure the appropriate link is highlighted on the Work with System Information menu.
- Press F10 (Actions) on the Work with System Information menu.
 - Select Options from the action bar. The Add system window is shown.
 - Enter values for the prompts in the window. The following list describes the prompts and the values you can supply for each.
 - Link name

The link name highlighted in the Work with System Information menu is shown for this parameter. If this is not the link name you want to use, press the Esc key to remove the Add system window, and then highlight the correct link name on the System Information menu.
 - System name

Type the name of the system you want added to the link.
 - User ID

This parameter is optional. If you do not specify a user ID, your default user ID is used. If you do specify a value for this parameter, it should be from 1 to 8 characters long.
 - To designate a system as your default system, make sure the system name (not a link name) is highlighted on the display. Then press F10 (Actions) and select Options from the action bar. A window is shown.
 - Use the Arrow keys to highlight option 4 (Assign as default system).
 - Press the Enter key. When you press the Enter key, the window is removed and the word (default) is shown after the system name on the display.
10. To save the changes you have made, press F10 (Actions) and select Exit from the action bar. A window is shown.
11. Select option 1 (Save and exit) from the window to save your changes and exit to the PC Support/400 Configuration menu.

Changing the PC Support Token-Ring Router

You can change the way the token-ring router operates so you can:

- Use the message function on multiple systems
- Use the shared folders function on more than one system

Using the Message Function on Multiple Systems

You can use the STARTRTR command to use the message function on more than one system. All of the message function commands run on the default link that has been set up by the router.

The message function allows you to specify the system to send and to receive messages on with an MDEF entry in the configuration file. Refer to the Chapter 24, "Configuration Identifiers and Work Sheets," for the format of this entry.

For example, assume that you have started the following links:

```
TRLI DEPT,1000A7001234  
TRLI ACCOUNT,1000A7002001  
TRLI BILLING,1000A7003579
```

Your default link is DEPT. You can start the message function on the BILLING link by entering the following command:

```
STARTMSG [configuration file]
```

where:

configuration file

is the name of a configuration file that contains the entry:

```
MDEF BILLING
```

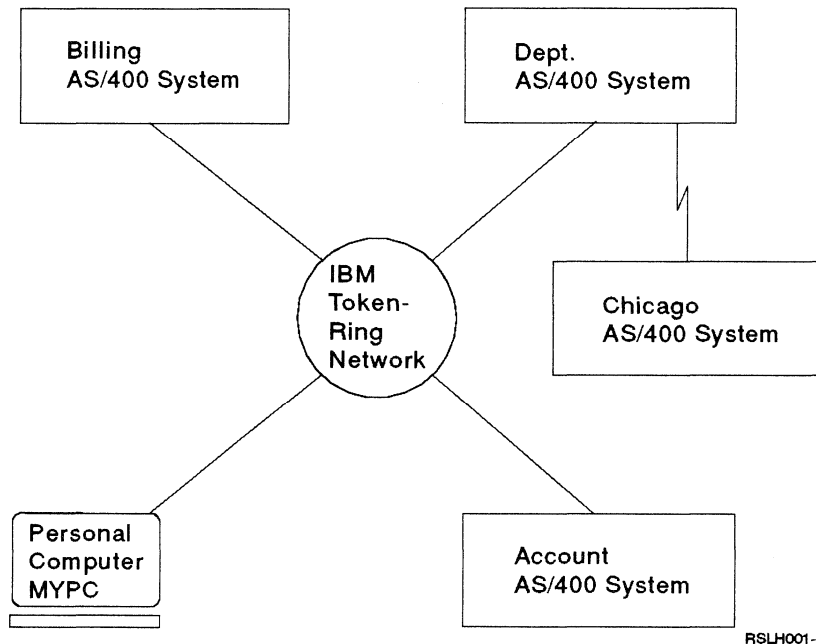
You can also temporarily send and receive messages using the MSG command and changing the system name.

Using the Shared Folders Function on More Than One System

The shared folders function supplies a value on the FSPC ASSIGN command that allows you to directly access a folder on any of the AS/400 systems that you have an active link to without having to change your default link. The format of this command is:

```
FSPC ASSIGN d: //BILLING
```

where d: is the personal computer drive letter to be assigned to the system name BILLING, and BILLING is the link-name from the TRLI entry in the configuration file.



For example, assume that you have started a link with the following TRLI identifiers:

```
TRLI DEPT,1000A7001234
TRLI ACCOUNT,1000A7002001
TRLI BILLING,1000A7003579
```

Your default link is DEPT. You can assign a shared folders drive (d:) to folder ACCTFLDR on the ACCOUNT link by entering the following command:

```
FSPC ASSIGN d: ACCTFLDR //ACCOUNT
```

or you can assign a shared folder drive (d:) to folder DEPTFLDR on the DEPT link by entering one of the following commands:

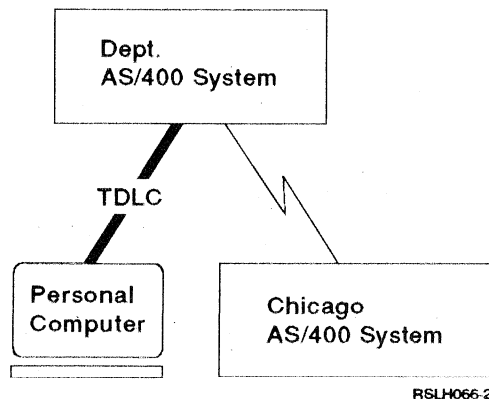
```
FSPC ASSIGN d: DEPTFLDR
```

or

```
FSPC ASSIGN d: DEPTFLDR //DEPT
```

Using the PC Support Twinaxial (TDLC) Router

The PC Support Twinaxial (TDLC) Router is also known as the 5250 emulation router. When you use the 5250 emulation router, your personal computer establishes one direct link to a primary AS/400 system through a twinaxial line. If you want to communicate with any other AS/400 system, you must pass through your primary system to do so. The following diagram shows how this works.



In order for you to use the 5250 emulation router, the 5250 twinaxial adapter handlers must be installed. The PC Support installation diskettes supplied the programs for the adapter handlers. The programs are:

- E5250AH.COM, which is used if your personal computer has an enhanced 5250 emulation adapter.
- WSEAH.EXE, which is used if your Personal System/2 has a work station emulation adapter.

In most cases, the program you need was installed when PC Support was installed. You cannot use the 5250 router unless the adapter handler is loaded.

The E5250AH adapter handler is started as follows:

```
E5250AH [/Li] [/Inn] [/Mm]
```

where:

/Li Sets the interrupt level. The value for *i* can be a decimal number from 2 to 7. Use this option only if interrupt level 5 cannot be used by the enhanced 5250 emulation adapter.

/Inn

Sets the I/O port address range. The value for *nn* is a hexadecimal number from 40 to 7F that corresponds to the switch settings on the adapter. See "Using the Enhanced 5250 Emulation Adapter" on page 1-11 for more information about this mapping. Use this option only if port 71 cannot be used by the enhanced 5250 emulation adapter.

/Mm

Sets the memory page for the adapter card. The value for *m* is a single hexadecimal digit from A to F. Use this option if the memory addresses used in the enhanced 5250 emulation adapter conflict with some other adapter on your personal computer. The addresses used are specified as follows:

A specifies memory address 'AC00'

B specifies memory address 'BC00'

C specifies memory address 'CC00'

D specifies memory address 'DC00'

E specifies memory address 'EC00'

F specifies memory address 'FC00'

When PC Support was installed, the basic information necessary for starting the 5250 emulation router was added to your CONFIG.PCS file. You can operate PC Support using the information provided or you can change the information using the configuration program.

Setting Up Your TDLC Router Connection

You can use the configuration program to set up your twinaxial data link control (TDL) router connection. To do so, you must start the configuration program and display the PC Support/400 Configuration menu. Refer to Chapter 12, "Configuring PC Support with the Configuration Program" for information on displaying this menu.

When you have displayed the PC Support/400 Configuration menu, follow these steps to configure the TDLC router connection.

1. Select the Connection to AS/400 option from the list of functions on the PC Support/400 Configuration menu. The PC to AS/400 Connection (Router) Configuration menu is shown.
2. Press the Enter key to select option 1 (PC to AS/400 connection information). The Work with PC to AS/400 Connection Information window is shown.
3. Use the Arrow keys to highlight option 1 (Twinax) and then press the spacebar to select the option.
4. Press the Enter key. The Work with PC to AS/400 Connection Information window is removed.
5. Press F3 (Exit). A window is shown.
6. Select option 1 (Save and exit) to save your changes and exit to the PC Support/400 Configuration menu.

Setting Up Your TDLC Router System Information

You can use the PC Support configuration program to add a link, change a link, delete a link, add or designate a system as your default system.

To do any of these actions, follow these steps:

1. Display the PC Support/400 Configuration Menu. Refer to Chapter 12, "Configuring PC Support with the Configuration Program" for instructions.
2. Select the Connection to AS/400 option from the list of options on the menu. The PC to AS/400 Connection (Router) Configuration menu is shown. It shows your current configuration information.
3. Select option 3 (System information). The Work With System Information menu is shown.
4. Press F10 (Actions) and select the option Change from the action bar.
5. To add a link, select option 2 (Add link). The Add link window is shown.

Note: If one link has already been defined, you will not be able to select this option.

- Enter values for the following prompts:

- Link name

This is a required value. It is best to give the link a name which you are familiar with and one which uniquely identifies the system being attached. The link name you choose should match the LCLLOCNAME on the target AS/400 system. For example, if you are connecting to a system containing your accounts receivable, you could name the link BILLING.

- Work station address

This prompt is required. It specifies the work station address the router is to use when communicating with the AS/400 system. Enter a value from 0 to 6. The entry must be unique on the twinaxial port where the personal computer is connected.

- User ID

This prompt is optional. Specify the same user ID you would use to sign on a work station. The value can be from 1 to 10 characters long. If you do not enter a value, the common user ID is used.

- Press the Enter key after you have entered values for the prompts. The Add link window is removed.

6. To change a link, make sure the link you want to change is highlighted. Then, press F10 (Actions) and select the option Change from the action bar. A window is shown.
 - Select option 1 (Change link). The Change link window is shown.
 - Enter the new values for Link name, Work station address, and User ID. The descriptions for the prompts are listed above.
7. To delete a link, make sure the link you want to delete is highlighted. Then, press F10 (Actions) and select the option Change from the action bar. A window is shown.
 - Select option 3 (Delete link). A window is shown with the name of the link you are about to delete.

- Press the Enter key if the link name is correct. The window is removed and the link is deleted.
8. To add a system name to a link, make sure the link you want to add the system to is highlighted. Press F10 (Actions) and select the option Change from the action bar. A window is shown.
 - Select option 4 (Add system). The Add system window is shown.
 - Enter values for the following prompts:
 - System name
This prompt is required. Enter the name of the system you want to connect to.
 - User ID
This value is optional. Use the same user ID you use to sign on to a work station.
 - Press F9 (Additional Parameters) and select option 1 (Assign) or option 2 (Release). The default is to have the system assigned.
 - When you have finished entering values for the prompts, press the Enter key. The Add system window is removed and the new system name is shown under the link name.
 9. To designate a system as your default system, make sure the system name (not link name) is highlighted on the display. Then press F10 (Actions) and select options from the action bar. A window is shown.
 - Use the Arrow keys to highlight option 4 (Assign as default system).
 - Press the Enter key. When you press the Enter key, the window is removed and the word (default) is shown after the system name on the display.
 10. Press F3 (Exit). A window is shown.
 11. Select option 1 (Exit to main router screen).
 12. Press F3 (Exit) again. A window is shown.
 13. Select option 1 (Save and exit) to save the changes you have made. You are returned to the PC Support Configuration Menu.

Using the Error Notify Option

If the line is excessively noisy (parity errors) on a local twinaxial work station, you can use the error notify option to display this information and use it to make the necessary corrections, or you can try replacing or rerouting the cabling.

Permanent errors detected in the twinaxial environment are:

- Link lost
- Internal error
- Configuration error

When an error occurs on the line and the link goes down, communications to the host system is stopped. You can use the STARTRTR /d command to display the router status. If there are errors, they are displayed. In addition to displaying the logical and physical link information, the line errors encountered by the router are also displayed.

For example, if you enter the STARTRTR command with /D, the following information may appear on your display:

```
c:\PCS=>starttrtr /d

AS/400 PC Support
IBM 5250 Emulation Router
(C) Copyright IBM Corp. 1984, 1990. All rights reserved.
Release 3.0 Level 00

Default remote system name: RCH68638
Link name      System names
RCH68638      RCH68638

Error Notify OFF
13:40:50  15:20:25

Counters:
Parity

121

Event log:
Time              Event
01:45:55          Link Lost 2000
```

The error notify option is available to notify you of errors that may occur while you are using the system. If the error notify option is on, the router notifies you immediately of an error by sounding an alarm on your personal computer for a short period of time. You can turn the error notify option on or off by entering the STARTRTR command with the /B parameter. To do so, enter the following command at the DOS prompt:

```
STARTRTR /B
```

Using the SDLC Router

The synchronous data link control (SDLC) router uses a communications protocol that controls the transmission of data between two remotely connected computers. The sending and receiving stations are synchronized with each other so that strings of characters can be sent together rather than sending individual characters separately. The link between the two computers in an SDLC setup is usually accomplished through a telephone line or another type of line specially designed for data transmission.

Setting Up Your SDLC Router Connection

You can use the configuration program to set up your SDLC router connection. When you do, all the information you supply about the connection is added for you to your CONFIG.PCS file or to an alternative configuration file.

To configure your SDLC connection using the configuration program, complete the following steps.

1. Start the configuration program and display the PC Support/400 Configuration menu. Refer to Chapter 12, "Configuring PC Support with the Configuration Program" for information on displaying this menu.

2. Select the Connection to AS/400 option from the list of functions on the PC Support/400 Configuration menu. The PC to AS/400 Connection (Router) Configuration menu is shown.
3. Press the Enter key to select option 1 (PC to AS/400 connection information). The Work with PC to AS/400 Connection Configuration window is shown.
4. Use the Arrow keys to highlight option 3 (SDLC) and press the spacebar to select the option.
5. Supply values for the prompts displayed in the window. The following list describes the prompts and the values you can supply for each. The identifier associated with each prompt is shown in parentheses. Press F1 (Help) for additional help information when needed.

- Line type (SDLT)

- Select option 1 (Nonswitched point-to-point) if you are connecting your personal computer to a leased line from a telephone company, or if you are connecting your personal computer to a modem eliminator.
- Select option 2 (Switched point-to-point) if you are connecting your personal computer to a modem that is connected to a telephone line.
- Select option 3 (Multiple point network) if you are connecting your personal computer to a line that has multiple work stations attached to that line.

- Auto-dial command and number (SWAD)

The field is displayed only if you selected switched point-to-point as the line type.

Indicate the auto-dial command and the number you want dialed

This value tells the router that the modem supports the automatic dialing feature. When the router tries to connect to the AS/400 system, the automatic dial command and the number are passed to the modem, and then the modem dials the number.

For example, using the Call Request with Phone Number command (CRN) and the telephone number 1-987-654-3210, your entry would appear this way:

```
CRN 1-987-654-3210
```

- Auto-Dial response (SWAR)

The field is displayed only if you selected switched point-to-point as the line type.

This prompt is optional. This is the response the modem returns when a successful connection to the AS/400 system has occurred. Maximum value for this prompt is 20 characters.

- Line facility (SDLF)

The default for this value is option 1 (Half duplex). Half duplex indicates that the line or modem cannot be used to transmit data in both directions at the same time. Full duplex indicates that the line or modem can transmit data in both directions at the same time. Select option 2 (Full duplex) if your modem is capable of duplex operation and if it supports constant request-to-send.

- Modem connection method (SDCM)

The default for this prompt is option 1 (DTR). Modems for the United States and Canada usually conform to the data terminal ready (DTR) connection method.

- NRZI data encoding (SDDE)

Select option 1 (Yes) if you want NRZI data coding to take place. The value you select for this option must match the value in the AS/400 line description.

- Modem rate (SDMR)

The default for this prompt is option 1 (Full speed). This value specifies the speed at which the line operates if the modem has the rate select feature. Full speed indicates the line operates at 100% of the selected data rate for the modem. Half speed indicates the line operates at 50% of the selected data rate on the modem.

6. Press the Enter key after you have supplied values for the appropriate prompts. The Work with PC to AS/400 Connection Information window is removed.
7. Press F3 (Exit). A window is shown.
8. Select option 1 (Save and exit) from the window to save your changes and exit to the PC Support/400 Configuration menu.

Setting Up Your SDLC Router System Information

You can use the PC Support configuration program to add, change, or delete a link, and to add a system, or designate a system as your default system.

To do any of these actions, follow these steps.

1. Display the PC Support/400 Configuration Menu. Refer to Chapter 12, "Configuring PC Support with the Configuration Program" for instructions.
2. Select the Connection to AS/400 option from the list of options on the menu. The PC to AS/400 Connection (Router) Configuration menu is shown. It shows your current configuration information.
3. Select option 3 (System information). The Work With System Information menu is shown.
4. Press F10 (Actions) and select the option Change from the action bar.
5. To add a link, select option 2 (Add link). The Add link window is shown.

Note: You can define only one link for the SDLC router. If you have already defined a link, you are not able to select this option.

- Enter values for the following prompts:

- Link name

This is a name previously configured on the host system. The link name you choose must be the same name as the default local location name parameter specified on the host system command Display Network Attributes (DSPNETA). The name can be from 1 to 8 characters long, and it must be unique.

- Local station address

Type the SDLC station address by which the personal computer is known to the host system. The address must be between hexadecimal 01 and FE.

- User ID

This prompt is optional. If it is left blank, your default user ID is used. This value can be from 1 to 10 characters long.

- Time-out value

This parameter is optional. It specifies the amount of time the hardware timer is set to each time your personal computer issues a command to the SDLC hardware. If the command is not completed before the hardware timer expires, the attempted connection fails.

Specify a value from 5 to 40 seconds. The default for this prompt is 40 seconds.

- Number of time-outs

This parameter is optional. It specifies the number of times the hardware timer is allowed to expire when your personal computer requests a connection to the AS/400 system. If the maximum number of times is reached before a connection is established, the connection attempt fails.

Values for this parameter can range from 1 to 255 attempts. The default value is 1. If you specify 255 for this parameter and 40 for the Time-out value parameter, the command request is allowed a total of 170 minutes (40 seconds x 255 attempts).

- Connect timer

This parameter is optional. It specifies the amount of time the router waits for a connection to the AS/400 system to be completed before the router turns off the data terminal ready signal (DTR).

Specify a value from 5 to 255 seconds. If you specify 255 seconds, the router waits for contact from the host system until a connection has been established.

- Block Number/ID Number

This prompt is optional. This value specifies the SNA Block Number/ID Number portion of the data link control exchange identifier (DLC XID). This value is not typically used to connect to AS/400 systems because the router fills this field with hexadecimal zeroes telling the AS/400 system to ignore the field. However, the AS/400 system or a different remote system may be configured to require a certain value in this field. If that is the case, you cannot connect to the remote system unless you specify the correct value. This value corresponds to the *Exchange identifier* field in the Create Controller Description (APPC) (CRTCTLAPPC) command on the AS/400 system. A valid entry is 8 hexadecimal characters.

- Press the Enter key after you have entered values for the prompts. The Add link window is removed.

6. To change a link, use the Arrow keys to highlight the link name. Then, press F10 (Actions) and select the option Change from the action bar. A window is shown.

- Select option 1 (Change link). The Change link window is shown.
- Enter the new values for the prompts Link name, Local station address, User ID, Time-out value, Number of time-outs, and Connect timer. The

descriptions for the prompts are listed under the steps for adding a link. You can also press F1 (Help) for online information about the prompts.

7. To delete a link, make sure the link name (not a system name) you want to delete is highlighted. Then, press F10 (Actions) and select the option Change from the action bar. A window is shown.
 - Select option 3 (Delete link). A window is shown with the name of the link you are about to delete.
 - Press the Enter key if the name is correct. The window is removed and the link is deleted.
8. To add a system name to a link, make sure the link you want to add the system to is highlighted. Press F10 (Actions) and select the option Change from the action bar. A window is shown.
 - Select option 4 (Add system). The Add system window is shown.
 - Enter values for the following prompts:
 - System name
This prompt is required. Enter the name of the system you want to connect to.
 - User ID
This value is optional. Use the same user ID you use to sign on to a work station.
 - Press F9 (Additional Parameters) and select option 1 (Assign) or option 2 (Release). The default is to have the system assigned.
 - Press the Enter key after you have finished entering values for the prompts. The Add system window is removed and the new system name is shown under the link name.
9. To designate a system as your default system, make sure the system name (not a link name) is highlighted on the display. Then press F10 (Actions) and select Options from the action bar. A window is shown.
 - Use the Arrow keys to highlight option 4 (Assign as default system).
 - Press the Enter key. When you press the Enter key, the window is removed and the word (default) is shown after the system name on the display.
10. Press F3 (Exit). A window is shown.
11. Select option 1 (Exit to main router screen).
12. Press F3 (Exit) again. A window is shown.
13. Select option 1 (Save and exit) to save the changes you have made. You are returned to the PC Support/400 Configuration Menu.

Connecting with the SDLC Router

The following information explains how the router program establishes a connection to your host system. You can connect with the SDLC router using:

- A manual dial modem
- An automatic dial modem
- An automatic answer modem

Using Manual Dial Modems with the SDLC Router

When the STARTRTR command is started and the router program realizes that you must make a call, it displays the following messages:

```
Place call to host system now
Press the Enter key when the connection is made
or
Press the Esc key to Exit
```

When you see this message, you know that the router has sent a signal called data terminal ready (DTR) to the modem, and you should place your call. Refer to your modem documentation to make the connection. When the modem connection to the AS/400 modem is complete, press the Enter key to inform the router that you have made the connection.

If you cannot make the connection, you can press the Esc key. The router turns off the DTR signal and you can try to make the connection later. If the host modem is not answering the incoming calls, you should call the AS/400 system operator to verify that the communications line you want to use is available and ready (varied on).

Using Automatic Dial Modems with the SDLC Router

If your modem supports V.25 bis automatic dial, you can use the automatic dial commands of the SDLC router. The SDLC router needs to know if your modem supports the automatic dial function.

To use the automatic dial feature of the SDLC router, you should use the PC Support configuration program to specify the automatic dial command and number. See "Setting Up Your SDLC Router Connection" on page 20-22 for more information about the Auto-dial command and number prompt.

Refer to your modem documentation for information about automatic dial commands, unique modem-specific characters, and other specific information.

For example, your modem documentation may state that your modem supports V.25 bis and has a switch that allows the data set ready (DSR) signal to follow the data terminal ready (DTR) signal. Then you can use the automatic dial function of the SDLC router. Also, assume the documentation states that the modem recognizes the string CRN XXXXXXXX as a request to call the telephone number xxxxxxxx. If the telephone number of your AS/400 system is 987-6543, the following entry should appear in the CONFIG.PCS file or an alternative configuration file.

```
SWAD CRN 987-6543
```

When the SDLC router reads this entry, it builds an SDLC frame that conforms to V.25 bis synchronous protocol for automatic dial (SDLC address = hex FF and SDLC control byte = hex 13) and contains as an information field, CRN 987-6543.

The router sends this SDLC frame to the modem and waits for an indication that the call was successful or that the call failed.

If your modem supports V.25 bis, it may give an indication that a connection was successfully established by passing an SDLC frame back to the personal computer. The SDLC router needs to know if your modem provides this function.

For example, your modem documentation may state that when the call is successfully completed, the modem displays a "connected" message. If this is true, then the following entry should be in your CONFIG.PCS file or an alternative configuration file.

```
SWAR CONNECTED
```

Use the PC Support configuration program to specify the automatic dial response you want displayed. See "Setting Up Your SDLC Router Connection" on page 20-22 for more information about the Auto-dial response parameter.

If the SDLC router sees the "connected" message from the modem, it knows the connection was successful.

Identifying Call Failure Indications on an Automatic Dial Modem: Your V.25 bis modem may indicate that the connection was not successful. The router displays any error messages that come back from the modem. You can determine what to do after reviewing the modem documentation.

For example, if you try to use the automatic dial and the modem realizes that the number being dialed is busy, the modem ends the call and passes the string CFIET to the personal computer. The router displays this message:

```
Call to Host failed -- CFIET
```

Your modem documentation identifies CFIET as a call failure indication engaged tone, which means the line was busy. Try the call again later.

Using Automatic Answer Modems with the SDLC Router

The SDLC router is capable of implementing an automatic answer function. To use the auto-answer function, the following conditions must be true:

- Your modem must support automatic answer.
- The APPC controller on the AS/400 system describing your personal computer is configured as a controller with the initial connection of *DIAL.
- The SDLC line type parameter is set up as switched point to point (SWTPP) in the configuration file. See "Setting Up Your SDLC Router Connection" on page 20-22 for more information about the Line type parameter.
- The SDLC connect timer (SDCT) is set at its maximum value (255) in the configuration file.

With the SDLC connect timer specified as the maximum value (255), the STARTRTR program displays the following messages to end waiting for the AS/400 system to connect to the personal computer:

```
Waiting for contact from host.  
Press Esc to stop waiting.
```

If you press the Esc key, the router closes the adapter and drops the DTR signal to the modem.

When the APPC controller is varied on the AS/400 system, the AS/400 system attempts to call the remote personal computer using either the manual dial method or the automatic dial method. The method used depends on the modem used. The personal computer's modem then answers and the connection is completed.

Once the connection is complete, you can run any PC Support application that needs to communicate with the AS/400 system. When the applications have finished running, you should enter the STOPRTR command on your personal computer to end the communications link. Then, the AS/400 system can proceed to dial another remote SDLC-attached personal computer in a similar manner.

Using the Error Notify Option

There are several **temporary** line errors and **permanent** line errors that can occur when using the SDLC or PC Support asynchronous router.

Temporary line errors include:

- **Receive overrun errors:** Occur when the SDLC adapter handler has not had a chance to service a frame that has been received by the SDLC adapter and another frame is being received.
- **Byte framing errors:** Occur when the SDLC hardware detects that the number of bits in the frame just received is not evenly divisible by eight (8).
- **CRC errors:** Occur when the adapter handler has finished receiving an SDLC frame, but there were line hits as the information traveled over the wire. This frame is transmitted again from the AS/400 system.
- **Retransmission errors:** Occur when the work station has to retransmit one or more frames to the AS/400 system.
- **Framing errors:** Occur when a frame is received that is either too large or too small to be considered a valid SDLC frame. It is probably caused by a long period of noise on the telephone line.

Permanent line errors include:

- **DSR errors:** Occur when the data set ready (DSR) signal is not present when the adapter handler expects it to be or the adapter handler had a problem trying to get a DSR signal status from the SDLC hardware.
- **Failure of the SDLC controller chip:** Is a hardware failure that occurs when the SDLC adapter handler failed to correctly load the command parameters on the SDLC adapter's chip.
- **Unknown return code from the hardware errors:** Is a hardware failure that occurs when the transmitter/receiver portion of the chip has returned an undocumented return code upon completion of either a transmit or receive operation.
- **No interrupt failure:** Occurs when the adapter handler tried to service an interrupt when the hardware status indicates that there was not an interrupt to be serviced.
- **Time-out condition:** Occurs when the work station has not received any information from the host system after a period of time equal to the SDLC time out value multiplied by the number of time outs. Either the host system is no longer communicating or the hardware is not functioning.
- **Frame reject condition:** Occurs when an SDLC link error has occurred.
- **Synchronization error:** Occurs when the SDLC router receives an unexpected command from the host system, or when the switched disconnect timer on the AS/400 system runs out. This is a permanent link error.

To display and reset the information kept in the log, use the STARTRTR /r command. When you type this command, the information is displayed, all counters are reset, and the logged information is cleared.

You can also use the STARTRTR /b command to toggle the error notify option within the router.

The error notify option is a feature that sounds an alarm on your personal computer when either a temporary or permanent error is logged.

When the line quality is poor, you can use the STARTRTR /d command to display errors that have occurred. For example, if you entered STARTRTR /d, the following information may appear on your display:

```
c:\PCS=>starttrtr /d

AS/400 PC Support
IBM SDLC Router
(C) Copyright IBM Corp. 1984, 1990. All rights reserved.
Release 3.0 Level 00

Default remote system name: RCH68638
Link name      System names
RCH68638      RCH68638

Error Notify ON
13:40:50  15:20:25

Counters:
CRC          Overrun      Frame      Byte      Retry
1256         1              3          0         1270

Event log:
Time              Event
01:45:55         Data Set Ready Error
```

Some problems may occur due to noise on the telephone line, if the frame is too large or too small to be considered a valid frame, the communications to the host system has failed, or the hardware is not functioning. If you are experiencing a large number of temporary errors (one of the counters), it may be necessary to reduce your line speed. Refer to your modem documentation for more information.

Using the Asynchronous Router

Asynchronous data transmission is a means of sending information across a communications link between two computers or between a computer and a device, such as an ASCII work station. The sending and receiving stations may be located locally, such as in the same building, or remotely, such as in separate cities. Modems are required for a remote connection, but not for a local connection.

Asynchronous data transmission is character-oriented in that one character of data is sent at a time. Start bits and stop bits define the start and end of the transmitted character. Also, there is no synchronization between the sending and receiving stations. The link to the AS/400 system is maintained through the

PC Support Asynchronous router. The asynchronous router communicates with the AS/400 system through the ASCII work station controller.

Setting Up Your Asynchronous Router Connection

You can use the configuration program to set up your PC Support asynchronous router connection. When you do, the information you specify is added automatically for you to your CONFIG.PCS file or other alternative configuration file.

To configure your asynchronous connection, complete the following.

1. Start the configuration program and display the PC Support/400 Configuration menu. Refer to Chapter 12, "Configuring PC Support with the Configuration Program" for information about displaying this menu.
2. Select the Connection to AS/400 option from the list of functions on the PC Support/400 Configuration menu. The PC to AS/400 Connection Configuration menu is shown.
3. Press the Enter key to select option 1 (PC to AS/400 connection information). The Work with PC to AS/400 Connection Information window is shown.
4. Use the Arrow keys to highlight option 4 (ASYNC) and press the spacebar to select the option.
5. Enter values for the prompts displayed. The following list describes the prompts and the values you can supply for each. The identifier associated with each prompt follows in parentheses.

- Line type (SDLT)
 - Select option 1 (Nonswitched point-to-point) if you are connecting your personal computer to a leased line from a telephone company, or if you are connecting your personal computer to a modem eliminator.
 - Select option 2 (Switched point-to-point) if you are connecting your personal computer to a modem that is connected to a telephone line.

- Auto-dial command and number (SWAD)

The field is displayed only if you selected switched point-to-point as the line type.

Indicate the auto-dial command and the number you want dialed.

This value tells the router that the modem supports the automatic dialing feature. When the router tries to connect to the AS/400 system, the automatic dial command and the number are passed to the modem, and then the modem dials the number. For example, using the dial tone command in the attention command set (ATDT) and the telephone number 1-987-654-3210, your entry would appear this way:

```
ATDT 1-987-654-3210
```

- Auto-dial response (SWAR)

The field is only displayed if you selected Switched point-to-point.

This prompt is optional. It specifies the response that the modem returns when a successful connection to the AS/400 system has occurred. The value cannot exceed 20 characters.

- Line facility (SDLF)

Option 1 (Half duplex) indicates the that line or modem cannot be used to transmit data in both directions at the same time. Option 2 (Full duplex) indicates the line or modem can be used to transmit data in both directions at the same time. Option 2 is the default.

- Baud rate (ASBR)

The default value for this prompt is option 1 (1200). Select the option that fits your situation.

- Port number (ASPN)

The default for this prompt is option 1 (COM1). This value identifies the port number in the personal computer that the router uses.

- Number of data bits (ASDB)

The default for this prompt is option 2 (8). This value is the number of data bits per byte.

- Modem initialization string (ASMI)

This prompt does not have a default value. The modem initialization string allows the user to tailor how the modem operates once the asynchronous router is started. The maximum number of characters for this value is 80.

- Parity (ASPR)

The default for this prompt is none. If you selected 8 as your number of data bits, the parity setting is ignored.

- Number of stop bits (ASSB)

The default for this prompt is option 1 (1). This value specifies the number of stop bits per byte.

6. Press the Enter key after you have completed the prompts. The Work with PC to AS/400 Connection Information window is removed.
7. Press F3 (exit). A window is shown.
8. Select option 1 (Save and exit) to save your changes and exit to the PC Support/400 Configuration menu.

Setting Up Your Asynchronous Router System Information

You can use the PC Support configuration program to add, change, or delete a link, and to add or designate a system as your default system.

To do any of these actions, follow these steps.

1. Display the PC Support/400 Configuration Menu. Refer to Chapter 12, "Configuring PC Support with the Configuration Program" for instructions.
2. Select the Connection to AS/400 option from the list of options on the menu. The PC to AS/400 Connection (Router) Configuration menu is shown. It shows your current configuration information.
3. Select option 3 (System information). The Work With System Information menu is shown.
4. Press F10 (Actions) and select the option Change from the action bar.
5. To add a link, select option 2 (Add link). The Add link window is shown.

Note: You can define only one link with the asynchronous router. If you have already defined a link, you cannot select this option.

- Enter values for the following prompts:
 - Link name
This is a name previously configured on the host system. The link name you choose must be the same name as the default local location name parameter specified on the host system command Display Network Attributes (DSPNETA). The name can be from 1 to 8 characters long, and it must be unique.
 - Local station address
Any valid station address may be used. The address must be between hexadecimal 01 and FE.
 - User ID
This prompt is optional. If it is left blank, your default user ID is used. This value can be from 1 to 10 characters long.
 - Parity
This field appears only if you specified 7 for number of data bits.
This parameter allows you to specify whether you want to use even or odd parity checking.
 - Time-out value
This parameter is optional. It specifies the amount of time the hardware timer is set to each time your personal computer requests a connection to the AS/400 system. If the connection is not completed before the hardware timer expires, the attempted connection fails.
Specify a value from 5 to 40 seconds. The default for this prompt is 40 seconds.
 - Number of time-outs
This parameter is optional. It specifies the number of times the hardware timer is allowed to expire when your personal computer requests a connection to the AS/400 system. If the maximum number of times is reached before a connection is established, the connection attempt fails.
Values for this parameter can range from 1 to 255 attempts. The default value is 1. If you specify 255 for this parameter and 40 for the Time-out value parameter, the connection request is allowed a total of 170 minutes (40 seconds x 255 attempts).
 - Connect timer
This is the amount of time the router waits for a connection to a modem before the router turns off the data terminal ready signal (DTR). Specify a value from 5 to 255 seconds. If you specify 255 seconds, the router waits for contact from the host system until a connection is established.
- Press the Enter key after you have entered values for the prompts. The Add link window is removed.

6. To change a link, use the Arrow keys to highlight the link name. Then, press F10 (Actions) and select the option Change from the action bar. A window is shown.
 - Select option 1 (Change link). The Change link window is shown.
 - Enter the new values for the prompts Link name, Local station address, User ID, Time-out value, Number of time-outs, and Connect timer. The descriptions for the prompts are listed under the steps for adding a link. You can also press F1 (Help) for online information about the prompts.
7. To delete a link, make sure the link name (not a system name) you want to delete is highlighted. Then, press F10 (Actions) and select the option Change from the action bar. A window is shown.
 - Select option 3 (Delete link). A window is shown with the name of the link you are about to delete.
 - Press the Enter key if the name is correct. The window is removed and the link is deleted.
8. To add a system name to a link, make sure the link you want to add the system to is highlighted. Press F10 (Actions) and select the option Change from the action bar. A window is shown.
 - Select option 4 (Add system). The Add system window is shown.
 - Enter values for the following prompts:
 - System name
This prompt is required. Enter the name of the system you want to connect to.
 - User ID
This value is optional. Use the same user ID you use to sign on to a work station.
 - Press F9 (Additional Parameters) and select option 1 (Assign) to have the system assigned or option 2 (Release) to have the system released. The default is to have the system assigned.
 - Press the Enter key after you have finished entering values for the prompts. The Add system window is removed and the new system name is shown under the link name.
9. To designate a system as your default system, make sure the system name (not a link name) is highlighted on the display. Then press F10 (Actions) and select Options from the action bar. A window is shown.
 - Use the Arrow keys to highlight option 4 (Assign as default system).
 - Press the Enter key. When you press the Enter key, the window is removed and the word (default) is shown after the system name on the display.
10. Press F3 (Exit). A window is shown.
11. Select option 1 (Exit to main router screen).
12. Press F3 (Exit) again. A window is shown.
13. Select option 1 (Save and exit) to save the changes you have made. You are returned to the PC Support/400 Configuration Menu.

Connecting with the Asynchronous Router

The following information explains how the router program establishes a connection to your host system. You can connect with the asynchronous router using:

- A manual dial modem
- An automatic dial modem

Using Manual Dial Modems with the Asynchronous Router

When the STARTRTR command is started and the router program realizes that you must make a call, it displays the following messages:

```
Place call to host system now
Press the Enter key when the connection is made
or
Press Esc to Exit
```

The router has sent a signal called data terminal ready (DTR) to the modem and you should place your call. Refer to your modem documentation to make the connection. When the modem connection to the AS/400 modem is complete, press the Enter key to inform the router that you have made the connection.

If you cannot make the connection, you can press the Esc key. The router turns off the DTR signal and you can try to make the connection later. If the host modem is not answering the incoming calls, you should call the AS/400 system operator to verify that the communications port you want to use is varied on.

Using Automatic Dial Modems with the Asynchronous Router

If you have an automatic dial modem, you can use the automatic dial functions of the PC Support asynchronous router. To use the automatic dial functions, you must place a switched automatic dial function (SWAD) entry in your CONFIG.PCS file or alternative configuration file.

The router can use the automatic dial function of your modem if the router knows when a connection is complete. This is indicated to the router in one of two ways:

- By a switched automatic dial response (SWAR) entry in the CONFIG.PCS or alternative configuration file
- By a signal from the modem to indicate that the connection is successful

If you use the SWAR entry, you place the response message the modem sends to indicate a successful connection in the configuration file. The PC Support asynchronous router waits for this message from the modem. If the router receives the message that you specified in your configuration file, your connection to the AS/400 system is complete. You are then prompted for your user ID and password. These are typical modem responses:

```
CONNECT 2400
CONNECT 1200
CONNECT
CONNECTED
```

If your modem returns the string CONNECT 2400, then the following entry should be in your configuration file:

```
SWAR CONNECT 2400
```

You can use the PC Support configuration program to add the entry to your configuration file.

If you use modem signals to indicate a successful connection, then your modem must provide an indication of a successful connection through either data set ready (DSR) or carrier detect (CD) modem control signals. When the router detects that a signal has become active, it recognizes the call was successful and prompts you for your user ID and password.

It may be necessary to program your modem to control these signals. You can do this in one of three ways:

- Setting modem switches.
- Putting a modem initialization string (ASMI) entry in the CONFIG.PCS or alternative configuration file.
- Using the interactive asynchronous communications (IAC) program to customize your modem's operation. For more information about the IAC program, refer to "Using the Interactive Asynchronous Communications Program" on page 20-39.

The following describes how the PC Support asynchronous router makes a connection with your AS/400 system.

When the STARTRTR command is run from the DOS prompt, the STARTRTR command checks to see if your asynchronous link is already running. If it is not running, the router tries to make a connection. When the connection is attempted, the router waits for one of the following:

- A response from the modem that matches your SWAR entry
- One of the modem control signals to go active, indicating that the connection has been made
- A time-out condition

If one of the first two conditions occurs, then the connection has been made and you are prompted for your user ID and password.

If the time-out condition occurs, you need to determine why the connection was not made.

Using the Error Notify Option

There are several **temporary** line errors and **permanent** line errors that can occur when using the SDLC or PC Support asynchronous router.

The **temporary** line errors are:

- Receive overrun errors: Occur when the PC Support asynchronous adapter handler has not had a chance to service a frame that has been received by the asynchronous adapter and another frame is being received.
- Byte framing errors: Occur when the asynchronous hardware detects a valid start bit on a byte, but detects no valid stop bit. This condition is due to either noise on the telephone line or a problem of misalignment of bytes.
- CRC errors: Occur when the adapter handler has finished receiving an asynchronous frame, but there were line hits as the information traveled over the wire. This frame is transmitted again from the AS/400 system.
- Retransmission errors: Occur when the work station has to retransmit one or more frames to the AS/400 system.

- Framing errors: Occur when a frame is received that is either too large or too small to be considered a valid asynchronous frame. It is probably caused by a long period of line noise on the telephone line.

The **permanent** line errors are:

- DSR errors: Occur when the data set ready (DSR) signal is not present when the adapter handler expects it to be or the adapter handler had a problem trying to get the DSR status from the asynchronous hardware.
- No interrupt failure: Occurs when the adapter handler tried to service an interrupt when the hardware status indicates that there was not an interrupt to be serviced.
- Timeout condition: Occurs when the work station has not received any information from the host system after a period of time equal to the SDLC time out value multiplied by the number of time outs. Either the host is no longer communicating or the hardware is not functioning.
- Frame reject condition: Occurs when an asynchronous link error has occurred.
- Synchronization error: Occurs when the asynchronous router receives an unexpected command from the host system. This is a permanent link error.
- Configuration errors: Occur when events or conditions are not in any of the other categories listed but an error is logged.

To display and reset the information kept in the log, use the STARTRTR /r command. When you type this command, the information is displayed, all counters are reset, and the logged information is cleared.

You can also use the STARTRTR /b command to toggle the error notify option within the router.

When the line quality is poor, you can use the STARTRTR /d command to display errors that have occurred. For example, if you entered STARTRTR/, the following information may appear on the display:

```
c:\PCS=>starttrtr /d

PC Support/400
IBM PC Support Asynchronous Router
(C) Copyright IBM Corp. 1984, 1990 All rights reserved.
Version 2.0 Release 1.0 Level 00

Default remote system name: RCH68638
Link name      System names
RCH68638      RCH68638

Error Notify ON
13:40:50  15:20:25

Counters:
CRC          Overrun      Frame      Byte      Retry
1256         1             3          0         1270

Event log:
Time                Event
01:45:55            Data Set Ready Error
```

Some problems may occur due to:

- Noise on the telephone line
- Frame is either too large or too small to be considered a valid frame
- Communications to the host system has failed
- Hardware is not functioning

Initializing an Asynchronous Modem

Asynchronous modems have command sets that are used to control their operation. The modem initialization string identifier (ASMI) in the configuration file for the STARTRTR program provides a means of accessing this capability. If the ASMI identifier is found in the configuration file, the STARTRTR command allows data or commands to be sent to the modem before attempting a telephone call.

If the STARTRTR program finds an ASMI identifier in the configuration file, it sends the string that follows the identifier to the modem before making a call to the host system. This allows you the ability to customize the operation of the modem. The following is an example using the attention (AT) command set. For specifics on the command set of your modem, refer to your modem's documentation.

If the line

```
ASMI ATE0L0
```

appears in the configuration file, the STARTRTR command sends the string ATE0L0 to the modem before establishing a physical connection. This command turns off the echoing of characters while in command state (E0) and sets the modem speaker volume to low (L0). The STARTRTR command then tries to establish a connection.

If no string follows the ASMI identifier, the STARTRTR program invokes a secondary command processor that starts a command with the format:

```
IAC /n /Z
```

where n is a digit from 1 to 4, specifying which serial port to use and /Z reduces the number of informational messages. (This corresponds to the ASPN entry in the configuration file.)

This command allows data or commands to be interactively sent to a modem.

When IAC ends, the secondary command processor stops and returns control back to the STARTRTR.EXE program. The effect is to suspend the STARTRTR program to run the command, and to resume the STARTRTR program when the command has completed.

The ability to interactively communicate with a modem allows advanced programming of a modem, which may require multiple commands, and the ability to connect through an asynchronous network, which may require input of passwords or access codes.

If you have an existing asynchronous communication software package that you want to use to make your connection, you may do so provided these conditions are true:

- The ASMI identifier entry in your configuration file is blank.
- Your communications package restores the asynchronous hardware to the state it was in prior to running the package.

- You have created your own IAC.BAT program to start your communications package.
- You have renamed the PC Support interactive asynchronous communications program (IAC.EXE) to IAC.BAK (this is a DOS requirement).

Using the Interactive Asynchronous Communications Program

You can interactively send data to a modem using the interactive asynchronous communications (IAC) program.

To start the program, enter the following command at the DOS prompt:

```
IAC /n /Z
```

where *n* is a number from 1 to 4 specifying which serial port to use and /Z reduces the number of information messages. If the program finds no values or incorrect values, the IAC program uses serial port 1 and ignores any other characters. The IAC program processes all keystrokes. Alternative keys, cursor keys, and function keys are rejected with a beep sound. All other keys are sent to the modem.

Any data echoed by the modem or result codes sent by the modem are shown on the display. If your modem has been instructed to not echo characters, no characters are displayed on the screen.

When the Escape key is pressed, IAC stops sending data to the modem and then stops.

Note: The serial port must be initialized or the IAC program will not function properly. This can be done with the DOS MODE command.

The following example shows how to use the IAC program.

At the DOS prompt enter:

```
MODE COM1:2400,N,8,1
```

to initialize serial port 1 (COM1).

At the DOS prompt enter:

```
IAC /1
```

where 1 specifies to use serial port 1 (COM1).

Messages similar to the following are shown:

```
Enter modem commands
```

```
Press Esc when finished
```

When you see these messages, enter the following information from the DOS prompt:

```
ATE0L0
```

and press the Enter key. This is a command from the attention command set that turns off the echoing of characters by the modem and sets the modem speaker volume to low.

As each key is typed, the character is sent to the modem. If the modem is echoing characters, they are shown on the display. When you press the Enter key, the modem processes the command and returns a result code. After typing

this command, the following result code is returned by the modem and shown on the display:

OK

This indicates that the command was recognized and processed without any errors.

When all commands and data have been entered, press the Esc key. This tells IAC that communications with the modem is complete. The IAC program stops and returns control to DOS.

The display for this example looks like this:

```
C>MODE COM1:2400,N,8,1
COM1: 2400,N,8,1,-
C>IAC /1
PC Support/400
IBM Interactive Asynchronous Communications
(C) Copyright IBM Corp. 1984, 1991. All rights reserved.
Version 2.0 Release 1.0 Level 00

Enter modem commands
Press Esc when finished

ATEOLO
OK

C>
```

Chapter 21. Managing the Update Function

Introducing the PC Support/400 Update Function	21-2
How PC Support/400 Uses the Update Function	21-2
Specifying When to Update PC Support/400	21-2
Using the Update Function to Update Other Files	21-3
Creating the Source Directory	21-3
Configuring Your Users to Update from the Source Directory	21-4
Creating the Target Directory	21-6
Deciding When to Run the Update Function	21-6
Examples of Using the Update Function	21-6
Updating PC Support/400	21-6
Updating User Tools	21-7
Parameters for the PC Support/400 Update Command	21-8
Batch Error Level Codes	21-9
Considerations for Using the Update Function	21-9
Update Time	21-9
Update Program Ended before Completion	21-10

Introducing the PC Support/400 Update Function

The PC Support/400 update function compares two sets of files and, if they are not at matching levels, updates one set with the contents of the other. PC Support/400 uses the update function to update personal computers when changes are made on the host system.

You can also use the update function to update applications other than PC Support/400. This is useful when you want to ensure that all your personal computer users are using the same versions of files.

How PC Support/400 Uses the Update Function

The PC Support/400 update function provides a simplified method of maintaining the most appropriate functional level of the PC Support/400 programs and other applications on the personal computer.

For PC Support/400, the PC Support/400 installation program creates the appropriate entries in your STARTPCS.BAT and CONFIG.PCS files to apply updates from the PC Support/400 folder QIWSFLR (or, for the extended DOS option, QIWSFL2) to your PC Support/400 directory. The update function automatically applies any updates when you start PC Support/400.

The update function is also used when you are using the administration function. The administrator makes configuration changes in a shared folder, and the update function copies these changes to the personal computer. For more information about the administration function, see Chapter 3, "Using the PC Support/400 Administration Function."

Specifying When to Update PC Support/400

It is important that you run the update function as a part of starting PC Support/400. This helps to avoid any problems that may arise from having different program levels on the personal computer and on the host system. However, if you are connected remotely, you may want to delay updating PC Support/400 until a more convenient time.

To specify when you want the PC Support/400 files updated on your personal computer, do the following:

1. Select General options from the PC Support/400 Configuration menu.
2. Choose Update personal computer applications.
3. Select PC Support/400 from the list of applications you are updating, then press F10 (Actions) and select Options from the action bar.
4. From the list of options, select Change. A warning display appears, notifying you that you are about to change the update options for PC Support/400; press the Enter key to continue.
5. The Change Update Control Information display appears. Select Update option to control how the update function operates each time PC Support/400 is started.
 - Select Update files to allow the update function to perform the necessary updates each time you start PC Support/400.

- Select `List` files to display a list of the files that need updating without making the actual updates. After listing the files that need updating, the update function allows you to specify whether to perform the updates immediately or to continue without updating.

Note: If you run `STARTPCS.BAT` from a working diskette, only that working diskette is updated. You should run the PC Support/400 update function on the other working diskettes that contain PC Support/400 programs. You should do this on a regular basis to ensure that you are using the correct level of PC Support/400 programs.

Using the Update Function to Update Other Files

The `PCSUPDT` command can be used to update files in any target directory based on files from any source directory. It is not limited to updating only the files in your PC Support/400 directory (`PCS`) based on files in the `QIWSFLR` (or, for extended DOS, `QIWSFL2`) folder.

In order to configure the update function to update other files, you must do the following:

1. Create the source directory
2. Configure your users to update from the source directory

Creating the Source Directory

The source directory is the folder that contains the master copy of the files. All updates will be applied from this folder to the personal computers.

The source directory may contain a **trigger file**. A trigger file is used to determine whether or not updates need to be applied. The name of this trigger file is `UPDATE.PCS`. The update function compares the time and date of the trigger file on the source with a similarly named file on the target. If the time or date is different, the updates are applied. If no trigger file is present in the source directory, updates are always applied to the target directory for each file that has a different time or date.

There is no format for the contents of the trigger file. The update function only looks at the time and date of this file.

If you want, you can also use a **package file** on the source directory. A package file describes which files you want to exist on the personal computer. This list of files must follow a certain format, and must be stored on the directory specified as the source for the update command.

Package files are identified by having `.PKG` as an extension. The package file has the following format:

- One line must contain the following identifier:

PKGF [*description*]

This identifier indicates the file is a package file. Following this identifier, you can type up to 40 characters as a description for the package file.

- The other lines each contain one of the following keywords:

MBRF [*path*] *filename*

This identifies a file as part of the package to be updated. A path name can also be specified; this indicates that the file is in a subdirectory of the source directory.

The *path* should not contain the drive letter, nor should it begin with a backslash character (\). When you begin the update function, you specify a target directory; the path specified in the package file is considered a subdirectory of this target directory. See "Updating User Tools" on page 21-7 for an example.

DLTF [*path*] *filename*

This identifies a file to be deleted from the target directory. A path name can also be specified; this indicates that the file is in a subdirectory of the target directory. As with the MBRF identifier, you should not specify a drive letter or begin with a backslash character (\).

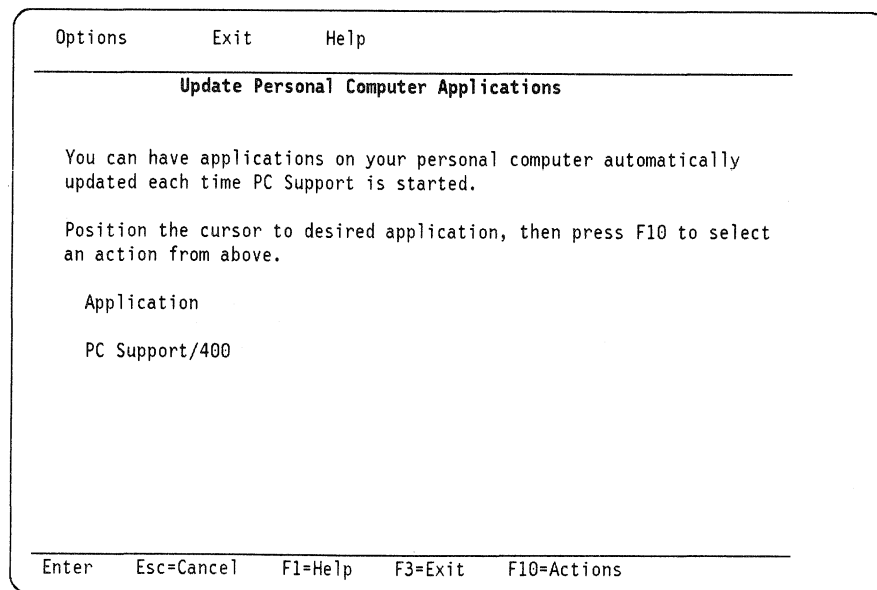
REM [*comment*]

This identifies a comment. The update function ignores the line.

Configuring Your Users to Update from the Source Directory

To receive updates from the source directory, each user must do the following:

1. Display the PC Support Configuration menu. Refer to "Starting the PC Support/400 Configuration Program" on page 12-2 for information on displaying this menu.
2. Select General options. The General Options for PC Support/400 display appears.
3. Select Update personal computer applications. The following display appears:



This display shows you the functions you are currently updating. Each of these applications has a separate UPDT entry in your PC Support/400 configuration file.

4. Press the Enter key or F10 (Actions) and select Options. A window appears.
5. Select Add update control information. The following window appears:

Creating the Target Directory

You should use the DOS XCOPY command to create files on the target with the same names as all the files on the source. For example, if your source directory is I:\MASTER and your target directory is C:\EDITORS, enter

```
XCOPY I:\MASTER\*.* C:\EDITORS /S
```

The /S option on the XCOPY command indicates that subdirectories should also be copied.

Deciding When to Run the Update Function

Sometimes you need to start your personal computer again in order for the updates you made to take effect. If you start an application and then update that function, you will still be using the old version of the application. Similarly, some applications use configuration files that are read only when you start your personal computer.

You can sometimes avoid having to start your personal computer again by running the update function before you start the application you are updating. You should not start any applications you are updating until after you have started PC Support/400. If you do not do this, or if the application makes changes to configuration files that are only read when you start the personal computer, you should start the personal computer again immediately in order to use the newest version of the application.

Examples of Using the Update Function

Updating PC Support/400

When you install PC Support/400 on the personal computer, the installation program creates a STARTPCS.BAT file that starts all the PC Support/400 functions you selected while installing, including PCSUPDT. By default, this command assumes that information about the source and target directories will be found in the CONFIG.PCS file. The installation program creates the following entry in the CONFIG.PCS file:

```
UPDT I:\QIWSFLR,C:\PCS,S,,,PC Support/400
```

Note: When using the extended DOS option of PC Support/400, the system folder is QIWSFL2.

The I:\QIWSFLR directory contains many package files, which are identified by the PKG extension. For example,

```
PKGF Sample Package File
MBRF PROG1.EXE
MBRF PROG2.EXE
MBRF SUB1\SHEET.DAT
DLTF PROG3.EXE
```

When started, the program works as follows:

1. If the application being updated is a licensed program, the update program looks for a QPTFIDX file to determine if any program updates need to be applied.

2. If the QPTFIDX file does not exist on the source, the update program compares the time and date of the I:\QIWSFLR\UPDATE.PCS file with the time and date of the C:\PCS\UPDATE.PCS file.
3. If the times and dates are identical, the program issues a message stating that the source and target are at matching levels. The program then exits.
4. If the program finds a file with the extension .PKG, the program assumes it is a package file, and looks for a file with the same name on the target directory. If one exists and the time and date are different, then the files listed in the package file are processed. Each file listed as an MBRF is added to the target directory if it did not already exist in the target directory. Each file listed as a DLTF is deleted from the target directory. For example, the update program copies the following files for the sample package file:

```
I:\QIWSFLR\PROG1.EXE to C:\PCS\PROG1.EXE
I:\QIWSFLR\PROG2.EXE to C:\PCS\PROG2.EXE
I:\QIWSFLR\SUB1\SHEET.DAT to C:\PCS\SUB1\SHEET.DAT
```

If the PROG3.EXE file exists on the C:\PCS directory, the PC Support/400 update function deletes the file.

5. If the times and dates of any files do not match, the program copies the changed files from the I:\QIWSFLR directory to the C:\PCS directory.

Updating User Tools

In this example, the update function is used to ensure that users have the same versions of an editor and a compiler. Two subdirectories are set up as follows:

```
I:\TOOLS
  \EDITORS
  \COMPILER
```

The TOOLS directory also contains the following files:

UPDATE.PCS (trigger file)

Last update - 4/9/91

EDITORS.PKG

```
PKGF Package file for editors
MBRF EDITORS\EDIT.EXE
MBRF EDITORS\EHELP.HLP
.
.
```

COMPILER.PKG

```
PKGF Package file for compilers
MBRF COMPILER\CE.EXE
MBRF COMPILER\CX.EXE
.
.
```

Each user uses the PC Support/400 configuration program to add the information:

Add update control information

More: ↓

Specify the information below so files for the specified application are automatically updated each time PC Support is started.

Application Description	
[Tools folder]]
Source directory (master copy)	
[I:\TOOLS]]
Target directory (your copy)	
[C:\TOOLS]]
Update Option	▶1. Update files 2. List files to be update

Enter Esc=Cancel F1=Help

When the administrator wants to distribute a new version of these tools, the administrator must:

1. Copy the new version of the editor or compiler to the appropriate subdirectory.
2. Update the appropriate package file on the TOOLS directory if any files have been added or deleted.
3. If using the UPDATE.PCS trigger file, edit this file so that the file has a new time and date.

The updated tools are copied to each user's personal computer when that user starts PC Support/400.

Parameters for the PC Support/400 Update Command

The parameters for the PCSUPDT command can be specified in either of two ways:

- As parameters entered with the command
- As values specified by the UPDT or ADMN identifiers in a configuration file

The PCSUPDT command is automatically placed in the STARTPCS.BAT file so it is run each time you start PC Support/400. You can also use the command by entering it at the DOS command prompt. The format is:

d:<path>PCSUPDT [source] [target] [/S] [/L] [/1]

or

d:<path>PCSUPDT [e:<path>filename] [/L]

where:

source Specifies the source drive and directory that contain the files to be used for updating the target. PC Support/400 uses I: which is assigned to the PC Support/400 folder on the host system. This folder contains the most current PC Support/400 programs.

- target** Specifies the target drive and directory to be updated using the files from the specified source directory. PC Support/400 uses the PC Support/400 directory on the personal computer. If not specified, the current drive and directory are used.
- /S** Allows the update function to update files in the subdirectories on the target directory. Files are updated only if the same subdirectories exist in both the source and target directories.
- /L** Displays a list of the files that need updating, then allows you to specify whether to perform the updates immediately or continue without updating the files.
- /I** Allows the update function to update files directly from one directory to another. This parameter is used when you have the OS/2 operating system on your personal computer.
- filename** Specifies the name of the configuration file to use for source and target information.

All parameters are optional. If you enter the command with no parameters, the information in the CONFIG.PCS file is used.

Batch Error Level Codes

The batch return codes are as follows:

- 0 The PC Support/400 update function completed successfully. No files were found that need updating.
- 10 The PC Support/400 update function completed successfully with informational messages. If /L was specified, files were found that need updating. If /L was not specified, the files were updated successfully.
- 20 The PC Support/400 update function completed with an error. An error message is displayed.

Considerations for Using the Update Function

When you use the update function, you should consider the following.

Update Time

When updating from one release of PC Support/400 to another, or when applying any updates that affect the attached personal computers, the PC Support/400 update function could take a relatively long time to complete. Some of the factors are:

- The speed of the connection types you are using for communications between the personal computers and the AS/400 system.
- The number of files that need updating on each personal computer.
- The number of personal computers trying to update at one time.

If you have a concern about how much time it may take to complete the updates, you can:

- Update the personal computers at a time when they are used the least. For example, if the personal computers are used mostly on week days, you could do the updates at night or during a weekend.

- Use the PC Support/400 administration function to control the updates. For instructions, see “Controlling Updates” on page 3-18.
- When upgrading to a new release, the update function runs as though you specified the /L parameter with the update command.

Update Program Ended before Completion

The PC Support/400 update function copies files to the personal computer one at a time. If an unexpected interruption occurs (for example, the communications connection is lost or the disk becomes full) while the update program is running, the copy process cannot be completed. You may find that some files on the personal computer are updated while others are not. This can cause your programs to be unusable.

To recover from this situation, you should try the following in the order listed:

1. If you have an active communications connection, correct the problem on the personal computer, then run the PCSUPDT command from the DOS prompt. For example, if the disk is full, but PC Support/400 is still running, remove some files that you do not need, then run the PCSUPDT command.
2. If your PC Support/400 connection has ended, use the STARTPCS command (or your alternative command) to start PC Support/400 again.
3. If you are updating an application other than PC Support/400, use the command that starts the update function for the application.
4. Start the personal computer again, then repeat the previous steps.

Chapter 22. Printing with PC Support: Example

Introducing the PC Support Printing Functions	22-2
Setting Up a Virtual Printer: Example	22-2
Setting Up a Work Station Function Printer: Example	22-8
Changing Printer Function Table Typestyle Definitions: Example	22-12
Sharing an IBM 4029 LaserPrinter with Other Users: Example	22-16
Setting Up the Work Station Function Printer Session	22-16
Assigning the Virtual Printer	22-19

Introducing the PC Support Printing Functions

You can use PC Support to satisfy many of your printing needs. PC Support provides the virtual printer function and the work station function.

The virtual printer function allows you to print output created by PC programs on AS/400 printers. These printers are known as virtual printers. In most cases, virtual printers are not physically attached to your personal computer. Virtual printers can include:

- AS/400 printers attached to your AS/400 system
- Personal printers using the work station function.
- Personal printers attached to AS/400 displays, such as the 3477 or 3197, or to ASCII workstation controllers

Note: Before working through the virtual printer example in this chapter, you may want to use the interactive virtual printer function to familiarize yourself with the options you can select for each prompt on the configuration displays. For information about the interactive virtual printer function, refer to "Setting Up a Printer with the Interactive Virtual Printer Program" on page 15-6.

The work station function allows you to use personal printers to print output created by AS/400 programs. Personal printers can be physically attached to your personal computer. A work station function printer is a personal printer that emulates an AS/400 printer. The following list contains examples of personal printers:

- IBM LaserPrinter, Model 4029
- IBM ExecJet*, Model 4072
- Hewlett Packard LaserJet** Series III

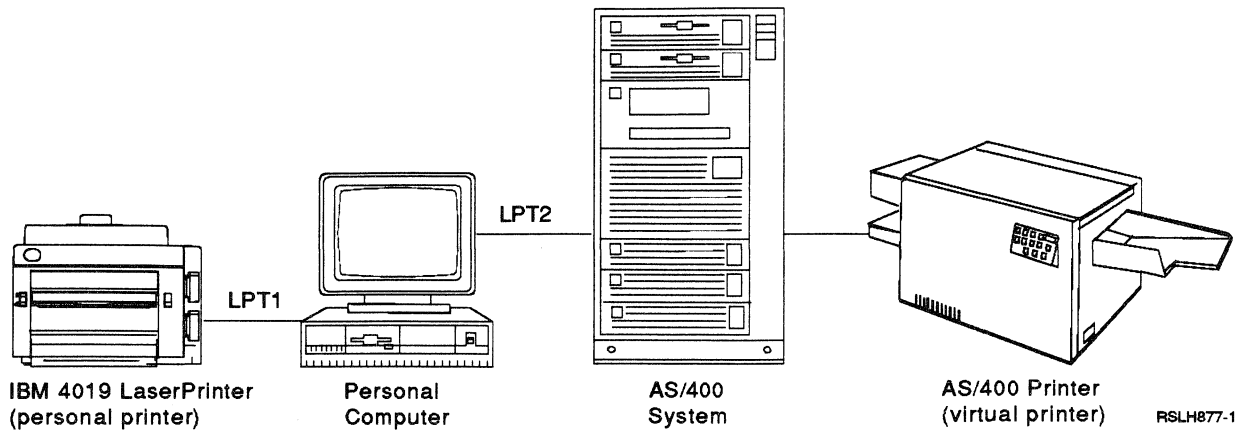
The following examples show how to:

- Set up an IBM 3812 PagePrinter as a virtual printer
- Set up an IBM 4029 LaserPrinter as a work station function printer
- Change the printer function table font definitions for an Epson LQ-510 Printer
- Set up an IBM 4029 LaserPrinter so it can be shared with other users

Setting Up a Virtual Printer: Example

The example in this section shows you how to set up an AS/400 printer as a virtual printer. This will allow you to print output from PC programs on your AS/400 printer as if it were attached to your personal computer.

The following diagram shows how the virtual printer is set up in this example.



In this example, the personal printer is an IBM 4019 LaserPrinter and the AS/400 printer is an IBM 3812. Normal PC application output can be sent to the personal printer (LPT1) or to the AS/400 printer (virtual printer assigned to LPT2).

To set up a 3812 printer attached to the AS/400 system as a virtual printer:

1. From the PC Support/400 main menu, select the configuration option. The following display appears:

```

PC Support Configuration

Your configuration is stored in the files specified in your current
working set. To change to a different set of files, press F7.

Select one of the following to configure.

    General options
    Startup options
    Folders
    Printers
    Messages
    Connection to AS/400
    Work station function
    Organizer
    Application program support

-----
Enter   Esc=Cancel   F1=Help   F3=Exit   F7=Change working set
F9=Additional options

```

2. Select Printers from the list of options on the PC Support Configuration menu. The following display appears:

```

Options   Exit   Help
-----
                Use Host System Printers

You can use a host system printer by assigning the desired printer to one of
your PC printer IDs (LPT1, LPT2, LPT3).

Position cursor to a printer definition and select an action above.

PC Printer      Action      Host Printer      System Name

No printers configured.

Enter  Esc=Cancel  F1=Help  F3=Exit  F10=Actions

```

3. Press F10 (Actions) and select the option to add a printer definition. The following window appears:

```

                Add printer definition
                More: ↓
PC printer. . . . . ▶ 1. LPT1
                   2. LPT2
                   3. LPT3
System name . . . . . [      ]
Printer device. . . . . [      ]

```

4. Choose the options and enter the values for the following prompts:

PC printer

Move the cursor to LPT2 and press the spacebar. By selecting LPT2, you can avoid any conflict with a real personal printer using port LPT1.

System name

Type the name of the AS/400 system that the printer you want to use is attached to.

5. Use the Down Arrow key, Tab key, or Page Down key to move to the next set of prompts.

```

                Add printer definition
                More:
Printer device. . . . . [P3812  ]
Printer file library. . . . . [      ]
Printer file. . . . . [      ]
Printer data type . . . . . 1. SCS data

```

Printer device

Type the name of the AS/400 system printer you want to use as a virtual printer.

Printer file library

Type the name of the library containing the printer file you want to use. This is optional.

Printer file

Type the name of the printer file you want to use. Use a printer file when you need special values that cannot be specified with the virtual printer function. This is optional.

6. Use the Down Arrow key, Tab key, or Page Down key to move to the next set of prompts.

```

                                Add printer definition
                                More:
Printer data type . . . . . 1. SCS data
                                2. Convert ASCII to SCS
                                3. Final form text
                                4. ASCII data
                                5. AFPDS data
Characters per inch . . . . . [  ]
```

Printer data type

AS/400 printers are not designed to print data from personal computers. This means that in some cases the virtual printer program must convert the data from your personal computer to a data type your AS/400 printer can recognize and print.

To select, move the cursor to the option and press the spacebar.

Characters per inch

Type the number of characters per inch you need for your virtual printer. If you do not know the values that are allowed for the printer you are using as your virtual printer, refer to the printer manuals for the values that are allowed. This value is optional.

7. Use the Down Arrow key, Tab key, or Page Down key to move to the next set of prompts. The prompts on the following displays are optional. Default values do not appear on the configuration displays. If you leave a prompt blank, the automatic configuration program will supply a default value for the prompt. In some cases, the prompts shown by the virtual printer program depend on the printer data type you selected.

Supply values for the prompts you want changed.

```

                                Add printer definition
                                More:
Characters per line . . . . . [  ]
Lines per inch. . . . . [  ]
Page length . . . . . [  ] (1 - 255 lines)
```

Characters per line

Type the maximum number of characters per line that you want the virtual printer to print. For example, if you selected 10 characters per inch and your page is 13.2 inches wide, the maximum number of characters per line you can print is 132. If you do not know the values that are

allowed for the printer you are using as your virtual printer, refer to the printer manuals for the values that are allowed. This value is optional.

Lines per inch

Type the number of lines you want the virtual printer to print per inch. If you do not know the values that are allowed for the printer you are using as your virtual printer, refer to the printer manuals for the values that are allowed.

Page length

Type the number of lines, between 1 and 255, that fit on each page. For example, if you selected 6 lines per inch and your page is 11 inches long, your page length is 66 lines. This value is optional.

- 8. Use the Down Arrow key, Tab key, or Page Down key to move to the next set of prompts.

Add printer definition		More:
Lines per page.	[]	(1 - page length)
Number of copies.	[]	(1 - 255 copies)
Time-out value.	[]	(0, 1 - 255 second)

Lines per page

Type the number of lines that you want the virtual printer to print on each page. This number may be between 1 and your page length. If you select a number less than your page length, the blank lines are left at the bottom of your printed page. If your data is already formatted and you select printer data type 2, set the page length equal to the lines per page to avoid extra pages ejected from the printer. This value is optional.

Number of copies

Type the number of copies that you want the virtual printer to print. For printer data types 1, 2, and 4, select a value from 1 to 255. For printer data type 3, select a value from 1 to 99. This value is optional.

- 9. Use the Down Arrow key, Tab key, or Page Down key to move to the next set of prompts.

Add printer definition		More:
Command override.	1. Yes 2. No	
PC printer character set.	1. Character set 1 2. Character set 2	

Command override

Command override allows the assigned values for line per inch, characters per inch, and page length to be replaced by printer commands in the data that you are printing. This value is optional.

To select, move the cursor to the option and press the spacebar.

Yes

The virtual printer will use the values specified for characters per inch, characters per line, lines per inch, page length, and lines per page by printer commands in your data instead of the ones you assigned. These commands work for the current output file only. The lines per inch, page length, and lines per page commands must be specified before the first printable character in the data. The commands that change the characters per line, characters per inch, superscript, or subscript may be specified anywhere in your data. Make sure that the printer you are using supports the commands that are being sent to it.

No

The virtual printer will use the values you previously assigned for the virtual printer instead of the values specified in printer commands found in the data. Commands in the data that change the characters per line, characters per inch, lines per inch, lines per page, page length, superscript, or subscript will be ignored.

PC printer character set

The printer character set determines how your virtual printer handles ASCII codes. The printer expects a command or a printable character depending on the character set that you select.

To select, move the cursor to the option and press the spacebar.

Character set 1

The virtual printer handles ASCII codes hexadecimal 80 through 9F as printer commands.

Character set 2

The virtual printer handles ASCII codes hexadecimal 80 through 9F as printable characters.

The default is character set 2.

10. Use the Down Arrow key, Tab key, or Page Down key to move to the next set of prompts.

Add printer definition More:

Defer printing until
output file closed. 1. Yes
2. No

Untranslatable character. . . . [] (hexadecimal)

Defer printing until output file closed

Select one of the following:

Yes

The virtual printer will wait until the output file is closed before it starts printing.

No

The virtual printer will start printing your data as soon as it receives the first character, without waiting for the output file to close. This can save you time if you are printing a large amount of data. However, the printer will not be able to print other output files until you close your output file.

This value is optional.

Untranslatable character

Type the EBCDIC hexadecimal code for the character you want the virtual printer to print if it finds a character it cannot translate from ASCII to EBCDIC. Normally these characters are translated to blank spaces (hexadecimal 40). When you select printer data type 2 (ASCII to SCS), the virtual printer must translate each character of data sent by the personal computer from ASCII to EBCDIC. Some characters do not translate from ASCII to EBCDIC. When an untranslatable character is found, the virtual printer substitutes a printable EBCDIC character.

11. Use the Down Arrow key, Tab key, or Page Down key to move to the next set of prompts.

Add printer definition More:

ASCII to EBCDIC
translation table filename. . . . []

ASCII to EBCDIC translation table filename

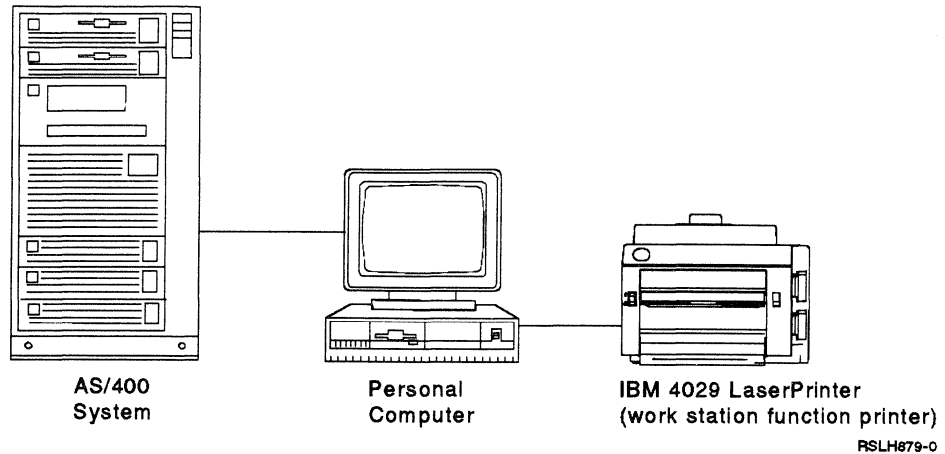
This prompt allows you to change the ASCII to EBCDIC translation table used by a virtual printer when translating personal computer printer output to AS/400 system format. You can specify a different ASCII to EBCDIC translation table for each of the virtual printers specified.

If this entry is in the CONFIG.PCS file (or alternative file) when the virtual printer program (VPRT.EXE) is run, the translation table found in the specified file is used instead of the supplied translation table. If you use the CONFIG.PCS file, it must be in the current drive and directory.

12. When you have completed the necessary prompts, press the Enter key.
You are returned to the Use Host System Printer display, and the printer assignment is shown.
13. Press F3 (Exit) and select option 1 (Save and exit). You are returned to the PC Support/400 Configuration menu.
14. Press F3 (Exit) and select option 1 (Exit configuration). You are returned to the place from which you started the configuration program.
15. Start your personal computer again to have the virtual printer assignment take effect.

Setting Up a Work Station Function Printer: Example

The example in this section shows you how to set up an IBM 4029 LaserPrinter attached to your personal computer as a work station function printer. This allows you to print output from AS/400 programs on your IBM 4029 LaserPrinter as if it were attached to your AS/400 system.



You use the work station function configuration program (CFGWSF) to set up a printer emulation session. The CFGWSF program displays a list of the manufacturers and the models of the personal printers you can use. When you select the personal printer you want to use, the work station function automatically provides the necessary printer function table (PFT) to use for the selected printer.

1. Start the work station function configuration program. At the DOS command prompt, type

```
I:CFGWSF
```

where I is the drive assigned to the PC Support folder on the system. The following display appears:

```

Create Change Exit Help
-----
Work Station Function Configuration

To select an action shown above, first press F10.

This program allows you to build the following profiles for use with the work
station function program:

--Session profiles, which define the type of workstation or printer a session
will imitate.

--Keyboard profiles, which define the type and style of keyboard you will use
in a session.

--Master profiles, which contain a keyboard profile and information to be used
by up to five session profiles.

You should complete the work station function checklist found in the
PC Support/400 DOS Installation and Administration Guide before continuing.

-----
Enter Esc=Cancel F1=Help F3=Exit F10=Actions

```

2. Press the Enter key or F10 (Action) and select Create from the list of options in the action list. A window is shown.

```

-----
1. Create session profile
2. Create keyboard profile
3. Create master profile

```

3. Select option 1 (Create Session Profile). A window is shown containing the name of the current session profile.

```
Enter a session profile name:
[D:\PCS\PRT.DAT >
Enter Esc=Cancel F1=Help F4=Prompt
```

4. Type the name you want to give the printer session profile. Press F4 (Prompt) for a list of names you can use. In this example, enter PRT.DAT as the profile name. Press the Enter key.

The following display appears:

```
                          Create Session Profile
Select options, press Enter.
Profile name. . . . . : D:\PCS\PRT.DAT

Type of session . . . . .▶ 1. Display
                          2. Printer

Display device . . . . .▶ 1. Standard
                          2. 132 column
                          3. Graphics
                          4. Graphics with plotter

System type . . . . .▶ 1. AS/400
                       2. S/36

Enter Esc=Cancel F1=Help F3=Exit Spacebar
```

5. Move the cursor to the Printer option. Press the spacebar to select the option, then press the Enter key.

The following display appears:


```

Select Printer Model
More: ↓

Select options, press Enter.

Printer manufacturer
▶ 1. IBM
  2. HP
  3. Epson
  4. NEC
  5. Okidata
  6. Other

Printer model
▶ IBM 2380 Personal Printer Series II
  IBM 2381 Personal Printer Series II
  IBM 2390 Personal Printer Series II
  IBM 2391 Personal Printer Series II
  IBM 3812 Pageprinter
  IBM 3816 Pageprinter
  IBM 4019 LaserPrinter
  IBM 4019 LaserPrinter - HP Mode
  IBM 4019E LaserPrinter E

Enter Esc=Cancel F1=Help F3=Exit Spacebar

```

6. The default value for the printer manufacturer is IBM. Press the Page Down key to move to the next page of printer models.
7. Move the cursor to IBM 4029-010 LaserPrinter 5E. Press the spacebar to select the option, then press the Enter key. The following display appears:

```

General session options  Printer options  Exit  Help
-----
Current Personal Printer Options
More: ↓

Below is the current configuration for your personal printer. To change
these values, select the action 'Printer options' and then select 'Personal
printer options'.

Printer function
table file name. . . . . : D:\PCS\IBM4029.PFT
Printer alarm. . . . . : Yes
Begin Printer
Session Suspended. . . . . : No
Form Feed on Suspend . . . . . : No
Initial font . . . . . : Courier 10
Prompt to
change font. . . . . : No
LAN directed print . . . . . : None
Number of
cut sheet drawers. . . . . : 2
Drawer one paper size. . . . . : 8.5x11
Drawer two paper size. . . . . : 8.5x11

Enter Esc=Cancel F1=Help F3=Exit F10=Actions

```

8. If you want to change your personal printer options, press F10 (Actions). Select Printer options from the action list. A window is shown.
9. Select option 1 (Personal printer options). Enter new values for the options you want to change, then press the Enter key.
10. If you do not want to change your personal printer options, press F3 (Exit) and select option 1 (Save session and add to a master). A window is displayed showing the current session profile name.
11. Press the Enter key to verify the session profile name. The Add Session Profile to Master Profile display is shown.

12. Press the Enter key to use the default master profile name, or type the name you want to use for a master profile and then press the Enter key. When you press the Enter key, a new group of options is shown on the display.

```

                                Add Session Profile to Master Profile

Session to add . . . . . : D:\PCS\PRT.DAT
Master profile . . . . . : D:\PCS\WSF.DAT

To add a session, cursor to the desired number and press the space bar.
Press Enter when finished.

Session number . . . . . 1 D:\PCS\SESS1.DAT
                               2 D:\PCS\PRT.DAT
                               3 No session assigned
                               4 No session assigned
                               5 No session assigned

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar

```

13. Move the cursor to the session number you want to use for the printer session and then press the spacebar. Do not press the Enter key.
14. Press F3 (Exit) and select option 1 (Save master profile and return).

You must start the work station function again before you can use the work station printer session.

Changing Printer Function Table Typestyle Definitions: Example

Printer function tables define the functions of the personal printer to the work station function printer session. The printer function table for the Epson LQ-510 printer (ELQ510.PFT) supports the resident fonts (typestyles) internally available for this printer. If you purchase an optional font module and install it in the slot on the front of your Epson LQ-510 printer, you should change the printer function table so the work station function printer can take advantage of the additional fonts (typestyles). The example in this section explains how to do this using the PFTSETUP program of the work station function.

The PFTSETUP program is used to change the font definitions contained in a printer function table. The following example shows you how to change the printer function table to define the OCR-B font on an Epson Multi-Font Module. The font global identification number (FGID) for OCR-B is 3.

To change the printer function table, follow these steps:

1. Make a copy of the printer function table to be used. In this example, the copy is made on the personal computer's hard disk.

It is important to give the printer function table a different name so that the PC Support update program (PCSUPDT) does not overlay your changes. In this example, the name MYE510.PFT is used.

Using the DOS copy command, type the following command at the DOS prompt to make a working copy of the default printer function table for the Epson LQ-510 printer.

```
COPY I:\ELQ510.PFT C:\PCS\MYE510.PFT
```

2. Change to drive I. The current directory should be the folder for the PC Support/400 option you are using. From within the folder, change to the MRIxxxx subdirectory, where the xxxx represents the national language feature code for the language you are using. For example, if you are using the extended DOS option of PC Support/400 and are using English, the DOS prompt should now be:

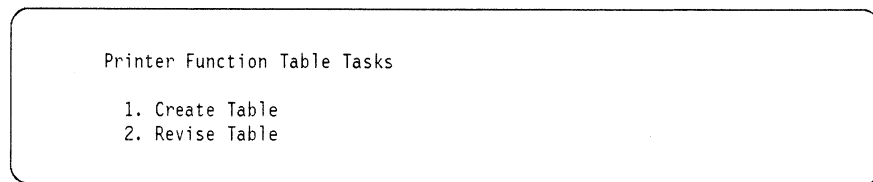
```
I:QIWSFL2\MRI2924
```

3. Type the following at the DOS prompt:

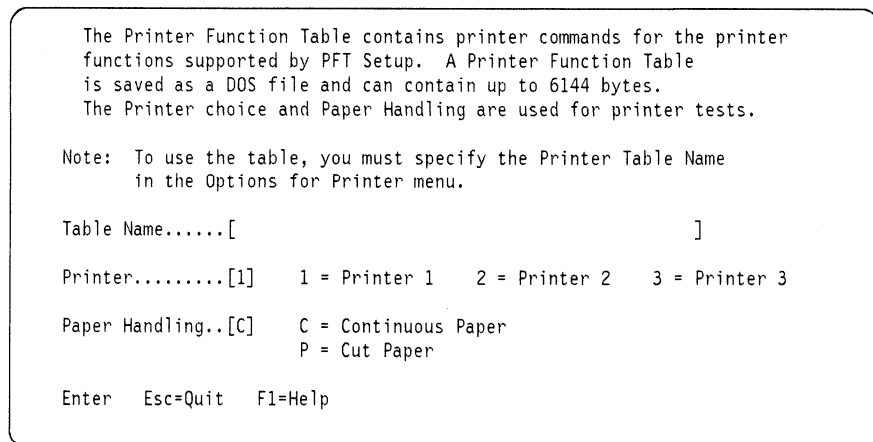
```
PFTSETUP
```

This starts the PFTSETUP program.

4. Press the Enter key when the logo screen is displayed. The Printer Function Table Tasks window is shown.



5. Select the Revise Table option and press the Enter key. The Revise Printer Function Table Selection window is shown.



6. Type the name of the printer function table to use in the *Table Name* prompt and press the Enter key. This example uses MYE510.PFT, which is the copy previously made of the ELQ510.PFT printer function table for the Epson LQ-510 printer. When you press the Enter key, the Revise Printer Function Table window is shown.

Revise Printer Function Table

1. Initialization and Reset
2. Vertical/Horizontal Spacing
3. Highlighting
4. Paper/Page Options
5. Typestyles/Character Sets
6. User-defined Controls

7. Function Selection Tests

Enter Esc=Quit F1=Help

7. Select option 5 (Typestyles/Character Sets). The Typestyles/Character Sets window is shown.

Typestyles/Character Sets

Typestyle Definitions:

1. Default
2. Individual
3. Group

4. Character Set Redefinition
5. Slot Selection Definition

Enter Esc=Quit F1=Help

8. Select option 3 (Group). The Group Typestyle Selection window is shown.

Group Typestyle Selection

Group Identifier..[a] A-Z

Enter Esc=Quit F1=Help

9. Type an A for the *Group Identifier* prompt. The Group Typestyle Definition window is shown.

Group Typestyle Definition (1 of 2)

Group Identifier Comment..[]
Typestyles.....[1-11 13-35 37 38 40-65]
[]
[]

PC Character Set.....[] 1-9 1 = PC Character Set 1
(2-9 are Redefinable)

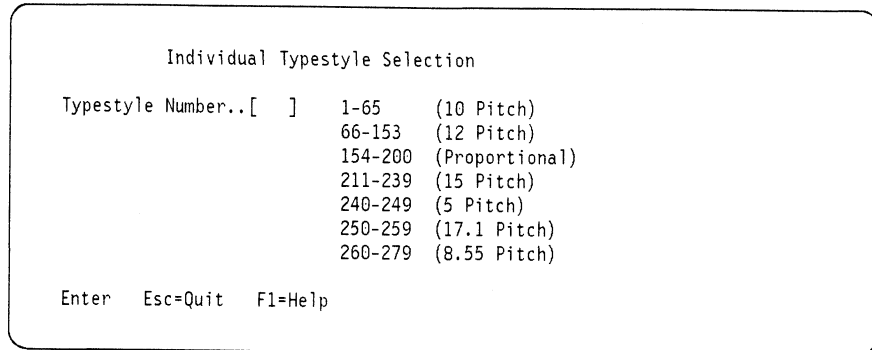
Initial Control Sequence..[14 12 1B 50]
[]
[]

Ending Control Sequence...[]
[]
[]

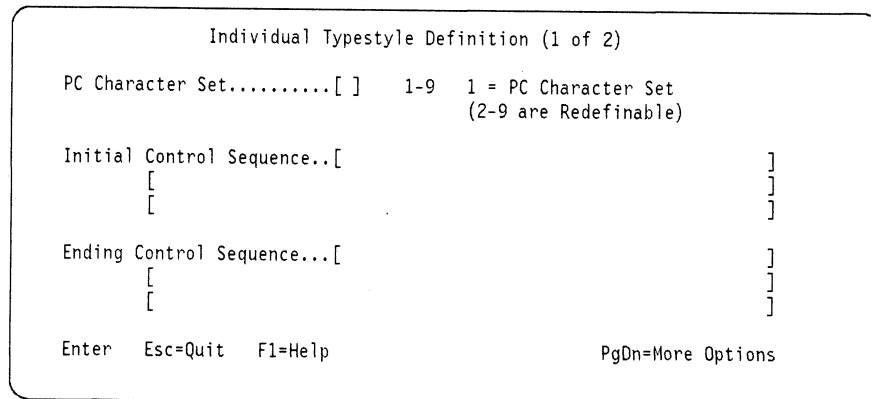
Enter Esc=Quit F1=Help

PgDn=More Options

10. Change the *Typestyles* entry from 1-11 to 1-2 4-11. This removes font 03 from group A, so that font 03 can be assigned as an individual font.
11. Press the Enter key. You are returned to the Group Typestyle Selection window.
12. Press the Esc key until you return to the Typestyle/Character Sets window again.
13. Select option 2 (Individual). The Individual Typestyle Selection window is shown.



14. Enter the FGID number (Typestyle number) for the OCR-B font (03) and press the Enter key. The Individual Typestyle Definition window is shown.



15. Enter the initial control sequence for your personal printer. This information is found in the printer's technical reference manual.

For the Epson LQ-510 printer the initial control sequence for OCR-B should be entered as follows:

```
14 12 1B 50 1B 6B 05
```

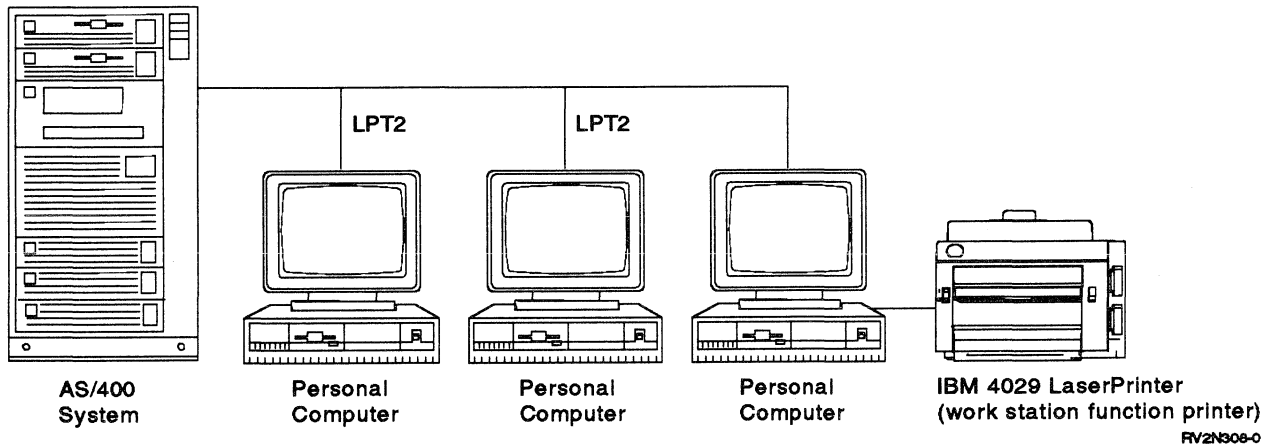
In the United States the PC character set is 2.

For individual typestyle definitions, ending control sequences normally do not have to be entered.

16. Press the Esc key until the End and Save option is shown.
17. Select the End and Save option.
18. Press the Esc key to exit.

Sharing an IBM 4029 LaserPrinter with Other Users: Example

Using a combination of the virtual printer function and the work station function allows several users to share a personal printer. In this example, the user whose personal computer the personal printer is attached to must create a work station function printer session to define the IBM 4029 LaserPrinter to the AS/400 system as an AS/400 printer. When the work station function printer has an AS/400 printer ID, the other PC users can assign it as a virtual printer.



Setting Up the Work Station Function Printer Session

The following example shows you how to set up an IBM 4029 LaserPrinter attached to your personal computer as a work station function printer.

1. Select the Configure PC Support option from the PC Support/400 Menu.

```
PC Support/400 Menu

Select one of the following

Learn About PC Support
  View PC Support Introduction

Perform PC Support Tasks
  Go to PC command prompt
  Use printers on host system
  Use folders on host system
  Transfer data
  Send and receive messages
  Go to Organizer menu
  Submit host system command

Manage Your PC Support Environment
  ► Configure PC Support
  Administer PC Support
  View PC Support Error Log

Enter Esc=Cancel F1=Help F3=Exit
```

2. A window appears.

```
1. PC Support configuration
  ► 2. Work station function configuration

Enter Esc=Cancel F1=Help
```

3. Select option 2 (Work station function configuration). A window appears.

```
▶ 1. Create session profile
  2. Create keyboard profile
  3. Create master profile
```

4. Select option 1 (Create session profile). A window appears.

```
Enter a session profile name:
[D:\PCS\PRT.DAT >
-----
Enter Esc=Cancel F1=Help F4=Prompt
```

5. Type the name you want to give the printer session profile in the window shown on the Work Station Function Configuration menu. Press F4 (Prompt) for a list of names you can use. In this example, the name PRT.DAT is used as the profile name. Press the Enter key. The Create Session Profile menu is shown.

```
                          Create Session Profile
Select options, press Enter.
Profile name. . . . . : D:\PCS\PRT.DAT

Type of session . . . . .▶ 1. Display
                        2. Printer

Display device . . . . .▶ 1. Standard
                        2. 132 column
                        3. Graphics
                        4. Graphics with plotter

System type . . . . .▶ 1. AS/400
                       2. S/36

-----
Enter Esc=Cancel F1=Help F3=Exit Spacebar
```

6. Move the cursor to the Printer option. Press the spacebar to select the option, then press the Enter key. The following display appears:

```

                                Select Printer Model
                                More: ↓

Select options, press Enter.

Printer manufacturer
▶ 1. IBM
  2. HP
  3. Epson
  4. NEC
  5. Okidata
  6. Other

Printer model
▶ IBM 2380 Personal Printer Series II
  IBM 2381 Personal Printer Series II
  IBM 2390 Personal Printer Series II
  IBM 2391 Personal Printer Series II
  IBM 3812 Pageprinter
  IBM 3816 Pageprinter
  IBM 4019 LaserPrinter
  IBM 4019 LaserPrinter - HP Mode
  IBM 4019E LaserPrinter E

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar

```

7. The default value for the printer manufacturer is IBM. Press the Page Down key to move to the next page of printer models.
8. Move the cursor to IBM 4029-010 LaserPrinter 5E. Press the spacebar to select the option, then press the Enter key. The following display appears:

```

General session options  Printer options  Exit  Help
-----
                                Current Personal Printer Options
                                More: |

Below is the current configuration for your personal printer. To change
these values, select the action 'Printer options' and then select 'Personal
printer options'.

Printer function
table file name. . . . . : D:\PCS\IBM4029.PFT
Printer alarm. . . . . : Yes
Begin Printer
Session Suspended. . . . . : No
Form Feed on Suspend . . . . . : No
Initial font . . . . . : Courier 10
Prompt to
change font. . . . . : No
LAN directed print . . . . . : None
Number of
cut sheet drawers. . . . . : 2
Drawer one paper size. . . . . : 8.5x11
Drawer two paper size. . . . . : 8.5x11

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  F10=Actions

```

Note: By default, the AS/400 system assigns a name to the work station function printer based on the printer session's number. For example, if your user ID is JOHN and your work station function printer session is session 2, the AS/400 system names the work station function printer JOHNS2. The S and the work station function printer session number is added to the end of the user ID. You can assign your own name to the work station function printer session using the CFGWSF program to change your general session options.

9. If you want to change your personal printer options, press F10 (Actions). Select Printer options from the action list. A window is shown.

10. Select option 1 (Personal printer options). Enter new values for the options you want to change, then press the Enter key.
11. If you do not want to change your personal printer options, press F3 (Exit) and select option 1 (Save session and add to a master).
12. Press the Enter key when you are asked to verify the session profile name.
13. Press the Enter key to use the default master profile name, or type the name you want for a master profile.
14. Move the cursor to the session number you want to use for the printer session, and then press the spacebar.

```

                                Add Session Profile to Master Profile

Session to add . . . . . : C:\PCS\PRT.DAT
Master profile . . . . . : C:\PCS\WSF.DAT

To add a session, cursor to the desired number and press the space bar.
Press Enter when finished.

Session number . . . . . 1 C:\PCS\SESS.DAT
                        2 C:\PCS\PRT.DAT
                        3 No session assigned
                        4 No session assigned
                        5 No session assigned

Enter  Esc=Cancel  F1=Help  F3=Exit  Spacebar

```

15. Press F3 to exit and then select the Save master profile and return option.

You must start the work station function again before you can use the work station printer session.

Assigning the Virtual Printer

Each of the users in this example must assign a virtual printer for the IBM 4029 LaserPrinter that is attached to a third personal computer as a work station function printer. To assign a virtual printer:

1. Display the PC Support/400 menu.

```

PC Support/400 Menu

Select one of the following

Learn About PC Support
  View PC Support Introduction

Perform PC Support Tasks
  Go to PC command prompt
  Use printers on host system
  Use folders on host system
  Transfer data
  Send and receive messages
  Go to Organizer menu
  Submit host system command

Manage Your PC Support Environment
  ► Configure PC Support
  Administer PC Support
  View PC Support Error Log

Enter  Esc=Cancel  F1=Help  F3=Exit

```

2. Select the Configure PC Support option from the PC Support/400 menu. A window is shown.

```

1. PC Support configuration
  ► 2. Work station function configuration

Enter  Esc=Cancel  F1=Help

```

3. Select option 1 (PC Support configuration). The PC Support Configuration menu is shown.

```

PC Support Configuration

Your configuration is stored in the files specified in your current "working
set". To change to a different set of files, press F7.

Select one of the following to configure.

  General options
  Startup options
  Folders
  ► Printers
  Messages
  Connection to AS/400
  Work station function
  Organizer
  Application program support

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  F7=Change working set
F9=Additional options

```

4. Select the Printers option from the PC Support Configuration menu. The Use Host System Printers display is shown.

```

Options  Exit  Help
-----
                          Use Host System Printers

You can use a host system printer by assigning the desired printer to one of
your PC printer IDs (LPT1, LPT2, LPT3).

Position cursor to a printer definition and select an action above.

PC Printer          Action          Host Printer          System Name
No printers configured

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  F10=Actions

```

5. Press F10 (Actions) and select the Change option from the action list. A window is shown.

```

*. Change printer definition
▶ 2. Add printer definition
*. Delete printer definition

-----
Esc=Cancel

```

6. Select option 2 (Add printer definition) from the window. The Add Printer Definition window is shown near the bottom of the display.

```

                          Add printer definition
PC printer. . . . . ▶ 1. LPT1
                          2. LPT2
                          3. LPT3
System name . . . . . [      ]
Printer device. . . . . [      ]

-----
Enter  Esc=Cancel  F1=Help  F9=Additional parameters

```

7. Enter these values for the following prompts:

PC printer

Move the cursor to LPT2 and press the spacebar. By selecting LPT2, you can avoid any conflict with a personal printer already using port LPT1.

System name

Type the name of the AS/400 system that the printer you want to use is attached to. A default name is provided. You can use the name provided or change it.

For this example, the name SYSTEM1 is used.

Printer device

Type the name of the AS/400 system printer you want to use as a virtual printer.

For this example, the printer session name JOHNS2 is used.

- 8. Use the Down Arrow key, Tab key, or Page Down key to move to the next set of prompts.

```

                                Add printer definition
                                More:
Printer device. . . . . [      ]
Printer file library. . . . . [      ]
Printer file. . . . . [      ]
Printer data type . . . . . 1. SCS data

```

Printer file library

Type the name of the library containing the printer file you want to use. This is optional.

For this example, a printer file library is not used.

Printer file

Type the name of the printer file you want to use. Use a printer file when you need to specify special values that cannot be set up with the virtual printer function. This is optional.

For this example, a printer file is not used.

- 9. Press the Down Arrow key, Tab key, or Page Down key to move to the next set of prompts.

```

                                Add printer definition
                                More:
Printer data type . . . . . 1. SCS data
                                2. Convert ASCII to SCS
                                3. Final form text
                                ▶ 4. ASCII data
                                5. AFPDS data
Characters per inch . . . . . [      ]

```

Printer data type

In this example, option 4 (ASCII data) is selected. To select, move the cursor to the option and press the spacebar.

When ASCII data is selected for this option, most of the remaining prompts on the display are not used. Only the *Time-out value* prompt and the *Defer printing until output closed* prompt are used.

- 10. Press the Down Arrow key, Tab key, or Page Down key to move to the next set of prompts. The prompts on the following displays are optional.

Supply values for the prompts you want changed.

```

                                Add printer definition
                                More:
    Characters per line . . . . . [ ]
    Lines per inch. . . . . [ ]
    Page length . . . . . [ ]    (1 - 255 lines)

```

```

                                Add printer definition
                                More:
    Lines per page. . . . . [ ]    (1 - page length
    Number of copies. . . . . [ ]    (1 - 255 copies)
    Time-out value. . . . . [ ]    (0, 1 - 255 seconds)

```

```

                                Add printer definition
                                More:
    Command override. . . . . 1. Yes
                                2. No
    PC printer character set. . . . . 1. Character set 1
                                ▶ 2. Character set 2

```

```

                                Add printer definition
                                More:
    Defer printing until
    output file closed. . . . . ▶ 1. Yes
                                2. No
    Untranslatable character. . . . . [ ]    (hexadecimal)

```

11. When you have completed the necessary prompts, press the Enter key. You are returned to the Virtual Printer Configuration menu, and the printer is shown as assigned.

```

Options  Exit  Help
-----
                                Use Host System Printers

You can use a host system printer by assigning the desired printer to one of
your PC printer IDs (LPT1, LPT2, LPT3).

Position cursor to a printer definition and select an action above.

PC Printer      Action      Host Printer      System Name
LPT1             Assign      JOHNS2            SYSTEM1

-----
Enter  Esc=Cancel  F1=Help  F3=Exit  F10=Actions

```

12. Press F3 (Exit) and select option 1 (Save and exit).

You are returned to the PC Support Configuration menu.

Chapter 23. Configuring PC Support Using the Editor

Understanding the Configuration Process	23-2
Starting the PC Support Editor	23-2
Editing a File	23-3
Adding Identifiers to a File	23-4
Highlighting Groups of Identifiers	23-4
Displaying the DOS Command Prompt	23-5
Changing Identifiers in a File	23-5
Marking and Unmarking Text	23-5
Moving Text	23-6
Copying Text	23-6
Inserting Blank Lines	23-6
Deleting Lines	23-6
Adding an Identifier to a Configuration File: Examples	23-6
Adding a 5250 Emulation Router Identifier	23-7
Adding a Token-Ring Router Identifier	23-8
Connecting to Additional Systems	23-9

Understanding the Configuration Process

You can operate PC Support using the default values supplied by the product. However, if you have special needs or want to enhance your performance in some way, you can use the PC Support configuration program (CFGPCS.EXE) to create new values or to change the values already present in your PC Support configuration file. You can also use the PC Support editor to change your configuration.

The PC Support/400 configuration program allows you to enter information (in the form of a four-character identifier) directly into a PC Support configuration file. The editor provides prompts and help information for adding, changing, or deleting identifiers.

This chapter explains how to use the PC Support editor with the configuration program to change the way PC Support operates. If you do not want to edit your configuration files directly, see Chapter 12, "Configuring PC Support with the Configuration Program" for information about using the PC Support configuration program.

Note: To make changes in the way the work station function operates, you should use the work station function configuration program. For information about using the work station function configuration program, refer to Chapter 16, "Managing Your Work Station Function Sessions."

When you have familiarized yourself with the functions of the PC Support editor, you should look through the identifiers in Chapter 24, "Configuration Identifiers and Work Sheets" to familiarize yourself with the configuration options available for each function. Then, you may want to use the work sheets located in "Work Sheets for PC Support Configuration" on page 24-40 to record the identifiers you want to enter in the file.

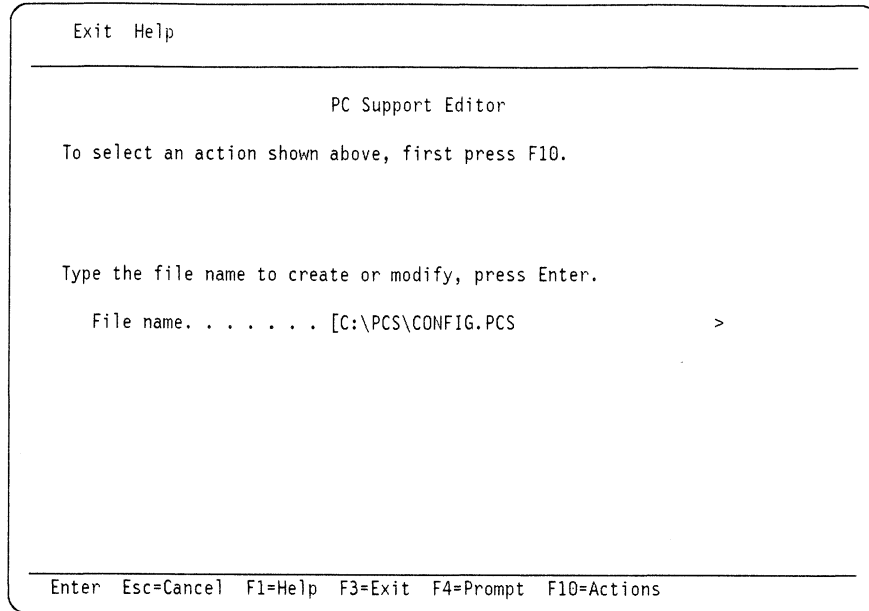
Starting the PC Support Editor

To make changes to the PC Support configuration file, you can use the PC Support configuration program (CFGPCS.EXE) as an editor.

You can use the PC Support editor with the configuration program to change the information in your PC Support configuration file.

To start the editor, do the following:

1. Display the PC Support Configuration menu. See Chapter 12, "Configuring PC Support with the Configuration Program" for information about starting the configuration program and displaying the PC Support Configuration menu.
2. Press F9 (Additional options). The Additional Options window is shown.
3. Press the Enter key to select the option PC Support editor. A display similar to the following is shown:



4. Press the Enter key to select the file shown on the display, or type the name of the file you want to edit and then press the Enter key.
When you press the Enter key, the contents of the specified file are shown on your display. If you are creating a new file, only the lines *Top-of-File* and *Bottom-of-File* are shown.
5. Use the remaining information in this chapter and the information in Chapter 24, "Configuration Identifiers and Work Sheets" to change the identifiers in this file.

Editing a File

Once you have started the PC Support/400 configuration program and the PC Support editor, and displayed the contents of the file you want to change, you can begin editing the file. The information in this section explains how to:

- Use the options in the action list at the top of the display to:
 - Add identifiers and their parameters to the file you are editing
 - Highlight a specific group of identifiers in the file you are editing
 - Display the DOS command prompt
- Use the function keys at the bottom of the display to:
 - Change an existing identifier in the file you are editing
 - Mark (or unmark) text you want to move or copy
 - Move marked text
 - Copy marked text
 - Insert blank lines
 - Delete lines

Adding Identifiers to a File

Use the Identifiers option in the action list at the top of the edit display to add identifiers to the file you are editing. Some identifiers can only appear once in a file. If you try to add a second entry, you will receive an error message.

When you add an identifier using this method, it is added after the line on which the cursor rests. Be careful not to add information between the lines containing the router identifiers.

To add an identifier to the file you are editing:

1. Move the cursor to the bottom of the file you are editing.
2. Press F10 (Action).
3. Select the Identifiers option from the action list. A window is shown containing several options.
 - Select option 1 to display the router identifiers.
 - Select option 2 to display the virtual printer identifiers.
 - Select option 3 to display the message function identifiers.
 - Select option 4 to display the organizer identifiers.
 - Select option 5 to display the shared folders identifiers.
 - Select option 6 to display the update function identifiers.
 - Select option 7 (Application program support) to display the identifier for the data queues function.

Note: You must be using the extended DOS option of PC Support/400 to use this identifier. If you are using the basic DOS option, this identifier is ignored.

 - Select option 8 (Other Identifiers) to display the miscellaneous identifiers associated with the PC Support product. For example, the identifiers for changing translation tables or speed are listed here as well as the software interrupt number.

When you select an option, a new window is shown containing the identifiers and their definitions for that option.

4. Use the Arrow keys to highlight the identifier you want to add.
5. Press the Enter key. When you press the Enter key, a new window is shown containing the prompts associated with the identifier you selected.
6. Select an option or enter a value for the prompts. Press F1 (Help) for additional information about the prompts and the values you can select for each.
7. Press the Enter key. The prompt window is removed.
8. Press the Esc key to remove the list of identifiers.

Highlighting Groups of Identifiers

To help you work with the identifiers in the file you are editing, the PC Support editor highlights the file's group of identifiers associated with the function you want to configure. For example, if you are configuring the router, the editor will highlight all of the identifiers corresponding to the router function.

To highlight a group of identifiers:

1. Press F10 (Actions).

2. Select the Highlight option from the action list. A window is shown containing several PC Support functions.
3. Use the Arrow keys to select the function you want highlighted.
4. Press the Enter key. When you press the Enter key, the window is removed and all the identifiers associated with the function you selected are highlighted on the edit display.
5. To remove the highlighting, press and hold the Shift key and then press F5. The highlighting is removed.

Displaying the DOS Command Prompt

If, while configuring PC Support with the editor, you find it necessary to enter a command from the DOS prompt, the editor provides you with a way to do this without exiting the file you are editing.

To display the DOS command prompt:

1. Press F10 (Actions).
2. Select the Command prompt action. A window is shown.
3. Select the Command prompt option. The PC command prompt is displayed.
4. Enter the commands you want processed.
5. Type `Exit` and press the Enter key to return to the editing display.

Changing Identifiers in a File

To help you change an identifier already existing in the file you are editing, the editor displays the prompt and the parameters you can select for that identifier when you press F4 (Prompt).

To change an identifier:

1. Move the cursor to the identifier you want to change.
2. Press F4 (Prompt). A window is shown containing the prompt for that identifier.
3. Select a new option or enter a new value in the prompt.
4. Press the Enter key. When you press the Enter key, the window is removed and the new option or value is shown next to the identifier in the file.

Marking and Unmarking Text

Before you can move or copy text in a file, you have to mark it.

To mark text:

1. Move the cursor to the beginning of the text you want marked.
2. Press F5 (Mark block). The line is highlighted.
3. Move the cursor to the end of the text you want marked.
4. Press F5 again. The highlighting is extended.
5. Move the cursor to the line to come before the marked text.
6. Press F7 to move the text or F8 to copy the text.

If you mark an area of text you do not want moved or copied, press and hold the Shift key and then press F5 to unmark it.

Moving Text

You can move a line of text or a block of text to another location in the file you are editing.

To move text:

1. Mark the text you want to move, following the instructions listed in "Marking and Unmarking Text" on page 23-5.
2. Move the cursor to the line to come before the marked text.
3. Press F7 (Move block). The lines are moved and the highlighting is removed.

Copying Text

You can copy text from one part of the file you are editing to another part. Some identifiers can only appear once in a file. You will not be able to copy them. For example, you can only have one RTYP (router type) identifier entry in a file. If you try to copy it to another part of the file, you will receive an error message.

To copy text:

1. Mark the text you want to copy, following the instructions listed in "Marking and Unmarking Text" on page 23-5.
2. Move the cursor to the line to come before the marked text.
3. Press F8 (Copy block). The text is copied and the highlighting is removed.

Inserting Blank Lines

To insert blank lines into the file you are editing:

1. Move the cursor to the line you want to come before the blank line you are inserting.
2. Press F9 (Insert line). A blank line is inserted into the file.

Deleting Lines

You can delete one line at a time from a file you are editing. If there is only one line in the file, you cannot delete it.

To delete a line:

1. Move the cursor to the line you want to delete.
2. Press the Shift key and then press the F9 key. The line is deleted and the lines following it move up in the file.

Adding an Identifier to a Configuration File: Examples

This section contains three examples of editing a configuration file using the PC Support editor. The first example involves a personal computer attached to the AS/400 system with a twinaxial (or 5250 emulation) router. The second example involves a personal computer attached to an AS/400 system with a token-ring router. Both examples show how to add an identifier to the CONFIG.PCS file.

The third example shows how to configure a connection to a second AS/400 system. For more detailed information about the identifiers used in this example, refer to "Router Identifiers" on page 24-3.

Adding a 5250 Emulation Router Identifier

If PC Support was installed and the twinaxial router option was selected, the CONFIG.PCS file contains the following entries:

- RTYP 5250
- RTLN APPN.PC location name
- EMLI system name, work station address

The PC location name, system name, and work station address are the values you entered when you ran the installation program. You have enough entries to connect your personal computer to the AS/400 system.

You can use PC Support with its default configuration, or you can change it to meet your specific needs. For example, if you do not want to be prompted for your user ID every time you start your personal computer, you can add an RTCU identifier entry with your common user ID to the CONFIG.PCS file.

To add an RTCU identifier, do the following:

1. Enter the following command at the DOS prompt:

```
[d:][path]CFGPCS [c:][path] CONFIG.PCS
```

The edit display is shown. The current entries in the CONFIG.PCS file are shown on the display. The display should look similar to the following:

```
Identifiers Highlight Command prompt Exit Help
-----
---- Top-of-File ----
RTYP 5250
RTLN APPN.PCLNAME
EMLI SYSTEMA,0
---- Bottom-of-File ----

Enter Esc=Cancel F1=Help F3=Exit F4=Prompt F5=Mark block F7=Move block
F8=Copy block F9=Insert line F10=Actions Shift+F5=Remove marks
Shift+F9=Delete line
```

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2. Move the cursor to the end of the file.
3. Press F10 (Actions).
4. Select the option Identifiers from the action list. The identifier group option list is shown. Option 1 (Router) is highlighted.
5. Press the Enter key to select option 1 (Router). A window is shown containing the identifiers corresponding to the router.

6. Use the Arrow keys to highlight the identifier option RTCU. Press the Enter key. When you press the Enter key, a new window is shown with the prompt for the RTCU identifier.

```
Type the RTCU value and press Enter.  
Router's common user ID . . . . . [      ]
```

7. Type your user ID on the input line and press the Enter key. When you press the Enter key, the window containing the prompt is removed. Notice that the RTCU identifier and your user ID are now contained in the file.
8. Press the Esc key to remove the list of identifiers.
9. Press F10 (Actions).
10. Select the option Exit from the action list.
11. Select option 1 (Save configuration file and return). When you select this option, the Save file display is shown, allowing you to change the drive, the directory, and the file name.
12. Press the Enter key. This saves your changed CONFIG.PCS file and allows you to exit the configuration program.
13. Press F10 and select Exit from the action list.
14. Select option 1 (Exit configuration editor). When you press the Enter key to select option 1, the configuration program is ended and you are returned to the point where you started the program.

Adding a Token-Ring Router Identifier

If PC Support was installed and the token-ring router option was selected, the CONFIG.PCS file contains the following entries:

```
RTYP ITRN  
RTLN PC location name  
TRLI system name, token-ring adapter address
```

The PC location name, system name, and token-ring adapter address are the values you entered when you ran the installation program. You have enough entries to connect your personal computer to the AS/400 system.

You can use PC Support with its default configuration, or you can change it to meet your specific needs. For example, if you do not want to be prompted for your user ID every time you start your personal computer, you can add an RTCU identifier entry with your common user ID to the CONFIG.PCS file. Follow the instructions in "Adding a 5250 Emulation Router Identifier" on page 23-7 to add an RTCU entry to your CONFIG.PCS file.

When you have made all of the changes, your CONFIG.PCS file will contain the following entries:

```
RTYP ITRN  
RTLN PC location name  
TRLI system name, token-ring adapter address  
RTCU user ID
```

Connecting to Additional Systems

This example involves a personal computer connected to an AS/400 system (called SYSTEM A) with a token-ring router. The PC Support editor is used to configure a connection to a second AS/400 system with a SDLC router.

If you have worked through the example in “Adding a Token-Ring Router Identifier” on page 23-8, your CONFIG.PCS file looks similar to this:

```
RTYP ITRN
RTLN PC location name
TRLI system name, token-ring adapter address
RTCU user ID
```

To configure an SDLC connection to a second system called SYSTEM B, you should add an ADRS entry to your CONFIG.PCS file.

Note: It does not matter what type of second connection you want to configure. The ADRS entry applies to all router types.

To add the entry, follow the instructions in “Adding a 5250 Emulation Router Identifier” on page 23-7, but select the ADRS identifier instead of the RTCU identifier. When you complete the steps, your CONFIG.PCS file will look similar to this:

```
RTYP ITRN
RTLN PC location name
TRLI system name, token-ring adapter address
RTCU user ID
ADRS SYSTEM B,SYSTEM A
```

Chapter 24. Configuration Identifiers and Work Sheets

Planning PC Support Configuration	24-2
Router Identifiers	24-3
Relationship of AS/400 Commands to Identifiers	24-3
Common Router Identifiers	24-7
5250 Emulation Router Identifiers	24-9
Using EMLI to Connect to Another System	24-9
Token-Ring Router Identifiers: Required	24-10
Token-Ring Router Identifiers: Optional	24-10
Using TRLI to Connect to Another System	24-13
Synchronous Data Link Control (SDLC) Router Identifiers	24-14
Using SDLI to Connect to Another System	24-16
Asynchronous Router Identifiers	24-17
Shared Folders Function Identifiers	24-19
Virtual Printer Identifiers	24-21
Message Function Identifiers	24-26
Organizer Identifiers	24-27
Update Identifiers	24-28
Application Program Interface Support Identifiers	24-29
Other PC Support Identifiers	24-29
Example of Completed Configuration Work Sheet	24-30
Router	24-31
Shared Folders Function	24-35
Virtual Printer	24-36
Message Function	24-37
Organizer	24-38
Update	24-38
Application Program Interface Support Work Sheets	24-39
Other PC Support Identifiers	24-39
Work Sheets for PC Support Configuration	24-40
Router Configuration Work Sheets	24-40
Shared Folders Function Work Sheets	24-44
Virtual Printer Function Work Sheets	24-45
Message Function Work Sheets	24-47
Organizer Work Sheets	24-47
Update Function Work Sheets	24-48
Application Program Interface Support Work Sheets	24-49
Other PC Support Values Work Sheets	24-49

Planning PC Support Configuration

The PC Support configuration program (CFGPCS.EXE) helps you create or change your configuration files or batch files. You can use the configuration program through the PC Support/400 Configuration menu or through the PC Support editor.

When you use the PC Support/400 Configuration menu, you configure the PC Support functions by selecting options and supplying values for prompts on a display. The configuration program adds the information you have specified to the files named in your working set. You do not need to edit the files yourself. If you prefer to configure the PC Support functions using the configuration program, see Chapter 12, "Configuring PC Support with the Configuration Program" on page 12-1 for more information.

When you use the PC Support editor with the configuration program, you configure the PC Support functions by editing the necessary batch or configuration files yourself. The PC Support editor provides prompts and online help information to help you edit the files. When you edit the files yourself, you add the four-character identifiers that correspond to the characteristics you want each PC Support function to have. If you prefer to configure PC Support using the editor, you should familiarize yourself with the operation of the editor described in Chapter 23, "Configuring PC Support Using the Editor" before continuing with this chapter.

Once you have familiarized yourself with the operation of the editor, you should decide which identifiers and their parameters you want to use. A few reasons for changing the identifiers in your files are:

- To have access to other systems
- To adjust the virtual printer operation
- To change the display attributes
- To change the organizer input-inhibited time
- To specify parameters, other than the defaults, to set up your PC Support/400 router connection

To help you make your decisions, this chapter contains a summary of all the PC Support identifiers, their parameters, and their descriptions. The identifiers are grouped by function to make the planning process easier. For example, if you only wanted to change your shared folders function type, you could turn to "Shared Folders Function Identifiers" on page 24-19 for a summary of the identifiers corresponding to the shared folders function.

To help you record the decisions you make, this chapter also contains a set of blank work sheets organized by function. As you decide which identifiers you want to use for each function, you can record them on the work sheets. To use the work sheets, turn to "Work Sheets for PC Support Configuration" on page 24-40. An example of a completed work sheet is also provided in "Example of Completed Configuration Work Sheet" on page 24-30.

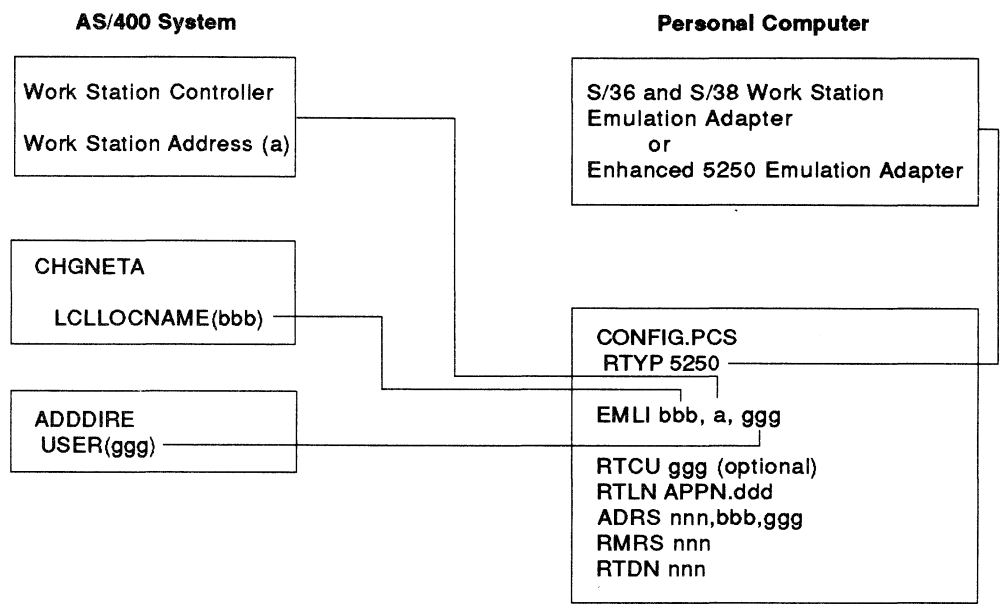
Router Identifiers

The identifiers in the router group are used to control the communications between the personal computer and the host system.

Relationship of AS/400 Commands to Identifiers

Values on specific router identifiers have a relationship to values stored on the AS/400 system. To communicate with this system, some of the router values must be the same as the values on the AS/400 system. The following diagrams show the values on the personal computer that must match with the values on the AS/400 system.

Twinaxial (5250 Emulation) Connection

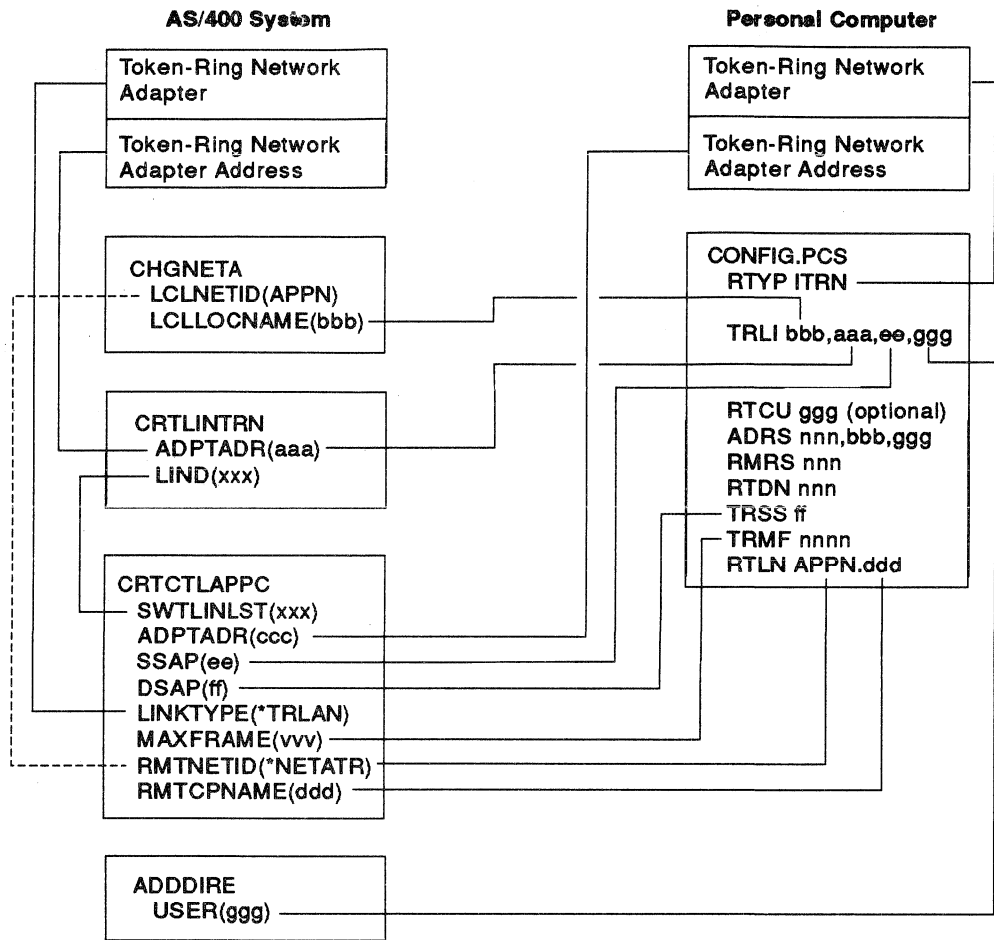


a = Work Station Address
bbb = System Name
ddd = PC Location Name

ggg = User ID
nnn = Any Other Host System Through APPN

RSLH069-5

Token-Ring Connection

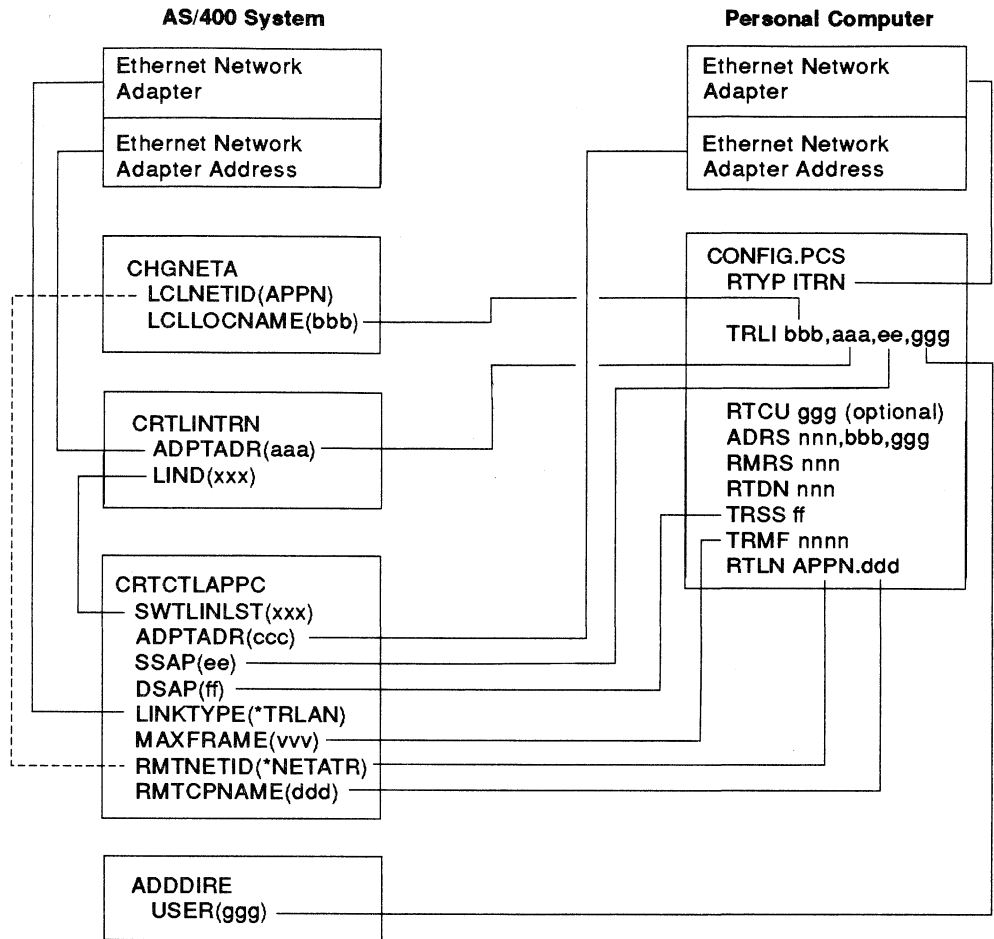


aaa = Host LAN Adapter Address
 bbb = System Name
 ccc = PC LAN Adapter Address
 ddd = PC Location Name
 ee = Host Service Access Point (SAP)

ff = PC Service Access Point (SAP)
 ggg = User ID
 nnn = Any Other Host System Through APPN
 xxx = Line Description Name
 vvv = Maximum Frame Size

RV20011-0

Ethernet Connection

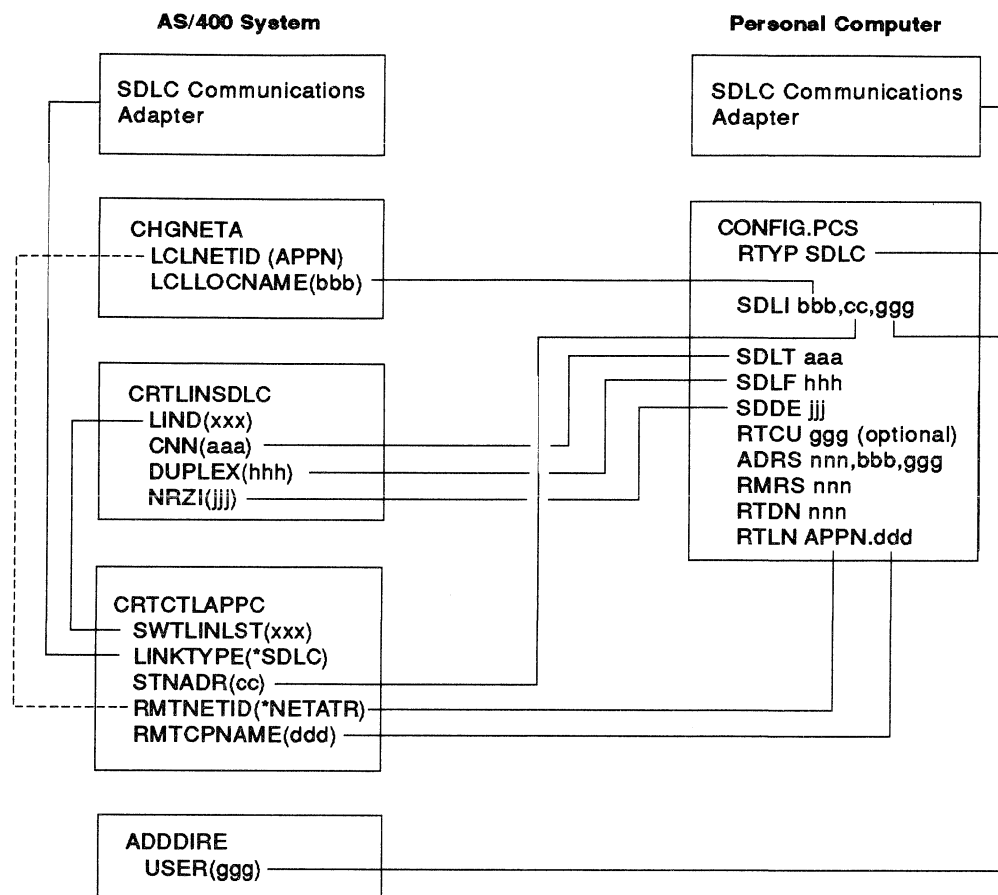


aaa = Host LAN Adapter Address
 bbb = System Name
 ccc = PC LAN Adapter Address
 ddd = PC Location Name
 ee = Host Service Access Point (SAP)

ff = PC Service Access Point (SAP)
 ggg = User ID
 nnn = Any Other Host System Through APPN
 xxx = Line Description Name
 vvv = Maximum Frame Size

RV20003-1

SDLC Connection

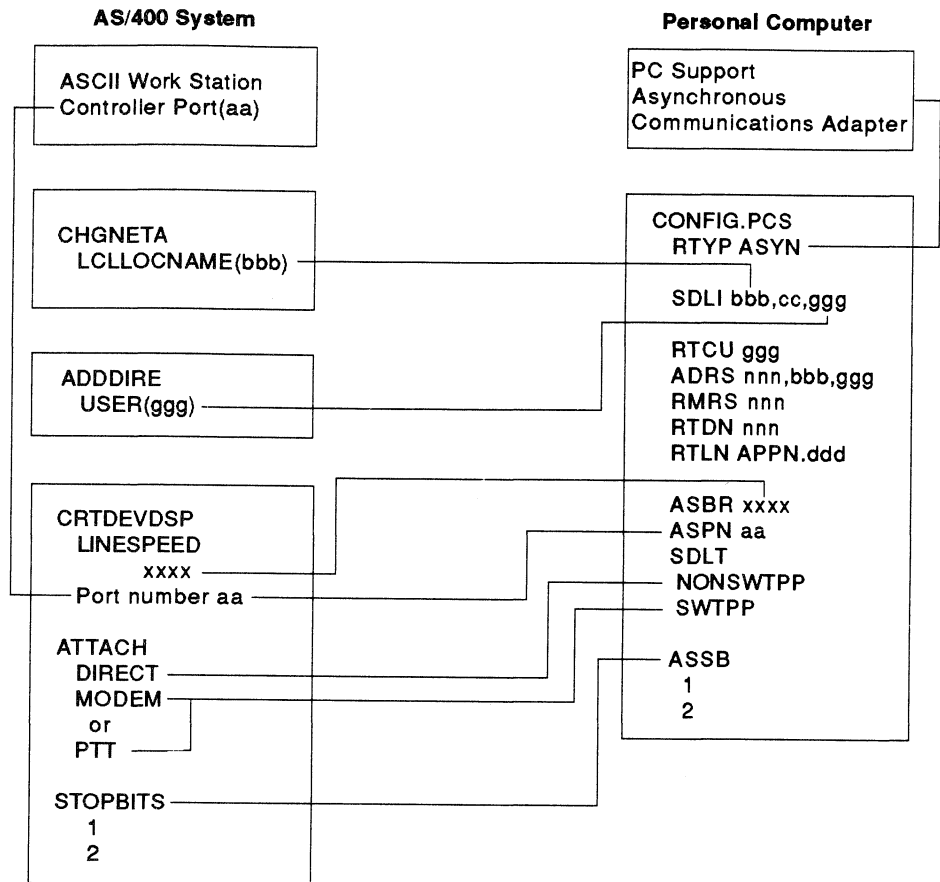


aaa = Connection Type
 bbb = System Name
 cc = Local Station Address
 ddd = PC Location Name

ggg = User ID
 hhh = Line Facility
 jjj = NRZI Data Encoding
 nnn = Any Other Host System Through APPN

RSLH068-4

Asynchronous Connection



aa = Port Number	ggg = User ID
bbb = System Name	nnn = Any Other Host System Through APPN
cc = Station Address	xxxx = Baud Rate
ddd = PC Location Name	

RV2Q004-0

Common Router Identifiers

The following identifiers are used by the 5250 emulation router, the IBM Token-Ring Network router, the synchronous data link control (SDLC) router and the asynchronous router. For PC Support to operate, you must have an RTYP and an RTLN identifier in the configuration file. These identifiers are put into the CONFIG.PCS file when you run the PC Support installation program. When you create alternative files to be used in place of CONFIG.PCS, you must put these identifiers in the file. You need to look at your environment and equipment to determine if you need to add the optional identifiers. For example, when you have a system connected by APPN, you may need an ADRS identifier if you want to communicate with that system.

Identifier	Parameter	Description
RTYP	Router type	<p>The router type to use when communicating with the system. This identifier is required. There are four possible values for this identifier:</p> <ol style="list-style-type: none"> 1. 5250 (Twinaxial data link control) 2. ITRN (Local area network) 3. SDLC (Synchronous Data Link Control) 4. ASYN (Asynchronous communications) <p>If you enter more than one RTYP identifier, only the last one is used.</p>
INTL	Software interrupt number	<p>This is the interrupt number used by the PC Support programs when communicating with the router. Specify a hexadecimal number between 60 and 68. This identifier is optional. If this value is not specified, hex 68 is used. If you enter more than one INTL identifier, only the last one is used. Expanded memory support (EMS) uses interrupt 67. If you are using EMS, do not select 67.</p>
RTLN	PC location name	<p>The name that uniquely identifies this personal computer in the APPN network. This identifier is required. It is a 17-character name that must be unique among all nodes in the network. For example, RTLN APPN.NETWORK. This name is sent to the system whenever the router makes contact. This name must be the same name as the RMTCPNAME parameter on the host system command CRTCTLAPPC.</p> <p>To have the new PC location name take effect when the router is already started, either start your computer again or use the remove PC Support function to remove the router from memory and then start it again with the STARTRTR command.</p>
ADRS		<p>This identifier is used to attach to a system through an intermediate system. The ADRS parameters must be separated by commas. The format of the identifier is:</p> <p>ADRS system name, system name for link, user ID</p>
	System name	<p>The name of the system to which you want to connect. It can be 1 to 8 characters. This name must be the same name as the DEFAULT LOCAL LOCATION NAME (LCLLOCNAME) parameter on the host system command DSPNETA.</p>
	Name of link	<p>The name of the intermediate system used to connect your system to the desired system. This is a required parameter. This link name must match the link name on a TRLI, EMLI, or SDLI identifier.</p>
	User ID	<p>The same user ID you would use to sign on to a work station. This value can be 1 to 10 characters. This entry is optional; if not specified, STARTRTR uses the common user ID and password, or prompts you for a user ID and associated password. When this user ID is specified, you are prompted for the associated password.</p>
RMRS	Remove system name	<p>The name of a system that you want to remove from the router internal system name table. This name must be an active system name. Once a system name has been removed, no PC Support function can start a conversation with that system.</p>
RTCU	Common user ID	<p>The user ID to be used if a user ID is not specified for a system on the ADRS, EMLI, TRLI, or SDLI identifier. This identifier is optional. If this identifier is specified and security is active on the host system, you are prompted for the associated password. The user ID can be 1 to 10 characters. If this identifier is not specified, you are prompted for the user ID and associated password.</p>
RTDN	Default system name	<p>The name of the system used to start conversations if a name is not specified. This system name must be the same as the system name on an ADRS, EMLI, TRLI, or SDLI identifier. This identifier is optional. If an identifier is not specified, the first system started becomes the default system name.</p>

5250 Emulation Router Identifiers

Identifier	Parameter	Description
EMLI		The link identification identifier must be in the configuration file when you are using the 5250 emulation connection to your host system. When you are in the twinaxial environment, you must have an EMLI identifier in the CONFIG.PCS file or in an alternative configuration file. The format is: EMLI system name for link, work station address, user ID
	System name for link	It is the name of the system to which you want to connect. It is: <ol style="list-style-type: none">Used to refer to the link between your personal computer and the host system.Used as the system name. This name must be the same name as the default local location name parameter on the host system Display Network Attributes (DSPNETA) command.
	Work station address	This is a required parameter. This is the work station address the router is to use to communicate with the host system. This entry must be a value between 0 and 6. The entry must be unique on the twinaxial port where the personal computer is connected.
	User ID	This is an optional parameter. Specify the same user ID you would use to sign on to a work station. This value can be 1 to 10 characters. This entry is optional; if not specified, STARTRTR uses the common user ID and password, or prompts you for a user ID and associated password. When this user ID is specified, you are prompted for the associated password.

Using EMLI to Connect to Another System

The following example shows how you can use the EMLI identifier with or without the ADRS identifier to connect to an AS/400 system through an intermediate system in an APPN network.

The example is based on the following conditions:

- The personal computer is connected to system A (SYSA) using a twinaxial connection.
- The personal computer uses work station address 3 on system A.
- System A is connected to system B (SYSB) using APPN.

To use system A as the intermediate system for connecting to system B, you could use either of the following in the configuration file:

- Using both the EMLI and ADRS identifiers:

```
EMLI SYSA,3  
ADRS SYSB,SYSA
```

This allows you to connect to system A, then to system B. A user ID and a password are required for both systems. You can include a user ID as an optional parameter in the EMLI or ADRS statements (or both), or enter a user ID each time you sign on to a system.

- Using the EMLI identifier alone:

```
EMLI SYSB,3
```

This allows you to connect directly to system B using the work station address configured on system A. A user ID and a password are required

only for system B. You can include the user ID as an optional parameter in the EMLI statement, or enter a user ID each time you sign on to the system.

Token-Ring Router Identifiers: Required

The identifiers in this group are used only when you have an IBM Token-Ring or Ethernet connection to the host system. When you are operating in this environment, you must have a TRLI identifier for each system you want to communicate with. The other identifiers are optional, but should be looked at to see if a specified value, rather than a supplied value, would benefit the operation of your system.

Identifier	Parameter	Description
TRLI		<p>This is the link identification identifier. This identifier must be in the router configuration file when you are using the IBM Token-Ring Network router. This identifier is used to start and stop links. More than one identifier can be specified. You must have an TRLI identifier for each adapter address that you want to communicate with on the IBM Token-Ring Network. The entries are processed in the sequence of appearance. To stop a link, the configuration file must contain an TRLI identifier with only the link name.</p> <p>The following example shows the sequence of the parameters in the TRLI statement to start a link:</p> <pre>TRLI system name for link, system address, destination SAP, user ID, MAXOUT, MAXIN, TIMERT1, TIMERT2, TIMERTI</pre>
	System name for link	<p>It is the name of the system to which you want to connect. It is:</p> <ol style="list-style-type: none"> Used to refer to the link between your personal computer and the host system. Used as the system name. This name must be the same name as the LCLLOCNAME parameter on the host system command DSPNETA.
	System address	<p>The address of the AS/400 IBM Token-Ring Adapter. This address is 12 hexadecimal characters. You must enter this address. See your AS/400 system administrator for this address.</p>
	Destination SAP	<p>This is an optional value. Specify this value only if the AS/400 system has changed the assumed value. This value is the service access point (SAP) value that is the same as the AS/400 router system service access point (SSAP) value. When this value is specified, it must be a hexadecimal number from 04 to FC and divisible by four.</p>
	User ID	<p>This parameter is optional; if not specified, STARTRTR uses the common user ID and password, or prompts you for a user ID and associated password. The user ID is the same user ID you would use to sign on to a work station. This value can be 1 to 10 characters. When this user ID is specified and security is active on the host system, you are prompted for the associated password.</p>

Token-Ring Router Identifiers: Optional

In order to increase performance in a file-serving environment, these values need to be changed from their default values because they affect the operation of the IBM Token-Ring Adapter. If you do not add these values to the TRLI entry in the CONFIG.PCS file, the defaults are used.

For more information on how to set these values, refer to the *IBM Local Area Network Technical Reference*.

Identifier	Parameter	Description								
TRLI	MAXOUT (transmit window count)	This value specifies the maximum number of sequentially-numbered blocks of data (I-frames) that may be outstanding at any time. The numeric value can be from 0 to 127. If this value is not specified, the adapter default value of 2 is used.								
	MAXIN (receive window count)	This value specifies the maximum number of sequentially-numbered blocks of data (I-frames) that may be received before sending an acknowledgment. The numeric value can be from 0 to 127. The token-ring adapter default value is 2.								
	TimerT1 (response timer)	The timer controls the length of time the sending station waits after sending a frame for a response to the frame. Normal settings would be one to two seconds. The decimal value can be from 0 to 10.								
	TimerT2 (receive acknowledgment timer)	This timer starts when a block of data (I-frame) is received. The timer stops when an acknowledgment is sent. The value of this timer must be less than that of Response Timer to ensure that the remote link station received the delayed acknowledgment before its response timer expires. Typical values are normally 80 to 256 milliseconds. A valid entry is a numeric value in the range of 0 to 99.								
	TimerTI (inactivity timer)	This is an optional value. The inactivity timer runs when the response timer (TIMERT1) is not running. The value for this parameter should be between 0 and 10. This value should be five to ten times greater than the TIMERT1 value. If a value is not specified, the adapter default value is used.								
	N2 (frame retry)	This is an optional value. This value specifies the number of times the router tries to resend a sequentially numbered block of data (I-frame) when the previous attempt to send the data failed. This value is used in conjunction with the Response Timer. Enter a value from 0 to 255. If you do not specify a value, 0 will be used.								
	CT1 (connection timer)	<p>This is an optional value. This timer controls the length of time (in half-second increments) the router waits during a connection attempt before trying to resend a connection frame when no response was received for the previous connection frame. Enter a value from 1 to 255. The following are the default values for each connection phase:</p> <table border="0"> <tr> <td>WaitForLocalTestResponse</td> <td>6</td> </tr> <tr> <td>WaitForBroadcastTestResponse</td> <td>12</td> </tr> <tr> <td>WaitForXIDResponse</td> <td>18</td> </tr> <tr> <td>WaitForSABME</td> <td>18</td> </tr> </table> <p>If you specify a Connection Timer value, this value will be used for all of the connection phases.</p>	WaitForLocalTestResponse	6	WaitForBroadcastTestResponse	12	WaitForXIDResponse	18	WaitForSABME	18
	WaitForLocalTestResponse	6								
WaitForBroadcastTestResponse	12									
WaitForXIDResponse	18									
WaitForSABME	18									
CN2 (connection retry)	This is an optional value. This value specifies the number of times the router should try to contact a remote system when that system does not respond to the router's previous attempts to connect. It is used in conjunction with the Connection Timer (CT1) value. Enter a value from 0 to 255. If you do not specify a value, 0 is used for all connection phases except WaitForBroadcastTestResponse, where 2 is used. If you specify a Connection Retry value, this value is used for all of the connection phases.									

Identifier	Parameter	Description
	Block number/ID number	This is an optional value. This value specifies the SNA Block Number/ID Number portion of the Data Link Control Exchange Identifier (DLC XID). This value is not typically used to connect to AS/400 systems because the router fills this field with hexadecimal zeroes telling the AS/400 system to ignore the field. However, the AS/400 system or a different remote system may be configured to require a certain value in this field. If that is the case, you cannot connect to the remote system unless you specify the correct value. This value corresponds to the <i>Exchange identifier</i> field in the Create Controller Description (APPC) (CRTCTLAPPC) command on the AS/400 system. A valid entry is 8 hexadecimal characters.
TRAN	Token-ring adapter number	The number of the IBM Token-Ring Network Adapter you want the router to use. When you have more than one adapter installed in your personal computer, you must tell the router which adapter is to be used. There are two possible adapter numbers that can be used. The primary adapter uses 0 as its adapter number. The secondary adapter uses number 1. The value 0 is assumed. If you want a PC Support application to run on the second adapter, you must specify this identifier with the value of 1.
TRSS	Token-ring service access point	This is an optional identifier. The service access point (SAP) value used by the IBM Token-Ring Network router in the personal computer. Valid values are hex 04 to hex FC, but must be divisible by four. This value must be different from the SAP value used by other personal computer programs using the token-ring network adapter. When this identifier is specified, it must be the same value as the DSAP parameter on the host system command CRTCTLAPPC. For more information, refer to the AS/400 online help for this command. The default value is hex 04.
TRRL	Number of systems	This is an optional identifier. The number of systems on the token-ring that you want to communicate with at the same time. The maximum number allowed is six. If this identifier is not specified, three is assumed. Do not specify more links than you need because each link takes up personal computer and IBM Token-Ring Network adapter resources. If the IBM Token-Ring Network Adapter has already been opened by other programs, the number of links will be the smallest of the following: <ul style="list-style-type: none"> • Number of available links • TRRL value • Default value
TRAL	Reserve additional links	This is an optional identifier and is ignored if the IBM Token-Ring Network Adapter has already been opened. Allows you to reserve links to be used by other personal computer programs that will be using the IBM Token-Ring Network Adapter. Specify this identifier only if you plan to have other programs use the IBM Token-Ring Network Adapter. Zero is assumed. The sum of TRAL and TRRL cannot be larger than 32. If more than one TRAL identifier is found in the configuration file, the last entry is used.
TRAS	Reserved additional service access points	This is an optional identifier and is ignored if the adapter has already been opened. Allows you to specify how many additional service access point stations (SAPS) will be reserved, in addition to the one needed by the router, when the IBM Token-Ring Network Adapter is initialized and opened. You should specify this identifier only if you plan to have other personal computer programs using the IBM Token-Ring Network Adapter. If more than one TRAS identifier entry is found in the configuration file, only the last one is used.

Identifier	Parameter	Description
TRMF	Token-ring maximum frame size	This is an optional identifier. It specifies the physical frame size used by the token-ring for personal computer to AS/400 system communications. Large frame sizes require additional PC memory. A 16MB token-ring environment is required to use a frame size greater than 2048. If you are using an Ethernet connection, the maximum frame size is 1496.

Note: Certain parameters on the Create Controller Description (APPC) (CRTCTLAPPC) command dictate how the local system treats the adjacent system in a token-ring environment. Default values for the APPC controller you create represent a personal computer on a token-ring that is communicating with the AS/400 system.

When you want to communicate with the AS/400 system using a token-ring APPC controller, you need to change some of the default values for the following parameters:

- TRNCNNRTY: Change the default value of 10 to 2.
This value specifies the number of times to try a transmission when attempting to make a connection to the host system.
- TRNRSPTMR: Change the default value of 10 to 30.
This value specifies the time period to determine an inoperative condition on the link after being connected.
- TRNCNNTMR: Change the default value of 70 to 2.
This value specifies the time period to determine an inoperative condition on the link at connection time.
- TRNACKTMR: Keep the default value of 1.
This value specifies the time to delay sending acknowledgments for received frames.
- TRINACTMR: Change the default value of 100 to 10.
This value specifies the time period used to determine an inactive condition for the controller.
- TRNACKFRQ: Keep the default value of 1.
This value specifies the maximum number of frames received before sending an acknowledgment to the controller.

Using TRLI to Connect to Another System

The following example shows how you can use the TRLI identifier with or without the ADRS identifier to connect to an AS/400 system through an intermediate system in an APPN network.

The example is based on the following conditions:

- The personal computer is connected to system A (SYSA) using a token-ring connection.
- The token-ring address of system A is 400000000001.
- System A is connected to system B (SYSB) using APPN.

To use system A as the intermediate system for connecting to system B, you could use either of the following in the configuration file:

- Using both the TRLI and ADRS identifiers:

```
TRLI SYSA,400000000001
ADRS SYSB,SYSA
```

This allows you to connect to system A, then to system B. A user ID and a password are required for both systems. You can include a user ID as an optional parameter in the TRLI or ADRS statements (or both), or enter a user ID each time you sign on to a system.

- Using the TRLI identifier alone:

```
TRLI SYSB,400000000001
```

This allows you to connect directly to system B using the token-ring address on system A. A user ID and a password are required only for system B. You can include the user ID as an optional parameter in the TRLI statement, or enter a user ID each time you sign on to the system.

Note: You can also use the TRLI identifier to connect to an AS/400 system using any APPN network node as an intermediate system. (For example, the intermediate system could be a personal computer running the OS/2 program and the Networking Services/2 program.) The personal computer running PC Support/400 is attached to the intermediate system using a token-ring connection. The intermediate system is connected to the AS/400 system on an APPN network. You would use the following statement in the PC Support/400 configuration file:

```
TRLI SYSTEM,4nnnnnnnnnn
```

In this case, SYSTEM is the name of the system to connect to and 4nnnnnnnnnn is the token-ring address of the intermediate system.

Synchronous Data Link Control (SDLC) Router Identifiers

Identifier	Parameter	Description
SDLI		<p>This is the link identification identifier. This identifier must be in the router configuration file when you are using the IBM SDLC or PC Support Asynchronous router.</p> <p>Link identification includes the system name for link, station address, and user ID. The format of the identifier is:</p> <pre>SDLI system name for link, station address, user ID, SDT0, SDNT, SDCT</pre>
	System name for link	<p>The name of the system to which you want to connect. It is:</p> <ol style="list-style-type: none"> 1. Used to refer to the link between your personal computer and the host system. 2. Used as the system name. This name must be the same name as the LCLLOCNAME parameter on the host system Display Network Attributes (DSPNETA) command.
	Local station address	<p>This address is the address by which the host system identifies the SDLC-attached personal computer. The value must be between hexadecimal 01 and FE.</p>
	User ID	<p>This parameter is optional; if not specified, the STARTRTR command uses the common user ID and password, or prompts you for your user ID and associated password. The user ID is the same user ID you would use to sign on a work station. The value can be 1 to 10 characters.</p> <p>When this user ID is specified and security is active on the host system, the user needs to provide the associated password.</p>

Identifier	Parameter	Description
	Time-out value	<p>This parameter is optional. It specifies the amount of time to which the hardware timer is set each time the SDLC router issues a command to the SDLC hardware. If the command is not completed before the hardware timer expires, the attempted command fails.</p> <p>Values for this parameter can range from 5 to 40 seconds. The default value is 40 seconds.</p>
	Number of time-outs	<p>This parameter is optional. It specifies the number of times the hardware timer is allowed to expire when the SDLC router issues a command to the SDLC hardware. If the maximum number of times is reached before the command is completed, the command attempt fails.</p> <p>Values for this parameter can range from 1 to 255 attempts. The default value is 5. If you specify 255 for this parameter and 40 for the Time-out value parameter, the connection request will be allowed a total of 170 minutes (40 seconds X 255 attempts) to complete successfully.</p>
	Connect timer	<p>This parameter is optional. It specifies the amount of time the router waits for a connection to be established between the personal computer and the AS/400 system. If the value for this parameter is reached, the router drops the data terminal ready (DTR) signal to the modem.</p> <p>Values for this parameter can range from 5 to 255 seconds. The default value is 90. If you specify 255, the router assumes the AS/400 system will provide initial contact, and will wait for a call from the AS/400 system until either a connection is established or you request the router to stop waiting for contact.</p>
	Block number/ID number	<p>This is an optional value. This value specifies the SNA Block Number/ID Number portion of the data link control exchange identifier (DLC XID). This value is not typically used to connect to AS/400 systems because the router fills this field with hexadecimal zeroes telling the AS/400 system to ignore the field. However, the AS/400 system or a different remote system may be configured to require a certain value in this field. If that is the case, you cannot connect to the remote system unless you specify the correct value. This value corresponds to the <i>Exchange identifier</i> field in the Create Controller Description (APPC) (CRTCTLAPPC) command on the AS/400 system. A valid entry is 8 hexadecimal characters.</p>
SDLT	Line type	<p>You can select either a point-to-point network or a multiple-point network. You can also select either a switched line or a nonswitched line. NONSWTPP indicates a nonswitched point-to-point line. SWTPP indicates a switched point-to-point line. MP indicates a nonswitched multiple point line. The default value is SWTPP. The PC Support/400 SDLT parameter must match the connection type (CNN) parameter of the line description on the host system.</p>
SDLF	Line facility	<p>Half-duplex (HALF) indicates that the line or modem cannot be used to transmit data in both directions at the same time. Duplex (FULL) indicates that the line or modem can be used to transmit data in both directions at the same time. Select duplex transmission if your modem is capable of duplex operation and if it supports constant request-to-send. The default is half-duplex.</p> <p>Note: SDLC still operates in half-duplex mode, but configuring the line as duplex eliminates the <i>clear to send</i> delay from the modem. Duplex is most effective when the personal computer modem and the AS/400 modem are configured as duplex.</p>
SDCM	Connection method	<p>Select either data terminal ready (DTR), which is the default, or connect data set to line (CDSTL). Modems for the United States and Canada usually conform to using DTR.</p>

Identifier	Parameter	Description
SDDE	NRZI data	<p>If you select Yes, NRZI data coding is used. If you select No, NRZI data coding is not used. The default is yes.</p> <p>Note: For SDLC communications, when you are connecting several personal computers in a multiple point network to a line splitter, you must either:</p> <ul style="list-style-type: none"> Specify *NO for the NRZI value on the AS/400 system when creating the SDLC line description with CRTLINSDLC, and specify No for the SDDE value for the personal computer. Configure the splitter so that it uses the request-to-send line to gate transmitted data on the network. <p>The PC Support/400 and the host communications line must be configured the same for NRZI data coding.</p>
SDMR	Modem rate	<p>This value specifies the speed at which the line operates if the modem has the rate select feature. Full speed (FULL) indicates that the line operates at 100% of the selected data rate on the modem. Half-speed (HALF) indicates that the line operates at 50% of the selected data rate on the modem. The default is full speed.</p>
SWAD	Switched automatic dial function	<p>This identifier is optional. This value specifies to the SDLC router that the modem supports the automatic dial feature. The maximum length for this value is 60 characters. Along with this field, you should indicate the number to be dialed. For example, if your modem accepts the string CRN as a call command indication and you want to dial the number: 1-987-654-3210, the following entry should be in your configuration file:</p> <pre>SWAD CRN 1-987-654-3210</pre> <p>The CRN is a call command indication to the modem.</p>
SWAR	Switched automatic dial response	<p>This identifier is optional. This is the response that the modem returns when a successful connection to the AS/400 system has occurred. The maximum length for this value is 20 characters. Your modem may not provide this function.</p> <p>Refer to Chapter 8, "Installing PC Support/400 for Synchronous Data Link Control (SDLC) Connections" for more information regarding the SDLC router.</p>

Using SDLI to Connect to Another System

The following example shows how you can use the SDLI identifier with or without the ADRS identifier to connect to an AS/400 system through an intermediate system in an APPN network.

The example is based on the following conditions:

- The personal computer is connected to system A (SYSA) using an SDLC connection.
- System A is configured to allow your personal computer to use station address F7.
- System A is connected to system B (SYSB) using APPN.

To use system A as the intermediate system for connecting to system B, you could use either of the following in the configuration file:

- Using both the SDLI and ADRS identifiers:

```
SDLI SYSA,F7
ADRS SYSB,SYSA
```


This allows you to connect to system A, then to system B. A user ID and a password are required for both systems. You can include a user ID as an optional parameter in the SDLI or ADRS statements (or both), or enter a user ID each time you sign on to a system.

- Using the SDLI identifier alone:

```
SDLI SYSB,F7
```

This allows you to connect directly to system B using the station address on system A. A user ID and a password are required only for system B. You can include the user ID as an optional parameter in the SDLI statement, or enter a user ID each time you sign on to the system.

Asynchronous Router Identifiers

The following identifiers are used only when the personal computer is connected to the host system through asynchronous PC Support and the ASCII work station controller.

Identifier	Parameter	Description
ASBR	Baud rate	This identifier may be in the configuration file when you are using the asynchronous router. This value is the baud rate. You can select 1200, 2400, 4800, 9600, or 19200. The default value is 1200. Note: 19200 is supported only on PS/2* Model 50 and above. The maximum when you use a personal computer, IBM Personal Computer XT*, or the IBM convertible personal computer is 4800.
ASDB	Number of data bits	This identifier may be in the configuration file when you are using the asynchronous router. This value is the number of data bits per byte. You can select 7 or 8. The default value is 8.
ASMI	Modem initialization string	This identifier may be in the configuration file when you are using the asynchronous router. This value identifies the modem initialization string. The modem initialization string allows the user to tailor how the modem operates once the PC Support asynchronous router is started. The maximum number of characters is 80 and there is no default. If this identifier is found in the configuration file, the STARTRTR program allows commands and data to be sent to the modem. Refer to "Using the Asynchronous Router" on page 20-30 for more information regarding the asynchronous router.
ASPN	Port number	This identifier may be in the configuration file when you are using the asynchronous router. This value identifies the port number. You can select COM1, COM2, COM3, or COM4. The default is COM1. Note: COM3 and COM4 are supported only on PS/2 Model 50 and above.
ASPR	Parity	This identifier may be in the configuration file when you are using the asynchronous router. This value identifies the parity. You can select even or odd. The default is none. The parity setting is ignored in the 8-bit data mode.
ASSB	Stop bits per byte	This identifier may be in the configuration file when you are using the asynchronous router. This value identifies the number of stop bits per byte. You can select 1 or 2. The default is 1.
SDLI		This is the link identification identifier. This identifier must be in the router configuration file when you are using the IBM SDLC or the PC Support Asynchronous router. Link identification includes the system name for link, station address, and user ID. The format is: SDLI system name for link, station address, user ID

Identifier	Parameter	Description
	System name for link	<p>The name of the system to which you want to connect. It is:</p> <ol style="list-style-type: none"> Used to refer to the link between your personal computer and the host system. Used as the system name. This name must be the same name as the LCLLOCNAME parameter on the host system Display Network Attributes (DSPNETA) command.
	Local station address	Any valid station address can be used. The value must be between hexadecimal 01 and FE.
	User ID	<p>This parameter is optional; if not specified, the STARTRTR program uses the common user ID and password, or prompts you for your user ID and associated password. The user ID is the same user ID you would use to sign on a work station. The value can be 1 to 10 characters.</p> <p>When this user ID is specified and security is active on the host system, the user needs to provide the associated password.</p>
	Time-out value	<p>This parameter is optional. It specifies the amount of time to which the hardware timer is set each time the asynchronous communications router issues a command to the asynchronous communications hardware. If the command is not completed before the hardware timer expires, the attempted command fails.</p> <p>Values for this parameter can range from 5 to 40 seconds. The default value is 40 seconds.</p>
	Number of time-outs	<p>This parameter is optional. It specifies the number of times the hardware timer is allowed to expire when the asynchronous communications router issues a command to the asynchronous communications hardware. If the maximum number of times is reached before the command is completed, the command attempt fails.</p> <p>Values for this parameter can range from 1 to 255 attempts. The default value is 1. If you specify 255 for this parameter and 40 for the Time-out value parameter, the connection request will be allowed a total of 170 minutes (40 seconds X 255 attempts) to complete successfully.</p>
	Connect timer	<p>This parameter is optional. It specifies the amount of time the router waits for a connection to be established between the personal computer and the AS/400 system. If the value for this parameter is reached, the router drops the data terminal ready (DTR) signal to the modem.</p> <p>Values for this parameter can range from 5 to 255 seconds. The default value is 90.</p>
SDLT	Line type	You can select a point-to-point network. You can also select either a switched line or a nonswitched line. NONSWTPP indicates a nonswitched point-to-point line. SWTPP indicates a switched point-to-point line. The default value is SWTPP. The PC Support/400 SDLT parameter must match the attach parameter on the device description on the host system.
SDLF	Line facility	Half-duplex (HALF) indicates that the line or modem cannot be used to transmit data in both directions at the same time. Duplex (FULL) indicates that the line or modem can be used to transmit data in both directions at the same time. Select duplex transmission if your modem is capable of duplex operation and if it supports constant request-to-send. The default is full duplex.

Identifier	Parameter	Description
SWAD	Switched automatic dial function	This identifier is optional. The value for this identifier specifies to the PC Support asynchronous router that the modem supports the automatic dial feature. The maximum length for this value is 60 characters. Along with this field, you should indicate the number to be dialed. For example, if your modem accepts the string ATDT as a call command indication and you want to dial the number: 1-987-654-3210, the following entry should be in your configuration file: SWAD ATDT 1-987-654-3210
SWAR	Switched automatic dial response	This identifier is optional. This is the response that the modem returns when a successful connection to the AS/400 modem has occurred. The maximum length for this value is 20 characters. For example, SWAR connect 2400 Your modem may not provide this function.

Shared Folders Function Identifiers

Use these identifiers when using the shared folders function. The SFLR identifier applies to all shared folders function types. The FTYP, CBSZ, FEMU, MCAC, and MCAE identifiers apply to types 1 and 2. The CBSZ, FEMU, and MCAX identifiers apply when using the extended DOS option of PC Support/400.

Identifier	Parameter	Description
MCAC	Cache size for conventional memory	This entry specifies the amount of personal computer memory used for conventional memory caching by the STARTFLR program. If you do not specify the MCAC value, the default amount of memory (0) is used. The cache size value is required and must be a numeric value from 3 to 640 (3K to 640KB). If you specify 0, caching is not done. Note: If you increase the size of the shared folders function cache, the results may be better performance. However, using conventional memory results in less memory being available for other application programs.
MCAE	Cache size for expanded memory	This entry specifies the amount of personal computer memory used for expanded memory caching by the STARTFLR program. If you do not specify the MCAE value, the default amount of memory (128KB) is used. This value is required and must be a numeric value from 32 to 4096. If you specify 0, caching is not done. Note: If you increase the size of the shared folders function cache, you allow more data to be cached on the personal computer, which improves shared folders function performance.
MCAX	Cache size for extended memory	This entry specifies the amount of personal computer extended memory used for memory caching by the STARTFLR program when using the extended DOS option of PC Support/400. If you do not specify the MCAX value, the default amount of memory (320KB) is used. This value is required and must be a numeric value from 3 to 8192. If you specify 0, caching is not done. Note: If you increase the size of the shared folders function cache, you allow more data to be cached on the personal computer, which improves shared folders function performance.

Identifier	Parameter	Description
FEMU		<p>This identifier is the shared folders expanded memory usage identifier. This entry indicates how expanded memory is used by shared folders function code, buffers, and cache. If you do not specify the FEMU value, the shared folders function uses expanded memory for programs, buffers, and the cache when expanded memory is available. The default value is 1 to use expanded memory. Select 2 to use conventional memory.</p> <p>For the extended DOS option of PC Support/400, FEMU is used to specify the location of the communications buffer only when it cannot be placed in extended memory. The values for <i>program</i>, <i>cache buffers</i>, and <i>cache table</i> are ignored.</p> <p>The format for the FEMU identifier is: FEMU program,communication buffer,cache buffers,cache table</p> <p>The supported values are:</p>
	Program	Specifies if the shared folders programs should be in expanded memory. Select 1 to use expanded memory or select 2 to use conventional memory.
	Communications buffers	Specifies if the shared folders communications buffer should be in expanded memory. Select 1 to use expanded memory or select 2 to use conventional memory.
	Cache buffers	Specifies if the shared folders cache buffers should be in expanded memory. Select 1 to use expanded memory or select 2 to use conventional memory.
	Cache table	Specifies if the shared folders cache table should be in expanded memory. Select 1 to use expanded memory or select 2 to use conventional memory.
CBSZ	Communications buffer size	<p>This identifier specifies the amount of conventional memory the personal computer uses for the shared folders communications buffer. Increasing the buffer size generally improves performance. For shared folders function types 1 and 2, the default value is 14KB and the value must be a numeric value from 2 to 32 (2 to 32KB). For the shared folders function type used with the extended DOS option, the default value is 8KB and the value must be a numeric value from 1 to 64 (1 to 64KB).</p> <p>Note: The CBSZ entry is not used when the communications buffer is located in expanded memory.</p>
FTYP	Shared folders function type	This identifier specifies the shared folders function type that you want to use.
SFLR		<p>Specifies the drive to be assigned or released by the shared folders function configuration program (CFGFLR.EXE). For example, to assign a drive: SFLR 1,D,Folder,System</p> <p>To release a drive: SFLR 2,D</p>
	Action	Specifies the action to be performed on the drive. Select 1 to assign or 2 to release.
	Drive letter	Specifies the shared folders function drive you want to assign or release. You can use the letters C through Z or leave this field blank so the program uses the next available drive. If you specify an asterisk (*) for the release action, all drives currently assigned are released.

Identifier	Parameter	Description
	Folder name	Specifies the name of the folder on which you want the action performed. If no folder name is specified for the assign action, a system drive is assigned.
	System name	Specifies the system name where the folder you are assigning or releasing is located. If you do not specify this parameter, the default system is assumed.

Virtual Printer Identifiers

The identifiers in this section are used by the virtual printer programs CFGVPRT.COM, to assign virtual printers and release virtual printers, and VPRT.EXE, to change the ASCII to EBCDIC translation tables for virtual printers. The VPCP identifier applies only when using the extended DOS option of PC Support/400. For more information about the virtual printer function, refer to Chapter 15, "Managing Virtual Printers."

Identifier	Parameter	Description
PRNT		<p>This identifier contains the parameters that control the selected virtual printer. You need a PRNT identifier in the CONFIG.PCS file or alternative configuration file, for each virtual printer you want to assign or release. When you complete configuration, this identifier contains all of the values that control the selected virtual printer. If you have a CFGVPRT command in the STARTPCS.BAT file, the program uses these identifiers to automatically set up your virtual printers. This is done each time PC Support is started. The PC Support installation program adds CFGVPRT to the STARTPCS.BAT file if you select virtual printer.</p> <p>The following example shows the sequence of the parameters. The abbreviations show the location of the parameter in the command. If you do not use a parameter, you must still use a comma (,) to mark its place in the parameter line.</p> <pre>PRNT PCP, [SN], PD, PFL, PF, [PDT, CPI, CPL, LPI, PL, LPP, NC, TOV, CO, PCS, DFP, UC]</pre>
	PCP (PC printer)	<p>The personal computer's name for the virtual printer you want to assign. The personal computer refers to the PC printers and virtual printers by the names LPT1, LPT2, and LPT3. The valid entry for this field is a single digit indicating which name you want to use for your virtual printer; either 1, 2, or 3.</p> <p>If you specify this value and the other values are blank, the virtual printer specified is released when you run CFGVPRT.</p>
	SN (System name)	<p>This name is optional; if you do not specify a name, the default system name is used when you run CFGVPRT.COM. It is the name of the host system that the printer you want to use as a virtual printer is attached to.</p>
	PD (Printer device)	<p>The name of the printer you want to use as a virtual printer.</p>
	PFL (Printer file library)	<p>The name of the library that contains the printer file you want to use. If you select a printer file, but do not select a library, the host system searches all of the libraries defined in the AS/400 library list (*USRLIBL).</p>

Identifier	Parameter	Description
	PF (Printer file)	<p>The name of the printer file you want to use. If you select a printer file, but do not select a library, the host system searches all of the libraries defined in the AS/400 library list (*USRLIBL).</p> <p>Note: The AS/400 system uses printer files to control information printed on AS/400 printers. A <i>printer file</i> contains information to format and control printing. Printer files are stored in <i>libraries</i> on the AS/400 system. A library is used to group related objects on the AS/400 system and to find objects by name when they are used.</p>

Identifier	Parameter	Description
	PDT (Printer data type)	<p>AS/400 printers are not designed to print data from the personal computer. This means that the PC Support/400 virtual printer programs need to convert the data from your personal computer before it can be printed on the AS/400 printer. The <i>Printer data type</i> prompt tells the virtual printer how to handle the data from your personal computer. If you do not change the value for this prompt, the virtual printer automatically converts the ASCII data to SNA character string (SCS).</p> <p>The values you can select for this prompt are:</p> <ol style="list-style-type: none"> 1. SCS data <p>Select this data type if your PC program is supplying data that is already SCS and does not have to be translated from ASCII to SCS. You may select this option if you are using programs that supply final-form text (FFT), such as DisplayWrite 4.</p> <p>If you select this option and the virtual printer you are using cannot print the data in the manner you request it (for example, underlined), the virtual printer does not change the data to a printable form. You receive a message instead.</p> <p>If you select this option and your printed document does not look the way you expect it to, you may want to return to this prompt and select option 3 (Final-form text) instead.</p> 2. Convert ASCII to SCS <p>Select this data type if your PC program is supplying ASCII data and you want the data to print on an SCS or IPDS printer.</p> 3. Final-form text <p>Select this data type if you are using any program supplying final-form text (FFT), such as DisplayWrite 4.</p> <p>If you select this option and the virtual printer you are using cannot print the data in the manner you request it (for example, underlined), the virtual printer changes the data to a printable form.</p> <p>When you select this option, your text data can be printed on any AS/400 printer. However, because printers vary in their capabilities, your printed document may not look the way you expect it to. If this happens, you may want to return to this prompt and select option 1 (SCS data) instead.</p> 4. ASCII data <p>Select this data type if your PC program is supplying ASCII data and you want the data to print on an ASCII printer that is connected to the host system.</p> 5. AFPDS <p>Select this data type if you are using personal computer programs that supply advanced function printing data stream (AFPDS) data and you want to print the data on a printer connected to the AS/400 system that is using AFP (advanced function printing) support.</p>
	CPI (Characters per inch)	<p>The number of characters per inch you want for your virtual printer. If this value is not specified, a value is supplied by CFGVPRT when the virtual printer is assigned. If you do not know the values allowed for the printer you are using as your virtual printer, refer to the printer's manual for the allowed values.</p>

Identifier	Parameter	Description
	CPL (Characters per line)	The maximum number of characters per line that you want the virtual printer to print. If this value is not specified, a value is supplied by CFGVPRT when the virtual printer is assigned. If you do not know the values allowed for the printer you are using as your virtual printer, refer to the printer's manual for the allowed values.
	LPI (Lines per inch)	The number of lines you want the virtual printer to print per inch. If this value is not specified, a value is supplied by CFGVPRT when the virtual printer is assigned. If you do not know the values allowed for the printer you are using as your virtual printer, refer to the printer's manual for the allowed values.
	PL (Page length)	The length of your page in lines. If this value is not specified, a value is supplied by CFGVPRT when the virtual printer is assigned. Calculate the length of your page in lines by multiplying the number of lines per inch that you selected by the length of the page in inches. For example, if you selected 6 lines per inch and your page is 11 inches long, your page length is 66 lines.
	LPP (Lines per page)	The number of lines, between 1 and your page length, that you want the virtual printer to print on each page. If this value is not specified, a value is supplied by CFGVPRT when the virtual printer is assigned. If you select a number less than your page length, the blank lines are at the bottom of your printed page. If your data is already formatted, you should use the same value as the page length value.
	NC (Number of copies)	The number of copies that you want the virtual printer to print. If this value is not specified, a value is supplied by CFGVPRT when the virtual printer is assigned. If you selected data type 1, 2, or 4, select a value from 1 to 255. If you selected data type 3, select a value from 1 to 99.
	TOV (Time-out value)	<p>The number of seconds you want the virtual printer to wait after it stops receiving data and before it closes the output file. If the personal computer data contains a reset command, the file closes immediately. If the virtual printer is assigned with printer data type 2 and the personal computer data contains printer commands to close the output file, the file closes immediately. The output file must be closed before it can begin to print on the host system printer (unless you select No for the defer-printing-until-output-file-closed value). For example, if you select 10 seconds, the printer waits for 10 seconds after it has received the last character of data to see if any more is coming. Then it closes your output file and prints it as soon as all the output files that closed before yours have printed.</p> <p>If your set of data does not print all in one printout, but gets split up into smaller ones, the time-out value is too short. Increase the number of seconds. If you are getting two or more sets of data combined in one printout, the time-out value is too long. Decrease the number of seconds, or wait longer after sending one set of data to be printed before you send the next.</p> <p>If you select 0, your output file does not close by time-out. Unless there are printer commands in your data that close the output file, or your application sends a reset command, you must close the output file using the Close action in the SETVPRT program after you send it to the virtual printer.</p> <p>If this value is not specified, 10 seconds is supplied by the CFGVPRT command when the virtual printer is assigned.</p>

Identifier	Parameter	Description
	CO (Command override)	<p>This value affects the way the virtual printer handles some personal computer printer commands when the virtual printer is assigned with printer data type 2.</p> <ol style="list-style-type: none"> 1. Yes. The virtual printer uses the personal computer commands found in the data that change characters per inch (cpi), characters per line (cpl), lines per inch (lpi), lines per page (lpp), and page length (pl), rather than the values you choose when you assign the virtual printer. The virtual printer also accepts superscript and subscript printer commands. These commands are in effect for the current output file only. 2. No. The virtual printer uses the values you choose for characters per inch, characters per line, lines per inch, lines per page, and page length when you assign the virtual printer and ignores the personal computer commands that change those values in the data. Superscript and subscript commands found in the data are ignored.
	PCS (PC printer character set)	<p>This value lets you choose the PC character set that the virtual printer uses.</p> <ol style="list-style-type: none"> 1. Character set 1. The virtual printer handles ASCII codes hex 80 through 9F as printer commands. 2. Character set 2. The virtual printer handles ASCII codes hex 80 through 9F as printable characters. <p>For example, in character set 1, the printer handles a hex 9B as the beginning of a printer command and expects the next character to be part of a command. However, in character set 2, the printer translates a hex 9B into a printable character. If you do not select a character set, character set 2 is supplied by the CFGVPRT program when the virtual printer is assigned.</p>
	DFP (Defer printing until output file closed)	<p>This value lets you decide whether you want your data to begin printing on the host system printer immediately or whether you want to wait until all of the data has arrived at the host system. If you do not select a value, a value is supplied by the CFGVPRT program when the virtual printer is assigned.</p> <ol style="list-style-type: none"> 1. Yes. The host system printer waits until the output file is closed before it starts printing the data. 2. No. The host system printer starts printing your data as soon as it receives the first character, without waiting for the output file to close. <p>Note: Choosing this value can save you time if you are printing a large amount of data, but other users are not able to print their data until your output file is closed and completely printed.</p>
	UC (Untranslatable character)	<p>This value lets you choose the EBCDIC hexadecimal code for the character the virtual printer prints if it finds a character it cannot translate from ASCII to EBCDIC. If this value is not specified, hex 40 (blank) is supplied by the CFGVPRT program when the virtual printer is assigned.</p> <p>Because many personal computers supply ASCII data and many printers accept only EBCDIC data, the virtual printer must translate each character of data sent by the personal computer from ASCII to EBCDIC. Some characters do not translate from ASCII to EBCDIC. When an untranslatable character is found, the virtual printer substitutes a printable EBCDIC character.</p>

Identifier	Parameter	Description
AEP1	Translation table filename	Allows you to change the ASCII-to-EBCDIC translation tables used by the virtual printer to translate personal computer printer data to host system data. AEP1 corresponds to the virtual printer LPT1. For example, AEP1 filename.ext
AEP2	Translation table filename	Allows you to change the ASCII-to-EBCDIC translation tables used by the virtual printer to translate personal computer printer data to host system data. AEP2 corresponds to the virtual printer LPT2. For example, AEP2 filename.ext
AEP3	Translation table filename	Allows you to change the ASCII-to-EBCDIC translation table used by the virtual printer to translate personal computer printer data to host system data. AEP3 corresponds to the virtual printer LPT3. For example, AEP3 filename.ext For more information regarding the translation table considerations, refer to Chapter 15, "Managing Virtual Printers."
VPCP		This identifier contains the parameters which apply to the virtual print function in general.
	VPMAX	This value indicates the maximum number of virtual printers you will be using. Valid values are from 1 to 9. The default value is 3.

Message Function Identifiers

The identifiers in this group are used by the message function to control the sending, displaying, and receiving of messages.

Note: If you are using work station function, message function is not necessary. If you select both work station function and message function, conflicts may arise when you use the user profile message queue on the AS/400 system.

Identifier	Parameter	Description
MDEF		Identifies the AS/400 system you want to send messages to and receive messages from. It also allows you to specify if you want your messages displayed immediately or if you want to be notified that you have messages at the host system. For example, MDEF system name, control option
	System name	This is an optional value. The name of the AS/400 system you want to send messages to and receive messages from. This name must be the same as the system name for the link identified in an ADRS, EMLI, TRLI, or SDLI value. If you do not specify an AS/400 name, the system name selected by the router as the default is used.

Identifier	Parameter	Description
	Control options	<p>This is an optional value. This value specifies the message control option for the AS/400 system. If the session option is specified, you must select option 1 or 2:</p> <ol style="list-style-type: none"> 1. Notify. You receive an audible alarm when your messages are waiting. 2. Immediate. The application presently running is stopped and the messages are displayed as they arrive. After you have exited, the contents of the display are restored and the application continues. <p>If no option is specified, 1. Notify is assumed. If you automatically start the message function from an AUTOEXEC.BAT file and there is no MDEF value in the configuration file, you communicate with the default AS/400 system using the Notify control option.</p>
MMRI	Message receive interval	<p>This is an optional identifier. It allows you to specify the number of seconds in the message receive interval. This establishes how often the AS/400 system is checked for messages. When no identifier is specified, 60 seconds is assumed. A value of 1 to 3600 seconds (1 hour) is allowed. When there is more than one MMRI entry in the configuration file, the last entry is used by your system.</p> <p>Note: A small MMRI could affect the performance of other applications on your personal computer. This is caused by messages being automatically checked for more frequently. If you would like messages more often, then use a small MMRI value. If performance is a concern, then a large MMRI is recommended.</p>
MTIM	Message display time-out value	<p>This is an optional value. It allows you to specify how long an immediate message appears on your display. When you do not specify a time, 60 seconds is assumed. A value of 0 specifies no time-out. A value of 1 to 3600 seconds (1 hour) is allowed. When a message is displayed, the following can happen:</p> <ul style="list-style-type: none"> • If you do not press any keys, the message goes away in the specified number of seconds and the PC program starts again. • If you press a key, the message appears again until you press the Esc key. <p>When more than one MTIM entry is in the configuration file, the last entry is used by your system.</p>

Organizer Identifiers

The identifiers in this group are used by the organizer function on the personal computer.

Identifier	Parameter	Description
PCOP		<p>This identifier and its values start the PC Support organizer. You can have more than one PCOP identifier in the configuration file. A group of identifiers can be used to set up a sequence of events when you start the organizer. The STRPCO command is run as a result of the PCOP entries. For example,</p> <p>PCOP session number, system command</p>
	Session number	The work station function session number you want the organizer to use.
	System command	Any AS/400 command. This command runs immediately after you sign on the system.

Identifier	Parameter	Description
PTIM	Input inhibited indicator time-out value	This value allows you to specify the number of seconds the organizer waits for input inhibited to become inactive. If input inhibited does not become inactive in the specified time, the organizer displays a message that communications have been lost with the host system. A value of 0 specifies no time-out. A value of 1 to 3600 seconds (1 hour) is allowed. When there is more than one PTIM entry in the configuration file, the last entry is used by your system. The default value for PTIM is 30 seconds.
PCOM		This is an optional identifier which allows you to use the hot-key sequence or load a text-assist function. For example, PCOM HOTKEY,LOADTA,TA1
	Allow hotkey	This value allows you to use a hot-key sequence to access a work station function session from which a DOS session was started.
	Load editor	This value allows you to load the text-assist function when you start the organizer. This ensures that the text-assist function is available when you request to use it. If you are using the basic DOS option of PC Support/400, you can assign the text-assist function to only one session.
	Editor type	This value allows you to load an advanced text-assist function. This advanced text-assist function requires more memory to run, but contains additional functions that you may find useful. If you are using the extended DOS option of PC Support/400, this value is ignored. The equivalent of the advanced text-assist function is always loaded.

Update Identifiers

The identifiers in this group are used by the update function on the personal computer.

Identifier	Parameter	Description
UPDT		This identifier and its values determine how the PC Support/400 update function operates. You can have multiple UPDT identifiers in the configuration file. The format is: UPDT Source,Target,S,L,1,Description For example, a typical entry for PC Support/400 might be: UPDT I:\QIWSFLR,C:\PCS,S,,PC Support/400
	Source	The drive and directory from which the updates will be applied.
	Target	The drive and directory to which the updates will be applied.
	Update subdirectories option	Specifies whether or not subdirectories should be included when applying updates. To include subdirectories, this value must be S. If this value is blank, subdirectories will not be included.
	Update option	Specifies whether files should be copied from the source to the target, or whether the files needing updating should only be listed. To list the files without copying, this value must be L. After listing the files, the update function allows you to specify whether to perform the updates immediately or continue without updating the files. If this value is blank, the files will be copied from the source to the target.
	Update directly	Specifies whether files should be copied immediately or placed in a temporary subdirectory and copied the next time you start the personal computer. To copy the files immediately, this value must be 1. This option is ignored unless you are using the OS/2 operating system.

Identifier	Parameter	Description
ADMN	Description	Up to 40 characters describing the files you want to update. This is a required parameter.
		This identifier and its values determine how the PC Support/400 update function operates in connection with the administration function. You can have only one ADMN identifier in the configuration file. See Chapter 3, "Using the PC Support/400 Administration Function" for information about using the administration function.
		The format is: ADMN Source,Target,S,L,1,Description
		For example, a typical entry might be: ADMN I:\QIWSADM\USER\JOE,C:\PCS,S,,Joe
	Source	The drive and directory from which the updates will be applied.
	Target	The drive and directory to which the updates will be applied.
	Update subdirectories option	Specifies whether or not subdirectories should be included when applying updates. To include subdirectories, this value must be S.
	Update option	Specifies whether files should be copied from the source to the target, or whether the files needing updating should only be listed. To list the files without copying, this value must be L. After listing the files, the update function allows you to specify whether to perform the updates immediately or continue without updating the files.
Update directly	Specifies whether files should be copied immediately or placed in a temporary subdirectory and copied the next time you start the personal computer. To copy the files immediately, this value must be 1. This option is ignored unless you are using the OS/2 operating system.	
Description	Up to 40 characters describing the files you want to update. This is an optional parameter.	

Application Program Interface Support Identifiers

A data queues application program interface is available for your use. The identifier for the data queues function controls the size of the buffers used for the two communications connections established for sending and receiving messages.

Identifier	Parameter	Description
DQBS		Identifies the total amount of buffer space (in kilobytes) to allow for each pair of connections established by the data queues function. The format is: DQBS buffer size
	Buffer size	Valid values for the buffer size are from 2 to 64. The default is 2KB. Half of the value you specify is used for sending and half for receiving.

Other PC Support Identifiers

The identifiers in this group are used by more than one identifier group. The identifiers in this group are used to change translation tables, identify monitor type and writing speed, and change the program interrupt number.

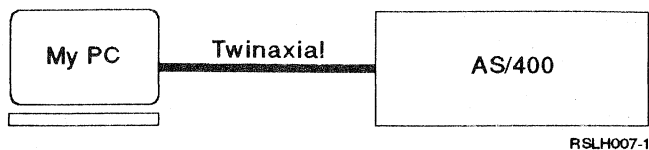
Identifier	Parameter	Description
A2ET	Translation table filename	<p>Use this identifier to change the ASCII-to-EBCDIC translation table used by the router, virtual printer, message function, shared folders, and transfer function. If this entry is in the specified file when STARTRTR.EXE is run, the translation table found in the file name is used instead of the supplied translation table. For example,</p> <p>A2ET filename.ext</p> <p>Note: When you use an A2ET identifier to change the translation table, the new translation table is used by PC Support until:</p> <ul style="list-style-type: none"> • Another identifier changes the translation table. • You start the personal computer again.
DSPL	Display-type Display-speed	<p>This identifier can be used to specify what attributes to use for your display and whether to use high-speed or slow-speed display writing when using a color graphics adapter. Using the wrong attributes can make the display difficult to read. You need to specify this entry only if you are using a monochrome monitor attached to a graphics adapter. For example,</p> <p>DSPL display type display speed</p> <p>An uppercase or lowercase C for a color display, or an uppercase or lowercase M for a monochrome display. If you specify this value on any of the interactive PC Support commands or STARTMSG.EXE, that value overrides the value specified in this configuration file.</p> <p>An uppercase or lowercase H for high-speed display writing, or an uppercase or lowercase S for slow-speed display writing for the command you specify. The default of high-speed display writing is used in most situations.</p>
E2AT	Translation table filename	<p>Use this identifier to change the EBCDIC-to-ASCII translation table used by the virtual printer, message function, shared folders, and transfer function. If this entry is in the specified file when STARTRTR.EXE is run, the translation table found in the file name is used instead of the supplied translation table. For example,</p> <p>E2AT filename.ext</p> <p>Note: When you use an E2AT identifier to change the translation table, the new translation table is used by PC Support until:</p> <ul style="list-style-type: none"> • The translation table is changed by another identifier. • The personal computer is started again.
PCSI	Interrupt number	<p>Allows you to specify the value of the PC Support interrupt number for the PC Support message function and transfer function. You can change the value if hex 69 is being used by another program on your personal computer.</p> <p>If the PC Support message function or the PC Support transfer function has been started, the PCSI value can only be changed by starting the personal computer again. If a PCSI value is found in another configuration file after the start, it will be ignored. The value used must be a number between hex 60 and hex 69.</p>

Example of Completed Configuration Work Sheet

This work sheet was done for a personal computer that:

- Is connected to an AS/400 system with a twinaxial connection
- Uses a standard display
- Has a Proprinter attached to port LPT1
- Will be using:
 - Extended DOS option of PC Support/400
 - Shared folders function

- Virtual printer
- Message function
- Organizer
- Work station function



Router

The following information is needed to configure the router identifiers on your personal computer.

Identifier	Possible Choices	Default Value	Write Your Choice
RTYP Router type	ITRN 5250 SDLC ASYN	5250	5250
INTL Software interrupt number	Hex 60 to 68	Hex 68	
RTLN PC location name	User-defined	APPN.User-defined	APPN.MYPC
ADRS System name	User-defined	None	
ADRS Name of link	User-defined	None	
ADRS User ID	User-defined	None	
RMRS Remove system name	User-defined	None	
RTCU Common user ID	User-defined	None	
RTDN Default system name	System name	First ADRS, EMLI, TRLI, or SDLI entry	
EMLI System name for link	User-defined	None	DEPT
EMLI Work station address	User-defined	None	2
EMLI User ID	User-defined	None	COMMONID

Identifier	Possible Choices	Default Value	Write Your Choice
TRAN Token-ring adapter number	0 or 1	0	
TRSS Token-ring service access point	Hex 04 to FC (see Note 1)	Hex 04	
TRRL Number of systems	1 to 6	3	
TRAL Reserve additional links	0	(see Note 2)	
TRAS Reserved additional service access points	0 to 9	0	
TRLI System name for link	User-defined	None	
TRLI System address	User-defined	None	
TRLI Destination SAP	Hex 04 to FC (see Note 1)	Hex 04	
TRLI User ID	User-defined	None	
TRLI MAXOUT (Transmit window count)	0 to 127	None	
TRLI MAXIN (Receive window count)	0 to 127	None	
TRLI TIMERT1 (Response timer)	0 to 10	None	
TRLI TIMERT2 (Receive acknowledgment timer)	0 to 99	None	
TRLI TIMERTI (Inactivity timer)	0 to 10	None	

Identifier	Possible Choices	Default Value	Write Your Choice
TRLI CT1 (Connection timer)	1 to 255	None	
TRLI CN2 (Connection retry)	0 to 255	None	
TRLI N2 (Frame retry)	0 to 255	0	
TRLI Block number/ID number	8 hexadecimal characters	None	
TRMF Token-ring maximum frame size	0 to 2048	None	
Notes:			
<ol style="list-style-type: none"> 1. This value must be divisible by four. 2. The sum of TRRL and TRAL cannot be greater than 32. 			

The following information is needed to configure the SDLC router identifiers on your personal computer.

Identifier	Possible Choices	Default value	Write Your Choice
SDLI System name for link	User-defined	None	
SDLI Local station address	Hex 01 to FE	None	
SDLI User ID	User-defined	None	
SDLI Time-out value	5 to 40	None	
SDLI Number of time-outs	1 to 255	None	
SDLI Connect timer	5 to 255	None	
SDLI Block number/ID number	8 hexadecimal characters	None	

Identifier	Possible Choices	Default value	Write Your Choice
SDLT Line type	NONSWTPP SWTPP MP	SWTPP	
SDLF Line facility	FULL HALF	HALF	
SDCM Connection method	DTR CDSTL	DTR	
SDDE NRZI data	Yes No	Yes	
SDMR Modem rate	FULL HALF	FULL	
SWAD Switched auto- matic dial func- tion	User-defined	None	
SWAR Switched auto- matic dial response	User-defined	None	
ASBR Baud rate	1200 2400 4800 9600 19200	1200	
ASDB Number of data bits	7 or 8	8	
ASMI Modem initial- ization string	Maximum 80	User-defined	
ASPN Port number	COM1 COM2 COM3 COM4	COM1	
ASPR Parity	Even or Odd	None	
ASSB Stop bits per byte	1 or 2	1	

Shared Folders Function

The following information is needed to configure the shared folders function identifiers on your personal computer.

Identifier	Possible Choices	Default value	Write Your Choice
MCAC Cache size for conventional memory	0, 3K to 640K	0	
MCAE Cache size for expanded memory	0, 32K to 4096K	128K	
MCAE Cache size for extended memory	0, 3K to 8192K	320K	320K
FEMU Program	1 (Expanded memory) 2 (Conventional memory)	1	
FEMU Communications buffers	1 (Expanded memory) 2 (Conventional memory)	1	
FEMU Cache buffers	1 (Expanded memory) 2 (Conventional memory)	1	
FEMU Cache table	1 (Expanded memory) 2 (Conventional memory)	1	
CBSZ Communications buffer size	2K to 32K (Basic DOS) 1K to 64K (Extended DOS)	14K	8K
FTYP Shared folders function type	1 or 2	2	
SFLR Action	1 (Assign) 2 (Release)	None	1
SFLR Drive letter	C to Z	Next available	I
SFLR Folder name	User-defined	None	

Identifier	Possible Choices	Default value	Write Your Choice
SFLR System name	User-defined	None	DEPT

Virtual Printer

The following information is needed to configure the virtual printer identifiers on your personal computer.

Identifier	Possible Choices	Write Your Choice
PRNT PCP (PC printer)	1. LPT1 2. LPT2 3. LPT3	LPT1
PRNT SN (System name)	User-defined	DEPT
PRNT PD (Printer device)	User-defined	P1
PRNT PFL (Printer file library)	User-defined	
PRNT PF (Printer file)	User-defined	
PRNT PDT (Printer data type)	1. SCS 2. ASCII to SCS 3. Final-Form Text 4. ASCII 5. AFPDS	2. ASCII to SCS
PRNT CPI (Characters per inch)	User-defined	10
PRNT CPL (Characters per line)	User-defined	132
PRNT LPI (Lines per inch)	User-defined	6
PRNT PL (Page length)	1 to 255	66
PRNT LPP (Lines per page)	1 to 255	60

Identifier	Possible Choices	Write Your Choice
PRNT NC (Number of copies)	1 to 255	1
PRNT TOV (Time-out values)	0, 1 to 255	10
PRNT CO (Command override)	1. Yes 2. No	2. No
PRNT PCS (PC printer character set)	1 or 2	2
PRNT DFP (Defer printing until output file closed)	1. Yes 2. No	1. Yes
PRNT UC (Untranslatable character)	User-defined	40
AEP1 Translation table filename	User-defined	
AEP2 Translation table filename	User-defined	
AEP3 Translation table filename	User-defined	
VPCP VPMAX	1 to 9	

Message Function

The following information is needed to configure the message function identifiers on your personal computer.

Identifier	Possible Choices	Default Value	Write Your Choice
MDEF System name	User-defined	Default system	DEPT
MDEF Control options	1. Notify 2. Immediate	1. Notify	1. Notify

Identifier	Possible Choices	Default Value	Write Your Choice
MMRI Message receive interval	1 to 3600	60	300
MTIM Message display time	0, 1 to 3600	60	0

Organizer

The following information is needed to configure the organizer identifiers on your personal computer.

Identifier	Possible Choices	Default Value	Write Your Choice
PCOP Session number	1 to 5	None	
PCOP System command	User-defined	For session 1: 1, STRPCO 1, GO PCOMNU For other sessions: x, STRPCO	
PTIM Input inhibited indicator time	0, 1 to 3600	30	30
PCOM Allow hotkey	HOTKEY	None	
PCOM Load editor	LOADTA	None	
PCOM Editor type (Basic DOS only)	TA1	None	

Update

The following information is needed to configure the update identifiers on your personal computer.

Identifier	Possible Choices	Default Value	Write Your Choice
UPDT Source	User-defined	None	
UPDT Target	User-defined	None	

Identifier	Possible Choices	Default Value	Write Your Choice
UPDT Update subdirectories option	S or Blank	Blank	
UPDT Update list option	L or Blank	Blank	
UPDT Update directly	1 or blank	1	
UPDT Description	User-defined	None	
ADMN Source	User-defined	None	
ADMN Target	User-defined	None	
ADMN Update subdirectories option	S or Blank	Blank	
ADMN Update list option	L or Blank	Blank	
ADMN Update directly	1 or blank	1	
ADMN Description	User-defined	None	

Application Program Interface Support Work Sheets

The following information is needed to configure the data queues function identifiers on your personal computer.

Identifier	Possible Choices	Default Value	Write Your Choice
DQBS	2 to 64	2	

Other PC Support Identifiers

The identifiers in this group are used by more than one function.

Identifier	Possible Choices	Default Value	Write Your Choice
A2ET Translation table filename	User-defined	None	

Identifier	Possible Choices	Default Value	Write Your Choice
DSPL Display type	C (Color) or M (Monochrome)	None (see Note)	
DSPL Display speed	H (High) or S (Slow)	None (see Note)	
E2AT Translation table filename	User-defined	None	
PCSI Interrupt number	Hex 60 to 69	Hex 69	
Note: If the DSPL display type or display speed is not specified, PC Support uses the value appropriate for your personal computer display.			

Work Sheets for PC Support Configuration

The work sheets in this section are organized by function. Individual work sheets are included for the following functions:

- Router function
- Shared folders function
- Virtual printer function
- Message function
- Organizer function
- Update function
- Data queues function
- PC Support characteristics common to several functions

You can make as many copies of the work sheets as you want.

The AS/400 administrator provides the AS/400 names; you provide the personal computer information, based on its hardware configuration.

Router Configuration Work Sheets

The following information is needed to configure the router identifiers on your personal computer.

Identifier	Possible Choices	Default Value	Write Your Choice
RTYP Router type	ITRN 5250 SDLC ASYN	5250	
INTL Software interrupt number	Hex 60 to 68	Hex 68	

Identifier	Possible Choices	Default Value	Write Your Choice
RTLN PC location name	User-defined	APPN.User-defined	
ADRS System name	User-defined	None	
ADRS Name of link	User-defined	None	
ADRS User ID	User-defined	None	
RMRS Remove system name	User-defined	None	
RTCU Common user ID	User-defined	None	
RTDN Default system name	System name	First ADRS, EMLI, TRLI, or SDLI entry	
EMLI System name for link	User-defined	None	
EMLI Work station address	User-defined	None	
EMLI User ID	User-defined	None	
TRAN Token-ring adapter number	0 or 1	0	
TRSS Token-ring service access point	Hex 04 to FC (see Note 1)	Hex 04	
TRRL Number of systems	1 to 6	3	
TRAL Reserve additional links	0	(see Note 2)	
TRAS Reserved additional service access points	0 to 9	0	
TRLI System name for link	User-defined	None	
TRLI System address	User-defined	None	

Identifier	Possible Choices	Default Value	Write Your Choice
TRLI Destination SAP	Hex 04 to FC (see Note 1)	Hex 04	
TRLI User ID	User-defined	None	
TRLI MAXOUT (Transmit window count)	0 to 127	None	
TRLI MAXIN (Receive window count)	0 to 127	None	
TRLI TIMERT1 (Response timer)	0 to 10	None	
TRLI TIMERT2 (Receive acknowl- edgment timer)	0 to 99	None	
TRLI TIMERTI (Inactivity timer)	0 to 10	None	
TRLI CT1 (Connection timer)	1 to 255	None	
TRLI CN2 (Connection retry)	0 to 255	None	
TRLI N2 (Frame retry)	0 to 255	0	
TRLI Block number/ID number	8 hexadecimal characters	None	
TRMF Token-ring maximum frame size	0 to 2048	None	
Notes:			
1. This value must be divisible by four.			
2. The sum of TRRL and TRAL cannot be greater than 32.			

The following information is needed to configure the SDLC router identifiers on your personal computer.

Identifier	Possible Choices	Default value	Write Your Choice
SDLI System name for link	User-defined	None	
SDLI Local station address	Hex 01 to FE	None	
SDLI User ID	User-defined	None	
SDLI Time-out value	5 to 40	None	
SDLI Number of time-outs	1 to 255	None	
SDLI Connect timer	5 to 255	None	
SDLI Block number/ID number	8 hexadecimal characters	None	
SDLT Line type	NONSWTPP SWTPP MP	SWTPP	
SDLF Line facility	FULL HALF	HALF	
SDCM Connection method	DTR CDSTL	DTR	
SDDE NRZI data	Yes No	Yes	
SDMR Modem rate	FULL HALF	FULL	
SWAD Switched auto- matic dial func- tion	User-defined	None	
SWAR Switched auto- matic dial response	User-defined	None	
ASBR Baud rate	1200 2400 4800 9600 19200	1200	

Identifier	Possible Choices	Default value	Write Your Choice
ASDB Number of data bits	7 or 8	8	
ASMI Modem initialization string	Maximum 80	User-defined	
ASPN Port number	COM1 COM2 COM3 COM4	COM1	
ASPR Parity	Even or Odd	None	
ASSB Stop bits per byte	1 or 2	1	

Shared Folders Function Work Sheets

The following information is needed to configure the shared folders function identifiers on your personal computer. These identifiers can be used with any shared folders function type except type 0.

Identifier	Possible Choices	Default value	Write Your Choice
MCAC Cache size for conventional memory	0, 3K to 640K	0	
MCAE Cache size for expanded memory	0, 32K to 4096K	128K	
MCAX Cache size for extended memory	0, 3K to 8192K	320K	
FEMU Program	1 (Expanded memory) 2 (Conventional memory)	1	
FEMU Communications buffers	1 (Expanded memory) 2 (Conventional memory)	1	

Identifier	Possible Choices	Default value	Write Your Choice
FEMU Cache buffers	1 (Expanded memory) 2 (Conventional memory)	1	
FEMU Cache table	1 (Expanded memory) 2 (Conventional memory)	1	
CBSZ Communications buffer size	2K to 32K (Basic DOS) 1K to 64K (Extended DOS)	14K	
FTYP Shared folders function type	1 or 2	2	
SFLR Action	1 (Assign) 2 (Release)	None	
SFLR Drive letter	C to Z	Next available	
SFLR Folder name	User-defined	None	
SFLR System name	User-defined	None	

Virtual Printer Function Work Sheets

The following information is needed to configure the virtual printer identifiers on your personal computer.

Identifier	Possible Choices	Write Your Choice
PRNT PCP (PC printer)	1. LPT1 2. LPT2 3. LPT3	
PRNT SN (System name)	User-defined	
PRNT PD (Printer device)	User-defined	
PRNT PFL (Printer file library)	User-defined	

Identifier	Possible Choices	Write Your Choice
PRNT PF (Printer file)	User-defined	
PRNT PDT (Printer data type)	1. SCS 2. ASCII to SCS 3. Final-Form Text 4. ASCII 5. AFPDS	
PRNT CPI (Characters per inch)	User-defined	
PRNT CPL (Characters per line)	User-defined	
PRNT LPI (Lines per inch)	User-defined	
PRNT PL (Page length)	1 to 255	
PRNT LPP (Lines per page)	1 to 255	
PRNT NC (Number of copies)	1 to 255	
PRNT TOV (Time-out values)	0, 1 to 255	
PRNT CO (Command override)	1. Yes 2. No	
PRNT PCS (PC printer character set)	1 or 2	
PRNT DFP (Defer printing until output file closed)	1. Yes 2. No	
PRNT UC (Untranslatable character)	User-defined	

Identifier	Possible Choices	Write Your Choice
AEP1 Translation table filename	User-defined	
AEP2 Translation table filename	User-defined	
AEP3 Translation table filename	User-defined	
VPCP VPMAX	1 to 9	

Message Function Work Sheets

The following information is needed to configure the message function identifiers on your personal computer.

Identifier	Possible Choices	Default Value	Write Your Choice
MDEF System name	User-defined	Default system	
MDEF Control options	1. Notify 2. Immediate	1. Notify	
MMRI Message receive interval	1 to 3600	60	
MTIM Message display time	0, 1 to 3600	60	

Organizer Work Sheets

The following information is needed to configure the organizer identifiers on your personal computer.

Identifier	Possible Choices	Default Value	Write Your Choice
PCOP Session number	1 to 5	None	
PCOP System command	User-defined	For session 1: 1, STRPCO 1, GO PCOMNU For other sessions: x, STRPCO	

Identifier	Possible Choices	Default Value	Write Your Choice
PTIM Input inhibited indicator time	0, 1 to 3600	30	
PCOM Allow hotkey	HOTKEY	None	
PCOM Load editor	LOADTA	None	
PCOM Editor type (Basic DOS only)	TA1	None	

Update Function Work Sheets

The following information is needed to configure the update identifiers on your personal computer.

Identifier	Possible Choices	Default Value	Write Your Choice
UPDT Source	User-defined	None	
UPDT Target	User-defined	None	
UPDT Update subdirectories option	S or Blank	Blank	
UPDT Update list option	L or Blank	Blank	
UPDT Update directly	1 or blank	1	
UPDT Description	User-defined	None	
ADMN Source	User-defined	None	
ADMN Target	User-defined	None	
ADMN Update subdirectories option	S or Blank	Blank	
ADMN Update list option	L or Blank	Blank	

Identifier	Possible Choices	Default Value	Write Your Choice
ADMN Update directly	1 or blank	1	
ADMN Description	User-defined	None	

Application Program Interface Support Work Sheets

The following information is needed to configure the data queues function identifiers on your personal computer.

Identifier	Possible Choices	Default Value	Write Your Choice
DQBS	2 to 64	2	

Other PC Support Values Work Sheets

The identifiers in this group are used by more than one function.

Identifier	Possible Choices	Default Value	Write Your Choice
A2ET Translation table filename	User-defined	None	
DSPL Display type	C (Color) or M (Monochrome)	None (see Note)	
DSPL Display speed	H (High) or S (Slow)	None (see Note)	
E2AT Translation table filename	User-defined	None	
PCSI Interrupt number	Hex 60 to 69	Hex 69	
Note: If the DSPL display type or display speed is not specified, PC Support uses the value appropriate for your personal computer display.			

Chapter 25. Work Station Function Configuration Information and Work Sheets

Planning Work Station Function Configuration	25-2
Completed Work Station Function Work Sheet	25-2
The Session Profile Work Sheet	25-3
Display Session	25-3
Graphics Session	25-3
Printer Session	25-4
The Keyboard Profile Work Sheet	25-4
The Master Profile Work Sheet	25-5
Work Sheets for Basic Work Station Function Configuration	25-5
The Session Profile Work Sheet	25-5
Display Sessions	25-5
Graphics Session	25-6
Printer Session	25-6
The Keyboard Profile Work Sheet	25-7
The Master Profile Work Sheet	25-7
Session Names	25-8
Work Sheets for Advanced Work Station Function Configuration	25-8
General Options Work Sheets	25-8
General Session Options Work Sheet	25-9
Display Options Work Sheet	25-10
Printer Options Work Sheet	25-10

Planning Work Station Function Configuration

The work station function configuration program (CFGWSF.EXE) helps you create or change your master profiles, keyboard profiles, and session profiles. When you use the work station function configuration program, you set up your profiles by selecting options and supplying values for prompts on different displays. The configuration program adds the information you have specified to your work station function files. You do not need to edit the files yourself.

Before you set up your work station function configuration, you should decide how many display and printer sessions you want, the characteristics you want each session to have, and the type of keyboard style you want to use. Use the information in Chapter 16, "Managing Your Work Station Function Sessions" to familiarize yourself with the options you can select and the steps you should follow to select them.

You do not have to create names for the master and session profiles. The configuration program provides names for all profiles. You can use the names and record them on the work sheet as you run the configuration program, or you can assign your own names.

The system administrator must provide the AS/400 names; you provide the personal computer information, based on its hardware configuration.

The work sheets in this chapter provide information that closely follows the displays presented to you in the work station function configuration program.

The work sheets are divided into the following categories:

- Work sheets for basic work station function configuration

The work sheets in this category apply to:

- Session profiles
- Keyboard profiles
- Master profiles

- Work sheets for advanced work station function configuration

The work sheets in this category apply to:

- General options applying to all work station function sessions
- Display options applying to display sessions
- Printer options applying to printer sessions

Use the blank work sheets to record the configuration options you select. An example of a completed work sheet is also provided to help guide you through the configuration process. For information about using the work station function configuration program, see Chapter 16, "Managing Your Work Station Function Sessions."

Completed Work Station Function Work Sheet

The following work sheets are examples of what completed work station function configuration work sheets may look like. Use the blank work sheets in "Work Sheets for Basic Work Station Function Configuration" on page 25-5 and "Work Sheets for Advanced Work Station Function Configuration" on page 25-8 to record your own selections.

The Session Profile Work Sheet

The session profile work sheet consists of three sections. The first section shows which options were selected for basic display session configuration. The second section shows which options were selected for basic graphics session configuration. The third section shows which options were selected for basic printer session configuration.

Display Session

The following information is needed for the display sessions you create.

Option	Possible Choices	Default Value	Write Your Choice
Profile name	User-defined	SESS.DAT	SESSTST1.DAT
Device type	Standard display 132 column Graphics display Graphics display with plotter	Standard display	Standard display
System type	AS/400 System/36	AS/400	AS/400
Bypass AS/400 host system sign-on	Yes No	No	

Graphics Session

If you selected a graphics session with a plotter under the *All Sessions* heading, you must specify the following:

Option	Possible Choices	Default Value	Write Your Choice
Plotter address	01 to 30	03	03
Async port name	COM1 COM2 COM3 COM4	COM1	COM1
Baud rate	110 to 9600	1200	9600
Number of data bits	7 or 8	7	7
Number of stop bits	1 or 2	1	1
Parity	Odd Even	Even	Even

Option	Possible Choices	Default Value	Write Your Choice
Plotter type	6180 eight-pen (valid for system type AS/400 only) 7371 7372 six-pen	7372	7372

Printer Session

The following information is needed for the printer sessions you create.

Option	Possible Choices	Default Value	Write Your Choice
Profile name	User-defined	SESS.DAT	SESSTST2.DAT
Printer manufacturer	IBM HP Epson NEC Other	IBM	IBM
Printer model	Depends on manufacturer	Depends on manufacturer	
System type	AS/400 System/36	AS/400	AS/400

The Keyboard Profile Work Sheet

If you choose to create your own keyboard profile, choose a keyboard type.

Option	Possible Choices	Default Value	Write Your Choice
Keyboard profile name	User-defined	KEYBD.KBD	KEYBD.KBD
Keyboard type	PC-type AT-type Enhanced type Convertible type	Current attached key- board	PC-type
Keyboard style	5250-style PC-style	PC-style	PC-style
Special-character keyboard set	Yes No	No for United States Yes for other supported coun- tries	

The Master Profile Work Sheet

For the master profile, you provide the following information:

Option	Possible Choices	Default Value	Write Your Choice
Master profile name	WSF.DAT User-defined	WSF.DAT	WSFTEST.DAT
Keyboard style	5250-style PC-style User-defined	PC-style	PC-style

Session Names: You should know how many sessions you want and their names. Record them on the following table:

Option	Possible Choices	Default Value	Write Your Choice
Number of sessions you want	1 to 5	1	2
Session 1 profile name	User-defined		SESSTST1.DAT
Session 2 profile name	User-defined		SESSTST2.DAT
Session 3 profile name	User-defined		
Session 4 profile name	User-defined		
Session 5 profile name	User-defined		

Work Sheets for Basic Work Station Function Configuration

Use the work sheets in this section to record the basic configuration information needed to operate work station function. The information you supply here will help you set up your master profiles, session profiles, and keyboard profile.

The Session Profile Work Sheet

Use the following sections to record the options you want for display sessions, for graphics sessions, and for printer sessions.

Display Sessions

You need the following information for each display session you create.

Option	Possible Choices	Default Value	Write Your Choice
Profile name	User-defined	SESS.DAT	

Option	Possible Choices	Default Value	Write Your Choice
Device type	Standard display 132 column Graphics display Graphics display with plotter	Standard display	
System type	AS/400 System/36	AS/400	
Bypass AS/400 host system sign-on	Yes No	No	

Graphics Session

If you selected a graphics session with a plotter under the *All Sessions* heading, you must specify the following:

Option	Possible Choices	Default Value	Write Your Choice
Plotter address	01 to 30	03	
Async port name	COM1 COM2 COM3 COM4	COM1	
Baud rate	110 to 9600	1200	
Number of data bits	7 or 8	7	
Number of stop bits	1 or 2	1	
Parity	Odd Even	Even	
Plotter type	6180 eight-pen (valid for system type AS/400 only) 7371 7372 six-pen	7372	

Printer Session

You need the following information for each printer session you create.

Option	Possible Choices	Default Value	Write Your Choice
Profile name	User-defined	SESS.DAT	

Option	Possible Choices	Default Value	Write Your Choice
Printer manufacturer	IBM HP Epson NEC Other	IBM	
Printer model	Depends on manufacturer	Depends on manufacturer	
System type	AS/400 System/36	AS/400	

The Keyboard Profile Work Sheet

If you choose to create your own keyboard profile, choose a keyboard type:

Option	Possible Choices	Default Value	Write Your Choice
Keyboard profile name	User-defined	KEYBD.KBD	
Keyboard type	PC-type AT-type Enhanced type Convertible type	Current attached keyboard	
Keyboard style	5250-style PC-style	PC-style	
Special-character keyboard set	Yes No	No for United States Yes for other supported countries	

The Master Profile Work Sheet

Use these work sheets to record the names you are giving to your master profiles and to your session profiles. The keyboard style you select for each master profile used for the session profiles grouped under that master profile.

Option	Possible Choices	Default Value	Write Your Choice
Master profile name	WSF.DAT User-defined	WSF.DAT	
Keyboard style	5250-style PC-style User-defined	PC-style	

Session Names

Use this work sheet to record your session profile names.

Option	Possible Choices	Default Value	Write Your Choice
Number of sessions you want	1 to 5	1	
Session 1 profile name	User-defined		
Session 2 profile name	User-defined		
Session 3 profile name	User-defined		
Session 4 profile name	User-defined		
Session 5 profile name	User-defined		

Do not configure more sessions than the personal computer can support. A configuration for five graphics-capable sessions on a personal computer with only 128KB of memory will fail when you attempt to start work station function. You might also want to run other applications in personal computer mode while work station function is resident in the personal computer memory. The memory required depends on the application. Refer to Appendix B, "PC Support Memory Requirements" on page B-1 for more information on program storage sizes.

Work Sheets for Advanced Work Station Function Configuration

Use the work sheets in this section to record your advanced work station function configuration information. The information you supply will help you specify the individual characteristics you want each display session and printer session to have.

General Options Work Sheets

Defined in the master profile and applies to all sessions within that master profile.

Option	Possible Choices	Default Value	Write Your Choice
Display save area (ignored for extended DOS)	Text buffer Graphics buffer	Text buffer	
8514/A Adapter	Yes No	Yes	

Option	Possible Choices	Default Value	Write Your Choice
Monitor attached to graphics adapter	Color Noncolor	Color	
Printer session online information	Yes No	No	
Bypass Pre sign-on display	Yes No	No	
Immediate hot key to DOS	Yes No	No	
Use expanded memory (for printer session and real mode WSF only)	Yes No	Yes	
Keyboard click	Yes No	Yes	
Host data stream buffer size (for extended DOS only)	6K to 64K	6K	
Automatically dim the display	Yes No	No	
Auto-dim interval in minutes	1 to 99	20	
Use background graphics adapter memory	Yes No	Yes	

General Session Options Work Sheet

Option	Possible Choices	Default Value	Write Your Choice
Buffer key-strokes	Yes No	Yes	
System name		User-defined	
Work station ID		User-defined	

Option	Possible Choices	Default Value	Write Your Choice
Request to Bypass AS/400 sign-on screen (applies to display sessions only)	Yes No	No	

Display Options Work Sheet

Option	Possible Choices	Default Value	Write Your Choice
Modify the EBCDIC to ASCII table	Yes No	No	
Modify display colors and attributes	Yes No	No	
Modify the column separator character	Any ASCII character	ASCII value 22	
Print display character set	127 255 (for graphics printers)	255	

Printer Options Work Sheet

The following table contains the personal printer options.

Option	Possible Choices	Default Value	Write Your Choice
Printer alarm	Yes No	Yes	
Begin printer session suspended	Yes No	No	
Form feed on suspend	Yes No	No	

Option	Possible Choices	Default Value	Write Your Choice
Initial font	OCR-B Rhetoric Courier 10 Prestige Pica Artisan 10 Courier Italic 10 OCR-A Pica Math Symbol 10 Orator Bold Gothic Bold 10 Gothic 10 Roman 10 Serif 10 Serif Italic 10 Katakana Gothic 10 Courier Bold 10 Shalom Gothic 12 Gothic Italic 12 Gothic Bold 12 Serif 12 Serif Italic 12 Serif Bold 12 Symbol Scribe 12 Script Courier 12 Prestige Elite Letter Gothic Light Italic Letter Gothic bold Prestige Elite bold Prestige Elite italic Boldface Italic Modern Boldface Essay Essay Italic Essay Bold Barak Essay Light Document Gothic 13 Prestige 15 Courier 15 Symbol Diplomat Scribe 15	Courier 10	

Option	Possible Choices	Default Value	Write Your Choice
Initial font (continued)	Serif 15 Gothic 15 Courier Bold 5 Courier 17 Courier Bold 17 Courier 17ss	Courier 10	
Prompt to change font	Yes No	No	
LAN directed print	None DOS LAN Requester	None	
Initial paper handling equipment	Continuous forms Cut sheets	Depends on model	
Continuous forms width	8.0 inches 13.2 inches	Depends on model	
Number of cut sheet drawers	1 2 None	Depends on model	
Drawer xxx paper size	Letter Half letter Legal A4 (8.3 x 11.7) A5 (5.8 x 8.3) B5 (7.2 x 10.1) Executive (7.25 x 10.5) (5.5 x 7.36 - 8.5) (8.5 x 8.51 - 11) (8.5 x 11.01 - 14)	Letter	
Form size control	Host Configured None	Host	
Envelope hopper	Yes No	Depends on model	
Drawer one orientation	COR Portrait Landscape	COR	
Drawer two orientation	COR Portrait Landscape	COR	
Automatic print adjustment	Yes No	Yes	

The following table contains options for parallel-attached printers (printers attached to the printer adapter).

Option	Possible Choices	Default Value	Write Your Choice
Parallel printer port name	LPT1 LPT2 LPT3	LPT1	

The following table contains options for serial-attached printers (printers attached to the asynchronous communications adapter).

Option	Possible Choices	Default Value	Write Your Choice
Asynchronous port name	COM1 COM2 COM3 COM4	COM1	
Baud rate	Specified values between 300 and 38400	1200	
Data bits	7 8	7	
Stop bits	1 2	1	
Use of parity bit	None Odd Even	None	

The following table contains options for changing the printer initialization string.

Option	Possible Choices	Default Value	Write Your Choice
Changing the printer initialization string	User-defined	None	

The following table contains options for modifying the EBCDIC-to-ASCII table.

Option	Possible Choices	Default Value	Write Your Choice
Modify the EBCDIC-to-ASCII table			

The following table contains printer queue options.

Option	Possible Choices	Default Value	Write Your Choice
Printer message queue name	User-defined	QSYSOPR	
Printer message queue library name	User-defined	*LIBL	

The following table contains options for keyboard sets.

Option	Possible Choices	Default Value	Write Your Choice
Special-character keyboard set	1. Yes 2. No	No for United States Yes for all other supported countries	

Part 5. Analyzing Problems with PC Support/400

Chapter 26. Personal Computer Messages	26-1
Chapter 27. AS/400 Messages	27-1
Chapter 28. Getting Help for PC Support/400 Messages and Commands	28-1
Chapter 29. The PC Support/400 Error Logging Function	29-1
Chapter 30. Personal Computer or PC Support/400 Problems	30-1
Chapter 31. Communications Problems	31-1
Chapter 32. Service Procedures	32-1

Chapter 26. Personal Computer Messages

DOS Messages	26-2
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This chapter describes personal computer messages that consist of message text only. These messages have no message identification number. For example:

```
Insert diskette for drive x and strike any key
when ready .....
```

This chapter includes only those personal computer messages that apply when you are using PC Support/400. For information on other DOS messages, refer to the publications that came with the operating system.

DOS Messages

Following are the DOS messages that may appear while you are using PC Support/400. The message descriptions include cause and recovery information.

Insert diskette for drive x and strike any key when ready.

Cause: If you have one physical diskette drive on your personal computer, the DOS operating system automatically assumes that your physical drive is the one to which you want to write or from which you want to read.

Recovery: If you are using an interactive PC Support/400 program, you should insert a diskette and start the program or change the default drive.

No paper error writing to device XXXX (virtual printer).

Cause: This error occurred due to one of the following:

- The virtual printer may not be assigned.
- A communication failure may have occurred between the personal computer and the AS/400 system.

Recovery: Select the Abort option. Run the Set Virtual Printer (SETPRT) command or the Configure Virtual Printer (CFGVPR) command to see if there are any messages to explain the error. Communications may have to be established before the virtual printer can be assigned again. Use the SETVPR or CFGVPR command to assign the virtual printer. Submit the operation again.

Write fault writing to device XXXX (virtual printer).

Cause: This error occurred due to one of the following reasons:

- The virtual printer may not be assigned.
- A communication failure may have occurred between the personal computer and the AS/400 system.

Recovery: Select the Abort option. Run the Set Virtual Printer (SETPRT) command or the Configure Virtual Printer (CFGVPR) command to see if there are any messages to explain the error. Communications may have to be established before the virtual printer can be assigned again. Use the SETVPR or CFGVPR command to assign the virtual printer. Submit the operation again.

Chapter 27. AS/400 Messages

Displaying and Printing Messages	27-2
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This chapter discusses displaying and printing AS/400 messages sent by the AS/400 system portion of PC Support/400. These messages can be identified by the prefix IWS before the message identification number and message text. Following is an example of a message issued by the AS/400 portion of PC Support/400:

IWS9819 Cannot use file &2 in library &1 at this time.

Note: In AS/400 messages, an ampersand (&) followed by a number (for example, &1) is a replacement value. When the message appears on the display, the ampersand and number will be replaced with the actual name or names to which the message applies.

For example, when message IWS9819 is displayed, it might appear as follows:

IWS9819 Cannot use file TESTDISK in library TESTLIB at this time.

Displaying and Printing Messages

Descriptions for AS/400 messages appear online only. When you are using a PC Support function, such as transfer function, and the AS/400 system sends a message to the personal computer, both the message and the cause and recovery information are displayed on the personal computer. When you are logged on to an AS/400 session, messages that are displayed show only the message itself. You can display the cause and recovery information by using the AS/400 Display Job Log (DSPJOBLOG) command or by moving the cursor to the message and pressing the Help key.

You can print the messages using the AS/400 Display Message Description (DSPMSGD) command. The DSPMSGD command prints detailed information about the messages in a message file. The descriptions of specific messages or a range of messages in one message file can be specified by their identifiers, or all messages in one message file can be specified. The printed output can be formatted or unformatted depending on the command parameters specified. Following is an example of the DSPMSGD command:

```
DSPMSGD    RANGE(IWS1650 IWS1654) MSGF(QIWS/QIWSMSG)
```

This command lists the message descriptions for those message identifiers in the file that are in the range between IWS1650 and IWS1654. For a complete description of this command, refer to the *CL Reference* manual.

Chapter 28. Getting Help for PC Support/400 Messages and Commands

Introducing the PCSHELP Command	28-2
Using the PCSHELP Command – Examples	28-2
Viewing Information about a PC Support/400 Command	28-2
Viewing Information about a PC Support/400 Message	28-3

Introducing the PCSHELP Command

The PCSHELP command allows you to display the following:

- Syntax and function information for PC Support/400 commands.
- Cause and recovery information for PC Support/400 messages.

Most PC Support/400 error messages appear in a window that allows you to select Help for additional information. In some situations, however, messages cannot appear in windows. Using the PCSHELP command allows you to display the additional information available for the message.

To use the PCSHELP command, type the following at the PC command prompt:

```
[d:][path]PCSHelp [message number]
                    [command name]
```

Press the Enter key. The following describes the parameters for this command:

message number

This is the unique 4-digit number identifying the message. This number is displayed immediately before the text of the message.

command name

This is the name of the command for which you want to display information.

Using the PCSHELP command without the optional parameters displays the help for the PCSHELP command. From this display, you can choose to display either the PC Support/400 command summary or the PC Support/400 message summary.

Using the PCSHELP Command – Examples

The following examples show you specific instances of using the PCSHELP command.

Viewing Information about a PC Support/400 Command

If you want information about the function and command line parameters of the Start Router (STARTRTR) command, enter

```
PCSHelp STARTRTR
```

at the DOS command line. A display similar to the following appears:


```

                                STARTRTR
                                More:  ↓
The Start Router (STARTRTR) command starts the PC Support router, which
controls communications with the AS/400 system.

There are two formats for the STARTRTR command. Enter the command and
any of the optional parameters.

The first format is:
d:<path>STARTRTR [e:<path>filename] ...
                [ /P ] [ /Z ]

where:

filename Specifies the name of the alternative configuration file to be

Enter Esc=Cancel F1=Help F3=Exit F9=Keys help F11=Help index
Shift+F6=View help list

```

Some of the words or phrases on the display may be highlighted. If you want information about one of the highlighted words, move the cursor to the word and press the Enter key.

Viewing Information about a PC Support/400 Message

If you received the following error message while running PC Support/400:

5031 - Command processor not found

and you do not understand this error message or what actions to take to correct the problem, enter

PCSHELP 5031

at the DOS command line. The following display appears:

```

                                5031
                                More:  ↓
Command processor not found.

Cause:  A PC Support program could not find the file for the personal
computer command processor. This happens if either of the
following conditions is true:
  • The environment variable COMSPEC was missing from the
    environment block for the PC Support program.
  • The file specified in the COMSPEC setting could not be
    found.

Recovery: From the command line, type SET. If you do not see

COMSPEC = <path>command.com (for DOS)

COMSPEC = <path>command.com (for OS/2)

refer to your operating system manual for instructions on specifying
the command interpreter. If you do not see

Esc=Cancel F1=Help F3=Exit F9=Keys help F11=Help index
Shift+F6=View help list

```

Chapter 29. The PC Support/400 Error Logging Function

Introducing the PC Support/400 Error Logging Function	29-2
Displaying the PC Support/400 Error Log	29-2
Changing the Viewing Options	29-3
Viewing a Specific Message	29-3
Clearing the Message Log	29-3
Configuring the Error Logging Function	29-3

Introducing the PC Support/400 Error Logging Function

The PC Support/400 error logging function saves error messages in a personal computer file. This provides you with a history of the PC Support/400 errors that have occurred. Information saved in the error log includes:

- The date and time the message was logged
- The name of the program that generated the message
- The message text, including the message number if it is an error message

Displaying the PC Support/400 Error Log

In order to display the PC Support/400 error log, enter the following command at the DOS prompt:

```
[d:][path]PCSL0G [/z]
```

The /z option causes the IBM logo display to be bypassed.

The following display shows you the messages you have received while using PC Support/400:

```
View Options Exit Help
PC Support/400 Error Log
More: ↑
For additional help on error messages, position
cursor to message number, press Enter.
11-02-90 09:20:40 STARTRTR
Starting Token-Ring Network Router
Version 2.0 Release 2.0 Level 00
11-02-90 09:20:40 STARTRTR
Processing: TRLI SYSTEM10,40004010046E4,,JOE
11-02-90 09:20:56 STARTRTR
Enter password for system user ID JOE:
11-02-90 09:21:02 STARTRTR
5115 Security values can not be checked 0003 084C0000
11-02-90 09:21:02 STARTRTR
5140 Connection failed for SYSTEM10
Enter Esc=Cancel F1=Help F3=Exit F10=Actions
```

The cursor is positioned at the bottom of the list, on the last error message you received. You can use the Page Up and Page Down keys to scroll through the error log. You can also move immediately to the top or bottom of the log by selecting the appropriate option from the Options pull-down window.

To receive additional information about a specific error, move the cursor to the appropriate error message and press the Enter key. This displays specific information about the error message.

Changing the Viewing Options

The View option on the action bar allows you to select whether you want to see all the PC Support/400 messages or only messages that indicate errors.

In order to change which messages are shown, do the following:

1. Press F10 to access the action bar.
2. Use the cursor keys to move the cursor to View, then press the Enter key. A window appears.
3. Select Error messages if you want to view only error messages. Select All messages if you want to view both informational and error messages.

Viewing a Specific Message

The View option on the action bar also allows you to display help for a specific message, regardless of whether or not the message appears in the error log. To display a particular message, select Specific message from the View option window. A window appears asking you to enter the message number for the message you want help for.

Clearing the Message Log

When you exit the error log (either by pressing Esc or by selecting the Exit option from the action bar), you receive a menu of options. Option 2 (Clear error log and exit) erases all the entries in the error log before returning you to the DOS prompt.

Configuring the Error Logging Function

The PC Support/400 configuration program allows you to specify whether you want to use the error logging function, and also the maximum size of the error log. When you install PC Support/400, the error logging function is automatically turned on, and the error log file will not exceed 20K. If this limit is reached, the error logging function automatically wraps log entries to the beginning of the file, replacing the oldest entries.

You should leave the error logging function on, since it is helpful when trying to diagnose PC Support/400 problems. If you have little space available on your hard disk or diskette, you should try reducing the size of the error log before you turn off the function altogether.

In order to change these defaults, do the following:

1. Select Configure PC Support/400 from the PC Support/400 Menu, or enter the CFGPCS command at the DOS prompt. The PC Support/400 Configuration display appears.
2. Select General options. The General Options for PC Support/400 display appears.
3. Select Error logging options from the list of options. The following window appears:

PC Support/400 error logging

Error Logging Options

Messages issued by PC Support functions can be stored in the PC Support error log.

Log PC Support messages ▶1. Yes
2. No

Maximum size for error log
(2 to 64 Kbytes) [20]

Enter Esc=Cancel F1=Help Spacebar

This window allows you to specify whether or not you want messages to be logged and, if so, how large you want the error log to be.

Note: If you are using the administration function to change another user's error logging options, the *Maximum size for error log* parameter is not displayed. This is because this information is stored on the user's personal computer.

4. When you are finished typing this information, press the Enter key.

Chapter 30. Personal Computer or PC Support/400 Problems

Identifying Installation Problems	30-3
Identifying Message Function Problems	30-3
Authority Errors While Sending Messages	30-3
Errors While Allocating Message Queues	30-4
Unexpected Errors While Sending or Receiving Messages	30-4
Identifying Organizer Problems	30-5
Loading Error	30-5
PCO.EXE Inactive	30-5
Missing Document	30-5
Inaccessible Document	30-6
Identifying Original Equipment Manufacturer (OEM) Card Problems	30-6
Identifying Shared Folders Problems	30-7
Installation Attempt Fails	30-7
PC Application Does Not Work	30-7
Inoperable DOS Command	30-7
Error Messages Appear in Host Job Log	30-8
Number of Bytes Free Does Not Change	30-8
Error Level 15 from CFGFLR	30-8
Different Messages Displayed for an Out-of-Space Condition	30-8
Identifying Transfer Function Problems	30-9
Transfer Function Stopped	30-9
Disk Input/Output Problems	30-10
Printer Input/Output Problems	30-11
Unexpected Transfer Function Output	30-12
Unclear Display	30-12
No Printer Output	30-12
Slow Printer Error Messages	30-12
Incorrect Printer Message	30-13
Missing Print Line	30-13
Improper Page Eject	30-13
Improper Printer Page Spacing	30-13
Incorrect Output File Placement	30-13
Print File Output in Multiple Parts	30-14
Transfer Request Resubmitted	30-14
Incorrect Data in Transferred Records	30-14
Substitution Characters in Data	30-14
Truncated Print Records	30-15
Identifying Virtual Printer Problems	30-15
Virtual Printer Stopped	30-15
Interactive Virtual Printer Program (SETVPRT) Stopped	30-15
Display Hard to Read	30-16
Virtual Printer Output Not Received	30-16
Incomplete Printer Output	30-17
Incorrect Output Format	30-17
Unreadable or Unexpected Output	30-18
Incorrect Printer Page Ejection	30-18
MODE Command Failure	30-19
Incorrect Printer Destination	30-19
Incorrect or Unreadable Document Content Architecture Output	30-19
Truncated Printer Lines	30-20
Divided Printer Output	30-20

Combined Printer Output	30-20
Printer Input/Output Problems	30-20
Output Queue Owner	30-20
Identifying Work Station Function Problems	30-21
Locating Work Station Function Job Logs	30-21
Inactive Hot Key Sequence	30-21
Inactive System Available Indicator	30-22
Starting... Message Remains On	30-22
Locked Keyboard	30-23
Display Problems	30-23
Sessions Lost after Invalid Sign-On Attempts	30-24
No Graphics Support	30-24
Sessions Do Not Produce Printed Output	30-24
Error Opening Virtual Device Interface (VDI) Device Driver	30-25
VDI Routines Message Appears	30-25
Pie Charts Appear Oblong	30-25
Enhanced Graphics Adapter (EGA) Produces Only Four Colors	30-26
Partial Chart Appears on Display	30-26
Blinking Chart Features on Monochrome Display	30-26
Plotter Does Not Produce Charts	30-26

CAUTION:

If you detect smoke, excessive heat, or unusual smells coming from your personal computer, immediately set the system unit switch to Off, disconnect the power cord, and see your system operator. (RSFTC055)

This part of the guide can help you solve a problem with PC Support/400. Check to see if any of the symptoms describe your problem, and take the corrective action described.

Before following these problem analysis procedures, do the actions described for the messages.

Use the following information for those times when your personal computer or PC Support/400 is not responding as it should. Before reading this section, you should:

- Look for some indication of processor activity to check for a stopped condition.
- Identify the problem as an AS/400 system, personal computer, or data link problem.

Identifying Installation Problems

The following description may assist you in analyzing problems with the install function.

Problem: A data error occurred while the program was trying to read a personal computer disk file.

Action: PC Support/400 programs are not able to modify files with lines that exceed 220 characters. If you are familiar with the CONFIG.SYS file and how it works, do one of the following:

- Edit the file and selectively delete unnecessary characters from the lines that are longer than 220 characters.
- Rename your CONFIG.SYS file (to CONFIG2.SYS, for example.) Install OS/2 again. The system will create a new CONFIG.SYS file for you. Look at your old CONFIG.SYS file (now called CONFIG2.SYS) and the new CONFIG.SYS file and merge the pertinent information from the old file into the new one.

If you are not familiar with the CONFIG.SYS file, see your system administrator.

Identifying Message Function Problems

The following descriptions may assist you in message function problem analysis.

Authority Errors While Sending Messages

The problem descriptions and actions for correction follow.

Problem: Authority errors occurred while you were attempting to send messages.

Action: If you are sending messages to a local user by specifying only the destination name, you must be authorized to the message queue associated with that user's work station, personal computer, or user profile. Get the correct authority from your system operator and try sending the message again.

Problem: An unexpected error occurred while you were sending or displaying messages.

Action: An error may have occurred in the message function host program. Check the job log. If any errors are listed, correct the problem. Submit the failing PC command again.

Errors While Allocating Message Queues

The problem description and actions for correction follow.

Problem: The IWS3601 or IWS3610 message is sent, indicating that an error has occurred while the system was assigning message queues.

Action: If the message function ended abnormally, a pause may occur before the system can be used because the message queues are assigned until the job finishes. Wait for a while and try the operation again, or use the Display Job (DSPJOB) or Work with Active Job (WRKACTJOB) command to check job status.

If you are using work station function, conflicts can occur while allocating the user profile message queue. Only the work station function or message function can allocate the message queue, but not both.

Unexpected Errors While Sending or Receiving Messages

The problem description and actions for correction follow.

Problem: You received message IWS3607 or IWS2587 indicating an error occurred, and the recovery for that message tells you to see the job log.

Action: Do the following:

1. Log on the AS/400 system using the work station function.
2. If the host message function jobs have ended, use the Work with Spooled Files (WRKSPLF) command to view the job log.
3. If the host message function jobs have not ended, use the Work with Active Jobs (WRKACTJOB) command to work with the job so that you can look at the job log.
4. Review the messages listed in the job log.
5. Determine the exact cause of those messages. (They may be preceded by the tests that will help in problem analysis.)
6. Correct the error according to the recovery for the given message.
7. Submit the operation again.

Identifying Organizer Problems

The following descriptions may assist you in organizer problem analysis.

Loading Error

The problem description and actions for correction follow.

Problem: You have an error loading your word processing function.

Action: Do the following:

- Go to the Profile Options display (CHGPCOPRF) and check the following prompts: *Name of editor*, *Primary program path*, *Temporary program path*, and *Secondary program path*. Check whether or not the primary and secondary program path points to the location of your word processing function.
- Determine the largest program that may be run in the current environment. You may find this by selecting the memory status function from the interactive display of the Remove PC Support (RMVPCS) command or, if you are using version 5.0 of the DOS operating system, by running the DOS MEM.EXE program. DisplayWrite 4 requires 340KB (KB equals 1024 bytes) to load the program. DisplayWrite 4/2 requires 380KB without expanded memory support (EMS) or 275KB when using EMS.

PCO.EXE Inactive

The problem description and actions for correction follow.

Problem: You received a message that the PCO.EXE program is not active.

Action: Make sure you:

- Are using a personal computer as your terminal
- Are using the DOS work station function
- Are using the appropriate session
- Have started PC Support organizer (PCO) from the command line

Missing Document

The problem description and actions for correction follow.

Problem: You cannot find a document.

Action: Check for the following errors and use the appropriate recovery procedure:

- The document name is spelled incorrectly. Correct the spelling. Submit the operation again.
- The document is not stored in a folder. If you are using your word processing function as a stand-alone, you may have stored the document in a PC drive. If so, put the document in the folder.
- The document is not stored in the correct folder. Verify the folder by doing one of the following:
 - Blank out the folder name value on the Work with Documents display. A list of the folders on the system will then appear on the display.

- If you are running stand-alone on the personal computer, enter FSPC ASSIGN. After the command has completed, do a directory (DIR) of the drive assigned. A list of the folders on the system will then appear on your display.

Inaccessible Document

The problem description and actions for correction follow.

Problem: A document you specified cannot be read.

Action: Do the following:

1. Run STRPCCMD to stand-alone environment.
2. Run the DisplayWrite product you have, such as DW 4 or DW 5.
3. Select the Utility option in the DisplayWrite product you have.
4. Select the Recovery option within the Utility option.

If this procedure does not correct the problem, do the following:

1. Enter an FSPC Release command to the drive assigned to the folder containing the document.
2. Enter an FSPC Assign command, to reassign the folder to the drive.
3. Repeat steps 1 through 3 of your word processing function stand-alone procedure.

If these steps have not corrected the problem, try the following:

1. Turn off the power to your personal computer. If you are using the IBM Token-Ring Network, wait 1.5 minutes and start your personal computer again. Try to read the document again.
2. Try to access the document from another work station.
3. Do an initial program load of the AS/400 system. Try to read the document again.
4. Call your service representative if you cannot read the document after attempting to correct the problem.

Identifying Original Equipment Manufacturer (OEM) Card Problems

The following description may assist you in analyzing problems with **original equipment manufacturer** (OEM) adapter cards.

OEM refers to the original manufacturer of equipment that is marketed by another manufacturer. For instance, you might have an IBM personal computer with an adapter card that is made by another company. In this case, the original manufacturer of the card is not IBM, so the adapter card is considered to be an OEM card.

Problem: Some OEM hardware cards use port addresses that may conflict with PC Support. This causes I/O port address conflicts in a specified range on the OEM card.

Action: Remap the OEM card's range of I/O port addresses so that the defined range does not conflict with the range used by PC Support.

- If your I/O port address conflicts fall in the range of 0310x through 0320x, your OEM card is reading only the right-most 10 bits in attempting to decode the address lines. Remap your OEM card to avoid the range 0310x through 0320x.
- If your I/O port address conflicts fall in the range of 5710x through 5720x, your OEM card is reading the full 16 bits in attempting to decode the address lines. Remap your OEM card to avoid the range 5710x through 5720x.

Identifying Shared Folders Problems

The following descriptions may assist you in shared folders problem analysis.

Installation Attempt Fails

Problem: You attempt to install PC Support/400 and receive the message Access denied.

Action: During initial installation the system security level is set to 10. Add the user profile QUSER to the system directory using the Add Directory Entry (ADDIRE) command.

PC Application Does Not Work

If your personal computer application does not work correctly with the shared folders function, use the problem description and action for correction that follow.

Problem: The result of a personal computer application is different when the application is run against a drive assigned by the shared folder function than when the application is run against a diskette or disk drive.

Action: The shared folders function does not support all personal computer commands or applications. Refer to the *PC Support/400 Technical Reference for DOS and OS/2* for the functions and types of applications that the shared folders function does not support.

Inoperable DOS Command

The problem description and actions for correction follow.

Problem: The DOS command you sent does not work.

Action: Verify that you used a DOS command that is supported by shared folders.

If the command was the DOS 4.0 compare (COMP) command and you received an Access Denied message, the value of the Maximum Number of Open Files parameter on the ECYDDX.SYS entry of the CONFIG.SYS file may be too small. If one of the drives being compared is not a shared folders drive, submit the request again specifying the shared folders drive first. Otherwise, increase the value of the Maximum Number of Open Files parameter so that it is greater than the number of files to be compared, use the Ctrl+Alt+Del key sequence to restart the personal computer, and try the request again.

Error Messages Appear in Host Job Log

Problem: Messages CPF9180 and CPF9216 appear in your host job log when running shared folders.

Action: These messages are issued as a result of normal shared folders processing. No action is required.

Number of Bytes Free Does Not Change

Problem: The number of bytes free specified when the DOS directory command (DIR) is issued against a shared folders drive does not change when a file is copied to the folder.

Action: The number of bytes free specified on the DIR command for a shared folders drive is the difference between the maximum storage allowed on the user profile and the actual storage used by that user. If this number is too large for the personal computer operating system to display, a number that can be displayed is used. This number remains the same until the actual number becomes small enough for the operating system to display. No action is required.

Error Level 15 from CFGFLR

Problem: One of the following:

- When configuring PC Support, drive I was not assigned to a folder on a host system.
- When configuring PC Support, drive I was assigned to a folder on a host system but the system name was not specified.
- An attempt was made to assign drive I to a folder on a host system that is not currently running.

Action: Do one of the following depending on the cause:

- Use the configurator program to assign drive I to a folder on a host system. The host system specified should be the one upon which you want to base your PC Support files.
- Use the configurator program to change the current drive I assignment so that a system name is specified. This will be the host system upon which you want to base your PC Support files.
- Wait for the host system to be fully operational and running before attempting to start PC Support again.

Different Messages Displayed for an Out-of-Space Condition

Problem: A number of different messages may be displayed, such as insufficient disk space, file creation error, unable to make directory, access denied, and general failure, as a result of running out of space on your user profile.

Action: These messages vary depending on when the error was actually detected. Check to see how much space you have by using the DOS directory (DIR) command. If you do not have a large amount of space free, either free up some space or have the maximum storage allowed on your user profile increased.

Identifying Transfer Function Problems

The following descriptions may assist you in problem analysis for the transfer function.

Transfer Function Stopped

The problem description and actions for correction follow.

Problem: The transfer of data between the AS/400 system and the personal computer appears to have stopped. It may have stopped at one of the following times:

- When the *From, Select, Where, Join By, Order By, Group By, Having, Field Reference Filename, or To* prompts appear, and:
 - After pressing F4 to get a list
 - After the list appears and after pressing the Up Arrow, Down Arrow, Page Up, Page Down, Ctrl+Home, or Ctrl+End key combinations
- While the
Your transfer request is running
message is displayed
- While an AS/400-to-personal computer transfer request with the display specified as the output device is running, and:
 - After pressing Up Arrow, Down Arrow, Page Up, Page Down, Ctrl+Home, or Ctrl+End key combinations, while the Transferred Data display area appears
 - While the records appear by the automatic AS/400-to-personal computer transfer function program
- While an AS/400-to-personal computer transfer request with the printer specified as the output device is running, and the
Retrieved data records being printed
message is displayed
- While an AS/400-to-personal computer transfer request with disk specified as the output device is running, and the
Retrieved data records are written to disk
message is displayed

Action: Select the appropriate recovery procedure:

- If the interactive transfer function is not displaying one of the above messages, the personal computer is waiting for you to do something.
- If one of the above messages appears or you are using the automatic transfer function, allow enough time (possibly several minutes) for the operation to complete.
 - If you have used the *Join By, Group By, or Order By* prompt and the
Your transfer request is running
message appears, allow more time for this operation.

- If you have pressed the End key while a list is being displayed, or while the transfer function is transferring data to the display, the transfer request may take longer.
- If you are transferring data to a shared folder or printer, or from a shared folder, the request may take longer.
- Refer to Chapter 31, “Communications Problems,” to determine if you have a communications problem.

If the AS/400 system is functioning properly, the problem is probably on the personal computer. Run the PC tests. If no problem is found while running tests, and this application is still failing, contact the AS/400 site for assistance.
- If you are printing the format of transferred data, you must use printer LPT1. Make sure you have an LPT1 printer or a virtual printer assigned as LPT1.
- If the output device is either the printer or shared folder and the output is directed to a virtual printer or shared folder, do problem analysis for the virtual printer or shared folder.

Disk Input/Output Problems

The problem description and actions for correction follow.

Problem: Disk problems may have occurred at one of the following times:

- When the *Name of request to be saved, From, or Description file name* prompts appear, and:
 - After pressing F4 to get a list
 - After displaying the list and pressing Up Arrow, Down Arrow, Page Up, Page Down, Ctrl+Home, or Ctrl+End key combinations
- While the transfer function is saving a transfer request and the Your transfer request is being saved message appears
- While the transfer function is recalling a transfer request and the Your transfer request is being recalled message appears
- While the transfer function is writing a file description to the disk and the File description is being written to disk message appears
- While the transfer function is retrieving data records and the Retrieved data records are being written to disk message appears

Action: Check for the following errors:

- If the interactive transfer function is not displaying one of the above messages, the personal computer is waiting for you to do something.
- If one of the above messages appears, or you are using the automatic transfer function, allow enough time for the operation to complete.

- If you pressed the Ctrl+End key combination while a list appears, the operation may take a long time.
- If you are working with a shared folder, allow several minutes for the transfer to complete.
- If the output is directed to a shared folder, do problem analysis for a shared folder. Refer to Chapter 31, “Communications Problems,” for more information.
- If the output is directed to a PC disk, run the PC tests. If no problem is found while running the tests and this application is still failing, contact the AS/400 site for assistance.

Printer Input/Output Problems

The problem description and actions for correction follow.

Problem: Printer problems may have occurred at one of the following times:

- While the
Retrieved data records are printing
message appears
- While the
Format of transferred data is printing
message appears

Action: Select the appropriate recovery procedure:

- If the interactive transfer function is not displaying one of the above messages, the personal computer is waiting for you to do something.
- If one of the above messages appears or you are using the automatic transfer function or a virtual printer, allow enough time for the operation to complete.
- If the output is directed to a virtual printer, do problem analysis for a virtual printer. Refer to “Virtual Printer Stopped” on page 30-15.
- If the output is directed to a PC printer, make sure the PC printer is supported by the transfer function. Refer to Part 4, “Configuring PC Support/400” to find out what printers are supported.
- If the output is directed to a PC printer that is supported by the transfer function, run the PC tests. If no problem is found while running the tests and this application is still failing, contact the AS/400 site for assistance. Contact your service representative if an error is suspected in an AS/400-supported program.
- You may find that it takes 30 seconds or more to get an error message for printer out of paper, printer offline, or printer not available (printer adapter card is present in the system). This delay is consistent with the way the DOS and the OS/2 operating systems work. You can correct the problem before the error message appears and printing will continue immediately, or you can correct the error after the error message appears, and then press the Enter key to continue printing.

Unexpected Transfer Function Output

The problem description and actions for correction follow.

Problem: You received an incomplete list or no list at all for a list of PC file names requested for the *Save*, *Recall*, or *Description file name* prompt.

Action: The transfer function searches the PC disk for file names that have a specific extension (the extension is different for different prompts). The function cannot find the specified file names (if any) on the specified disk.

You can request the transfer function to search a specific drive for file names with certain characteristics. This search overrides the default search values used by the transfer function.

Unclear Display

The problem description and actions for correction follow.

Problem: The display is difficult to read when using the interactive transfer function.

Action: If you are using a monochrome monitor attached to the color graphics adapter, you must specify the /M value when you start the transfer function or put a DSPL entry in the CONFIG.PCS file.

If the monitor you are using has random dashes or snow appearing on the display, specify /S for slow-speed display writing after the command you used to start the transfer function or put a display (DSPL) entry in the CONFIG.PCS file. For details, refer to Part 4, "Configuring PC Support/400."

No Printer Output

The problem description and actions for correction follow.

Problem: Printing appears to be in progress or completed, but no output appears on the printer.

Action: Check the following:

- If you try to print on LPT1, LPT2, or LPT3, and no adapter is set up for the printer, the transfer function acts as though it is printing even though it is not. This procedure is consistent with the way the DOS operating system handles printing to a printer that does not exist.
- You may be printing on a virtual printer. Release the virtual printer if you want to print on a personal computer printer defined by the same LPT number as the virtual printer.

Slow Printer Error Messages

The problem description and actions for correction follow.

Problem: Printer error messages take a long time to appear.

Action: You may find that it takes 30 seconds or more to get an error message for printer out of paper, printer offline, or printer not available (printer adapter card is present in the system). This delay is consistent with the way the DOS and the OS/2 operating systems work. You can correct the problem before the

error message appears and printing will continue immediately, or you can correct the error after the error message appears and press the Enter key to continue printing.

Incorrect Printer Message

The problem description and actions for correction follow.

Problem: Printer-out-of-paper message appears when the printer is not available.

Action: DOS does not always correctly diagnose printer errors. You can still correct the actual problem and press the Enter key to continue printing.

Missing Print Line

The problem description and actions for correction follow.

Problem: Part or all of a line of printing is missing.

Action: This problem can arise when an error occurs and, after the error is corrected, printing is started again. The printer loses the data sent for the line when it is turned off. When correcting problems, use the Offline button rather than turning the printer off, if possible.

Improper Page Eject

The problem description and actions for correction follow.

Problem: Page eject does not work properly.

Action: Turning the printer off and then back on may cause it to set a new top of form. Try to avoid turning the printer off and on again when correcting problems.

Improper Printer Page Spacing

The problem description and actions for correction follow.

Problem: Printer did not go to the top of the next page at the end of the output.

Action: If you select the Escape (ESC) option on an error message and do not correct the error condition, the final page eject may not be received by the printer. Put the printer in an offline condition and then press the form feed to complete the page eject.

Incorrect Output File Placement

The problem description and actions for correction follow.

Problem: For a virtual printer output file, output that should have appeared in separate output files appears in the same output file.

Action: Output files are not automatically closed between running transfer requests. The time-out method for closing files is used. Change the time-out value to a smaller number if too much time is elapsing between requests or close the file with the Set Virtual Printer (SETVPRT) command. Refer to "Identifying Virtual Printer Problems" on page 30-15 for additional information.

Print File Output in Multiple Parts

The problem description and actions for correction follow.

Problem: For a virtual printer output file, output is broken up into more than one part when only one continuous piece was expected.

Action: An output file may be closed before the transfer request is completed if there is a delay greater than the time-out value specified for the virtual printer. Change the time-out value to a larger number if output is breaking up.

Transfer Request Resubmitted

The problem description and actions for correction follow.

Problem: A status display area shows
Your transfer request has been resubmitted
while you are moving text lines backward in the transferred data display area.

Action: This situation is normal. However, if it occurs often, you should increase the amount of storage on your personal computer.

Incorrect Data in Transferred Records

The problem description and actions for correction follow.

Problem: A PC file containing the transferred records contains incorrect data. Your application program cannot process the file.

Action: Check for the following errors:

- Verify that the PC file type used in the *Transfer request* prompt is correct for the application you are running.
- If you have data in the AS/400 file that cannot be translated, a status message at the end of the transfer request identifies the number of records that could not be translated. If the transfer request indicates data that is not translatable, check the data in the AS/400 file and check the data definition for that file using the DSPFFD command.
- If you have transferred data to a BASIC ordered file, make sure the character data in the file does not contain any double quotation marks.

Substitution Characters in Data

The problem description and actions for correction follow.

Problem: The data displayed or printed contains substitution rectangle characters.

Action: The rectangle characters represent data in the AS/400 file that could not be translated from EBCDIC to ASCII. The status message at the end of the transfer request run identifies the number of records that could not be translated. Check the data in the AS/400 file and the data definition for that file.

Truncated Print Records

The problem description and actions for correction follow.

Problem: Printed records from transferred data are truncated at the end of each print line.

Action: Change the *Truncate* prompt in the transfer request you are running to No, so all data for each record is printed.

Identifying Virtual Printer Problems

The following descriptions may assist you in problem analysis for the virtual printer.

Virtual Printer Stopped

The problem description and actions for correction follow.

Problem: The personal computer was sending data to a virtual printer, but the transfer of information appears to have stopped and there are no messages.

Action: Check for the following errors:

- You have not allowed enough time. A large file may take several minutes to print.
- You sent the data to a local PC printer that is not turned on. Turn on the local printer and the data may start printing.
- You are using the DOS operating system and the output file does not close. If you are not using the time-out method of closing an output file, you may need to use the SETVPRT program to do so.
- You have a communications problem. Refer to Chapter 31, "Communications Problems," to determine the cause.
- You used the hot key sequence to access a Work Station Feature display session. This action will suspend the printer in the DOS session.

Interactive Virtual Printer Program (SETVPRT) Stopped

The problem description and actions for correction follow.

Problem: The interactive virtual printer program (SETVPRT) appears to have stopped. It may have stopped at one of the following times:

- After pressing F4 to get a list
- After displaying the list and pressing Up Arrow, Down Arrow, Page Up, Page Down, Ctrl+Home, or Ctrl+End key combinations
- After the Enter key was pressed on the assign virtual printer screen
- After the Enter key was pressed on the choose virtual printer screen

Action: Select the appropriate recovery procedure:

- If the SETVPRT program is not displaying the Please wait or Assigning the virtual printer message, the personal computer is waiting for you to do something.

- If the Please wait or Assigning the virtual printer message is displayed, allow enough time for the operation to complete.
- Refer to Chapter 31, "Communications Problems," to determine if you have a communications problem.
- If the AS/400 system is functioning properly, this is probably a PC problem. Run the PC tests. If no problem is found and this application is still not working, contact the AS/400 system operator for help. Contact the service representative if an error is suspected in a AS/400-supported program.

Display Hard to Read

The problem description and actions for correction follow.

Problem: The display is difficult to read when using the interactive virtual printer program.

Action: If you are using a monochrome monitor attached to a color graphics adapter (CGA) card, you must specify /M after the command you used to start SETVPRT, or put a DSPL entry in the CONFIG.PCS file.

If the monitor you are using has random dashes or snow appearing on the display, you should specify /S for slow-speed display writing after the command you used to start SETVPRT, or put a DSPL entry in the CONFIG.PCS file. For details, refer to Part 4, "Configuring PC Support/400."

Virtual Printer Output Not Received

The problem description and actions for correction follow.

Problem: No output received.

Action: Check for the following errors:

- You tried to print by using a printer name (LPT1, LPT2, LPT3) that is not a personal computer printer and is not assigned as a virtual printer. To activate the virtual printer, enter the SETVPRT or CFGVPRT command.
- You have not waited long enough for the output file to close. If the virtual printer was set up to delay printing, it does not start printing until the output file is closed. The output file is automatically closed when the time-out interval you selected ends.

If you selected a time-out interval of zero, the file must close using the SETVPRT command. However, if there is an End Document or Begin Document command at the end of your data stream or your application sends a reset command to the virtual printer, this is not necessary. (The *PC Support/400 Technical Reference for DOS and OS/2* contains information about the End Document and Begin Document commands.)

- If an error message appears in the message queue, ask the system operator to respond to any error messages and make the AS/400 printer ready.
- There may be a problem with the AS/400 spool utility if the output file was closed and no messages appear on the AS/400 console. (For example, the spool writer may have been stopped.) Ask your AS/400 operator if this could be the reason your output is not printing. The AS/400 operator should be able to help you resolve the problem.

- If you follow each of the procedures just listed, and you still receive no output, you may have a hardware problem. Run the PC and printer tests. If no error is found, contact the AS/400 site for assistance.

Incomplete Printer Output

The problem description and actions for correction follow.

Problem: Printed output started but not completed.

Action: Check for the following errors:

- You have not waited long enough for the file to close. You may have specified to print on the virtual printer, but it cannot print until the output file is closed. The file is automatically closed when the time-out interval ends.

If you selected a time-out interval of zero, you must use the SETVPRT command to close the output file unless there is an End Document or Begin Document command at the beginning or end of your data. Also, if your application sends a reset command to the virtual printer, the output file will be closed.

- If you follow the procedure just described, and you still do not receive complete output, you may have a hardware problem. Run the PC and printer program to aid diagnosis. If no error is found, contact the AS/400 site for assistance.
- The Virtual Printer function expects printer data that is intended for an IBM 4201 Proprinter.* If you are trying to print using a text editor on your personal computer and the editor provides a choice of several printer drivers, configure your editor so that it uses the IBM 4201 Proprinter driver.

If the virtual printer does not work, test the printer locally by sending the following:

- An AS/400 file/document
- A PC file/document from a personal computer to the locally attached PC printer

Incorrect Output Format

The problem description and actions for correction follow.

Problem: Format of printed output is correct at first, but formatting is lost or changed in the format of subsequent pages.

Action: Certain applications take longer to send data to the output file, so time-out occurs and the job is segmented. Increase the time-out value or disable the time-out by specifying a time-out value of 0. If you disable the time-out, the output file will not automatically close and must be closed by some other method. Refer to Part 4, "Configuring PC Support/400" for more information on setting the time-out value and closing output files.

Unreadable or Unexpected Output

The problem description and actions for correction follow.

Problem: Output is not readable or as expected.

Action: Check for the following errors:

- You are trying to print data from a personal computer file that is not readable or printable.
- The translation table is damaged. The *PC Support/400 Technical Reference for DOS and OS/2* contains information about translation tables.
- You specified an incorrect printer data type when you assigned the virtual printer. The printer data type could be incorrect for the data you are printing or for the AS/400 printer on which you are printing.
- You are trying functions that are not supported by the AS/400 printer. In this case, the output may not be the same as you expected. Refer to the *PC Support/400 Technical Reference for DOS and OS/2* for the functions that are supported.
- You are trying to print data for ASCII character set 2. Your virtual printer was assigned with character set 1 and did not receive a Select-character-set-2 command. The data was treated as a printer command for character set 1. The *PC Support/400 Technical Reference for DOS and OS/2* contains information about the Select-character-set-2 command.
- If you follow each of the procedures listed and the output is still not readable, you may have a hardware problem. Run the PC and printer program to help diagnosis. If no error is found, contact the AS/400 site for assistance. Contact your service representative if an error is suspected in an AS/400-supported program.
- The Virtual Printer function expects printer data that is intended for an IBM 4201 Proprinter. If you are trying to print using a text editor on your personal computer and the editor provides a choice of several printer drivers, configure your editor so that it uses the IBM 4201 Proprinter printer driver.

If the virtual printer does not work, test the printer locally by sending the following:

- An AS/400 file/document
- A PC file/document from a personal computer to its locally attached PC printer

Incorrect Printer Page Ejection

The problem description and actions for correction follow.

Problem: The printer ejects at the wrong place.

Action: Your virtual printer parameters and the AS/400 printer configuration do not match. Refer to Part 4, "Configuring PC Support/400" for information on using the lines-per-page and page-length parameters for a virtual printer.

MODE Command Failure

The problem description and actions for correction follow.

Problem: You entered the MODE command, but the changes failed to take effect.

Action: Check for the following errors:

- You entered the MODE command after running the SETVPRT or CFGVPRT command and before printing a file.
- The output file closed before you entered the MODE command.
- You did not specify the command-override option in the SETVPRT or CFGVPRT command.

Incorrect Printer Destination

The problem description and actions for correction follow.

Problem: Output goes to the local PC printer rather than the virtual printer.

Action: Check for the following errors:

- The virtual printer was not activated by either the SETVPRT or CFGVPRT command.
- You tried to use the virtual printer after entering the Stop Router (STOPRTR) command. You must start the router again before you can run SETVPRT or CFGVPRT.

Incorrect or Unreadable Document Content Architecture Output

The problem description and actions for correction follow.

Problem: You tried to print a Final-Form Text:Document Content Architecture document on a virtual printer, but the output was not readable or you did not get all the output.

Action: Check for the following errors:

- The default printer data type was specified. You should use printer data type 1 (SCS data) or printer data type 3 (final-form text). Refer to Part 4, "Configuring PC Support/400" for information on setting printer data type.
- You did not use a */b* parameter to indicate a binary file when using a DOS COPY command to copy a file to a virtual printer (including the DOS end-of-file characters).
- The AS/400 printer must be a printer that can print final-form text.
- You used DisplayWrite 4 (DW 4) to create the printer file but did not use a DW 4 Final-Form Text:Document Content Architecture printer function table. Refer to the *DW 4 Technical Reference* manual for information on using printer function tables.

Truncated Printer Lines

The problem description and actions for correction follow.

Problem: Printer lines are truncated.

Action: The AS/400 printer paper is not wide enough to handle the characters-per-line specified. Refer to the *PC Support/400 User's Guide for DOS* for information on setting the line length.

Divided Printer Output

The problem description and actions for correction follow.

Problem: Printer output is divided into parts. There is more than one output file in the spool writer status display for the job.

Action: Time-out value specified for SETVPRT or CFGVPRT commands is too short. Refer to Part 4, "Configuring PC Support/400" for information on setting the time-out value.

Combined Printer Output

The problem description and actions for correction follow.

Problem: Printer output is combined.

Action: Time-out value specified for the SETVPRT or CFGVPRT commands is too long. Refer to Part 4, "Configuring PC Support/400" for more information on setting the time-out value.

Printer Input/Output Problems

The problem description and actions for correction follow.

Problem: While trying to print to a virtual printer, the following DOS message is displayed:

```
Write fault error writing device LPTx
Abort, Retry, Ignore, Fail?
```

Action: Correct the problem as follows:

- You may have sent data to a local PC printer that is out of paper, offline, or not available. Correct the error and submit the operation again.
- Run SETVPRT or CFGVPRT to display an error message. Correct the error and submit the operation again.

Output Queue Owner

The problem description and actions for correction follow.

Problem: The AS/400 system creates a virtual device for each work station function printer session. The virtual devices are owned by the user who signed on to the router. The Create Device Description (Printer) (CRTDEVPRT) command used to create the printer device also creates an output queue. This output queue has a default value for the AUTCHK parameter of *OWNER. This means only the owner of the output queue can use it.

Action: Correct the problem as follows: Use the Change Output Queue (CHGOUTQ) command to change the authority to check (AUTCHK) parameter of the output queue to *DTAAUT.

Identifying Work Station Function Problems

The following problem descriptions may assist you in work station function problem analysis.

Locating Work Station Function Job Logs

When work station sessions are started, entries are always logged. One job log exists for each display or printer session started. When session start is unsuccessful, the job log helps you analyze the cause of the failure. Error messages will often refer you to the job log. You can read the job log as follows:

- If display station pass-through cannot be started by the work station function, a message is logged in the QSYSOPR message queue. This message queue will tell you if your personal computer was able to start communications from the personal computer to the host system or from the personal computer to the pass-through program. Use the DSPMSG QSYSOPR command to display the message queue for the operator.
- After display station pass-through is started, display station pass-through puts status and error messages in the job log, a spooled output file on the AS/400 system. Use the WRKSPLF command with the user ID you started the job with.
- You can now locate your job log by finding the session according to the date and time you tried to start the session.

Inactive Hot Key Sequence

You should always be able to use the hot key sequence when using the work station function. If you cannot, one of the following conditions has occurred:

- A PC application program has temporarily disabled the hot key to one or more sessions or to the PC type of operation. Work with the application program to correct the problem.
- Your personal computer is in a loop. Follow the recovery described in "Starting the PC Operating System" on page 31-6.

If you can use the hot-key sequence, the problem may be that the AS/400 system is not communicating with a work station function session. Check for the following errors:

- You used the Stop Work Station Function (STOPWSF) command for one or more of your sessions. Use the Start Work Station Function (STARTWSF) command to connect sessions to the PC Support/400 again.
- You used the Stop Router (STOPRTR) command. Refer to "Starting the AS/400 Router" on page 31-6.
- An AS/400 command has stopped the communications to your PC location. Follow the recovery action described on "Starting the AS/400 Router" on page 31-6.
- The PC Support/400 processor was stopped for a service function.

- An error message currently on the AS/400 operator's message queue requires a user response. Ask your system operator to respond to any messages. Then follow the recovery action in "Starting the AS/400 Router" on page 31-6.
- The AS/400 system has a processor check. Wait for the system operator to start the AS/400 system again, then follow the recovery action described in "Starting the AS/400 Router" on page 31-6.
- The AS/400 system is in a loop and must be canceled. Follow the recovery action described in "Stopping the AS/400 Router" on page 31-6.
- The IBM Token-Ring Network router is in a loop and must be canceled. Follow the recovery action described in "Starting the PC Operating System" on page 31-6.
- You have a communications problem. Refer to Chapter 31, "Communications Problems," to determine the cause.

Inactive System Available Indicator

The problem description and actions for correction follow.

Problem: The System Available indicator is not active. In a display session, the display is blank, the cursor is in the upper right corner, and the status line indicators appear. However, the System Available indicator is not active. Error code 0099 is displayed if you press keys other than the hot-key sequence.

An error message may appear above the status line.

Action: If there is an error message, use PCSHELP and the message number to determine the cause of the problem and possible recovery actions. If there is no error message, use the hot-key sequence to switch to PC operation. Enter the Start Work Station Function (STARTWSF) command to connect the session to the AS/400 system again. Then switch back to the session and continue using it.

If the problem still exists, the personal computer may have stopped communicating with the AS/400 system. Refer to Chapter 31, "Communications Problems," to determine the cause.

Starting... Message Remains On

The problem description and actions for correction follow.

Problem: The Starting... message appears on the pre-sign-on display for a long time, or the STARTWSF program displays its start-up message for a long time.

Action: Be sure you have allowed enough time for the operation to complete. This operation can take several minutes if the host system is heavily loaded or if you are passing through one or more systems in a communications network.

If the problem still exists, one of the following conditions may have occurred:

- The AS/400 system is waiting for a response to a message to the operator. Ask your system operator to check for messages and respond to them.
- The personal computer has stopped communicating with the AS/400 system. Refer to Chapter 31, "Communications Problems," to determine the cause.

Locked Keyboard

The problem description and actions for correction follow.

Problem: The input inhibited light remains on and the keyboard is locked.

Action: One of the following conditions may have caused the problem:

- The AS/400 system is busy or the operation may take a long time to complete. Allow enough time for the operation to finish.
- You have a keyboard error (identified by a flashing 4-digit number on the status line). Press the Help key for more information. Press the Reset key or the immediate-reset key sequence (Alt/Scroll Lock) to clear the error condition.
- The application program is in a loop. Press the Attn key to interrupt. You may be able to use the Attn key to resume or cancel the program. Some programs on the AS/400 system will disable the Attn key.
- The AS/400 system is waiting for a response to a message to the operator. Ask your system operator to check for messages and respond accordingly.
- The PC program is in a loop. Try to switch to another session. If the hot-key sequence does not work, the personal computer is in a loop and needs to be started again. Refer to "Starting the PC Operating System" on page 31-6 for more information.
- Your personal computer has stopped communicating with the AS/400 system. Refer to Chapter 31, "Communications Problems," to determine the cause.

Display Problems

The problem description and actions for correction follow.

Problem: The display is difficult to read.

Action: Adjust the brightness and contrast controls for best readability. If this adjustment does not correct the problem, you probably have a monochrome monitor attached to a color graphics adapter (CGA) card. Run the configuration program to select the monitor type for a CGA. Refer to Part 4, "Configuring PC Support/400" for instructions.

Problem: The display is blank except for a single character on the bottom line.

Action: The work station function has automatically dimmed the display to extend the usable life of your monitor. Press any key (such as the Shift key) to see the AS/400 information. You can run the configuration program to disable the automatic dimming function or change the automatic dimming time-out interval. Refer to Part 4, "Configuring PC Support/400" for instructions.

Problem: The display contains unusual or unexpected characters.

Action: You may have configured the work station function display EBCDIC-to-ASCII translation table. Run the configuration program to review your character translation table. Refer to Part 4, "Configuring PC Support/400" for instructions.

Problem: The DOS screen is not properly restored when you use the hot-key sequence to switch from the work station function session to the DOS session.

Action: The problem may occur if you have selected the Use Background Adapter Memory option under General options in CFGWSF and you are using a color graphics adapter (CGA). Change your master profile so you do not use that adapter memory option to store your display save area.

Sessions Lost after Invalid Sign-On Attempts

The problem description and actions for correction follow.

Problem: If the use is greater than the host system's maximum number of sign-on attempts for a work station, all work station function sessions for the PC will lose system availability and the PC link to the host system will be suspended.

Action: To restore the link between the PC and the host and allow the user to sign-on again, do the following for an AS/400 connection:

- Disable the PC link at the console by entering the following:
VRYCFG controller location-name *CTL *OFF
- Stop the router. For more information, refer to "Stopping the AS/400 Router" on page 31-6.
- Ready the location by entering the following:
VRYCFG controller-location-name *CTL *ON
- Optionally, you may load the system programs to recover any resident storage used by the router and work station function.
- Start the router. For more information, refer to "Starting the AS/400 Router" on page 31-6.
- Start the work station function.
- Try to sign on using the correct user ID and password.

No Graphics Support

The problem description and actions for correction follow.

Problem: Work station function graphics support does not produce charts.

Action: Make sure that the active session was started with a session profile that specifies a display type of Host Graphics Support. If the G indicator appears in column 14 of the status line, the session is graphics-capable.

Use the configuration program to check whether the session profile specifies a display type of Host Graphics Support. Refer to Part 4, "Configuring PC Support/400" for additional information.

Sessions Do Not Produce Printed Output

The problem description and actions for correction follow.

Problem: Work station sessions do not produce printer output when a printer session profile is specified.

Action: Make sure of the following:

- The AS/400 spool writer is started and the desired output is in the output queue being processed by that spool writer.

- There are no error messages for the printer on the AS/400 system. Check all applicable message queues.
- The work station function printer operator control panel indicates the printer is ready and no error messages or indicators appear. Take any action indicated. Take the stop options. Then take the start options.

Error Opening Virtual Device Interface (VDI) Device Driver

The problem description and actions for correction follow.

Problem: An error in opening a VDI device driver occurs.

Action: Make sure the VDI device driver specified in CONFIG.SYS is the correct one for your system. Refer to Part 4, "Configuring PC Support/400" for additional information.

VDI Routines Message Appears

The problem description and actions for correction follow.

Problem: The message

The VDI device driver or VDI.SYS file is not loaded.
appears while using CFGWSF.

Action: Make sure of the following:

- The CONFIG.SYS file is in the root directory.
- You have added the two required VDI device driver entries to CONFIG.SYS:
 - The name of the VDI device driver file that reflects the configuration of your personal computer
 - The VDI.SYS file

Refer to Part 4, "Configuring PC Support/400" for more information.

Pie Charts Appear Oblong

The problem description and actions for correction follow.

Problem: Work station function graphics produces pie charts that are not circular in appearance.

Action: Use the graphics configuration program CFGWSF to check the following in the session profile:

- The display screen width/height ratio is appropriate for the display/adaptor combination you are using.
- The profile specifies compressed operation for displaying graphics. Compressed operation is indicated by the C indicator on the status line when the display is in graphics condition.

Enhanced Graphics Adapter (EGA) Produces Only Four Colors

The problem description and actions for correction follow.

Problem: Work station function graphics produces charts with only four colors when used with the EGA.

Action: You must add the IBM graphics memory expansion card to the EGA to obtain 16-color support. The EGA card has 64KB (KB equals 1024 bytes) of storage and provides four colors; with the memory expansion card it has 128KB of storage and provides 16 colors.

Partial Chart Appears on Display

The problem description and actions for correction follow.

Problem: After switching back to a session that is in graphics condition, a chart appears incomplete.

Action: The VDI buffer used by the session is too small to hold the entire chart. When a complex chart uses the entire VDI buffer and the buffer overflows, parts of the chart are lost when the chart is drawn again on return to the session.

Use the CFGWSF graphics configuration program to increase the size of the VDI buffer. The minimum size is 20KB and the maximum size is 65.5KB.

Note: Increasing the size will increase the amount of storage required by the session.

Blinking Chart Features on Monochrome Display

The problem description and actions for correction follow.

Problem: Parts of the graphics display flash on and off when using work station function graphics with the display/adaptor combination of the IBM 5151 Monochrome Display with EGA.

Action: The 5151/EGA device driver allows four chart features: normal, high-intensity, blank, and blinking. Use CFGWSF to change the color table. Remove blinking as a color, and instead use patterns provided by the host system application to differentiate between chart areas.

Note: You must start the operating system again before you change the color table.

Plotter Does Not Produce Charts

The problem description and actions for correction follow.

Problem: Work station function graphics plotter support will not produce charts on the plotter.

Action: Check the following conditions:

- Make sure that the active session was brought up with a session profile that specified a display type of Host Graphics Support with plotter.

Use the configuration program to check whether the session profile specifies a display type of Graphics Display with plotter.

- Make sure the plotter is turned on and is ready to produce charts.

- Make sure the plotter switches are set correctly. Refer to Part 4, “Configuring PC Support/400” for information about your plotter. Make sure the switch settings are compatible with the values you configured for the plotter.
- Check the cable connection between the personal computer and the plotter. It should be securely fastened at both ends and should not be damaged.

Chapter 31. Communications Problems

Identifying Communications Connections Problems	31-2
No Connection Made to the AS/400 System	31-2
Stopping and Starting the PC Support/400 Router	31-5
Stopping the AS/400 Router	31-6
Starting the AS/400 Router	31-6
Starting the PC Operating System	31-6

When determining whether you have a communications problem, be sure you have allowed enough time for the requested operation to complete. Some operations require several minutes.

Identifying Communications Connections Problems

Communications problems which result in error messages may have several causes, and the causes may depend on the type of connection. Listed below are some common communications problems and the probable causes and recoveries for each.

No Connection Made to the AS/400 System

Twinaxial Connection (messages 5137, 5138)

Cause: Twinaxial cable not connected.

Recovery: Connect the cable to the adapter card.

Cause: The AS/400 system is not active.

Recovery: Wait until the AS/400 system is ready and try your operation again.

Cause: The 5150 device associated with your personal computer is not varied on or has not been configured.

Recovery: Vary on the 5150 Display Device. Refer to the *Device Configuration Guide* for information on how to automatically configure your device or how to use CRTDEV DSP to configure your personal computer.

Cause: Either your local or remote work station controller (WSC) is not varied on.

Recovery: Vary on the work station controller (WSC) and try your operation again.

Cause: The 5394 Remote Work Station Controller has not established a connection to an AS/400 system.

Recovery: Ensure that your 5394 is active, then try your operation again.

Cause: The switch setting you are using on the EMLI entry in the CONFIG.PCS or user-defined configuration file is already in use by another personal computer, a display, or a printer device.

Recovery: Ensure that each device on a port has a unique switch setting and try your operation again.

Token-Ring Connection (messages 5113, 5116, 5127, 5128, 5129, 5130, 5132, 5133, 5134, 5148, 5152)

Cause: One of the configuration parameters specified in the PC CONFIG.PCS file does not match what the remote system expects. The remote system is active, but is unable to complete the connection. The AS/400 system has rejected the Exchange Identification Information frame (XID), which is used to establish a link

between the personal computer and AS/400 system, for one of the following reasons:

- The router location name (RTLN) entry in the PC CONFIG.PCS file has a network identifier that does not match the local network ID configured in the AS/400 network attributes (DSPNETA).
- The RTLN entry in the PC CONFIG.PCS file has a control point name that does not match the remote control point name specified on the AS/400 APPC controller description for the personal computer.
- The PC token-ring address does not match the AS/400 APPC controller LAN remote adapter address.
- The block number/ID number parameter specified on the system information link name (SDLI or TRLI) identifier does not match the exchange identifier field for the AS/400 APPC controller.

Recovery: Do one of the following:

- Verify that the network identifier specified on the router location name (RTLN) entry in the PC CONFIG.PCS file matches the local network ID specified in the network attributes (DSPNETA) or specified directly in the APPC controller description.
- Verify that the PC control point name specified on the router location name (RTLN) entry in the PC CONFIG.PCS file matches the remote control point name specified on the APPC controller description.
- Verify that the PC token-ring adapter address specified on the device=DXMCOMOD.SYS entry in the PC CONFIG.SYS file matches the value specified in the LAN remote adapter address for the AS/400 APPC controller.
- Verify that the block number/ID number parameter specified on the system information link name identifier matches the exchange identifier field for the AS/400 APPC controller, or remove the block number/ID number parameter.

Cause: Token-ring adapter cable not connected.

Recovery: Make sure that all of your token-ring cables are connected and try your operation again.

Cause: Another station on the token-ring network is using the same address as you are.

Recovery: If you override the universally-administered token-ring address, make sure you use one that is unique in your network.

Cause: The multiple access unit to which you are connected is not functioning correctly.

Recovery: Reset the multiple access unit and start the router again.

Cause: One line or controller is not varied on at your host system.

Recovery: Vary on the line description and controller description for your personal computer and try your operation again.

Cause: A configuration problem exists.

Recovery: Check the QSYSOPR message queue log to identify the configuration error. Correct the configuration and try your operation again.

Cause: Another local area network (LAN) program (for example, PC LAN) is using LAN resources needed by the router.

Recovery: Change the configuration for the other program to make additional resources available. These may include more service access points (SAPs) more stations, or more buffers.

SDLC Connection

Cause: No contact with modem.

Recovery: Check the cabling between your personal computer and your modem.

Cause: Synchronous data link control (SDLC) line is not varied on.

Recovery: Vary on the SDLC line and controller description and try your operation again.

Cause: NRZI configuration values do not match.

Recovery: Set the NRZI values on your personal computer and your host to the same setting and try your operation again.

Cause: Configuration error (station address, CP name).

Recovery: Check the QSYSOPR message queue log. Correct the indicated error and try your operation again.

Cause: Excessive line noise.

Recovery: Reduce the line speed on your modem and try your operation again.

Asynchronous Connection

Cause: Cabling not correct to modem.

Recovery: Check the cabling between your personal computer and your modem.

Cause: 5150 device description not varied on.

Recovery: Vary on the 5150 Display Device and try your operation again.

Cause: Baud rate settings on the AS/400 system and your personal computer do not match.

Recovery: Set baud rates to the same value on the AS/400 system and on your personal computer.

Cause: Number of stop bits do not match.

Recovery: Set the number of stop bits to the same value on both your personal computer and the AS/400 system.

Cause: Excessive line noise.

Recovery: Reduce the line speed on your modem and try your operation again.

Cause: Baud rate is too fast for your personal computer.

Recovery: The maximum baud rates for personal computers are as follows:

- 2400 bps
 - Any personal computer using EMS
- 4800 bps
 - Personal computer
 - PC/XT
 - PC AT using the extended DOS option of PC Support/400
 - PC Convertible
- 9600 bps
 - PC AT
 - PS/2 models 25 and 30
 - PS/2 models 50 and 60 (with 80286 processor and running at 10 MHZ) using the extended DOS option of PC Support/400
- 19200 bps
 - PS/2 models 50 and above

Correct the line speed and try your operation again.

SDLC Connection (messages 5117, 5118, 5119)

Cause: A synchronous data link control (SDLC) adapter is not present.

Recovery: Ensure that you have the correct personal computer adapter card installed and try your operation again.

Cause: SDLC adapter failure.

Recovery: Run the diagnostic program that accompanied your adapter card, correct any indicated problems, and try your operation again.

Asynchronous Connection (messages 5118, 5119, 5151)

Cause: An asynchronous (ASYNC) adapter is not present.

Recovery: Ensure that you have the correct personal computer adapter card installed and try your operation again.

Cause: ASYNC adapter failure.

Recovery: Run the diagnostic program that accompanied your adapter card, correct any indicated problems, and try your operation again.

Stopping and Starting the PC Support/400 Router

If you have determined that the AS/400 router has an error from which recovery is not possible or is in a loop, then it must be stopped and started again. This section explains stopping and starting procedures.

You may wish to put STOPRTR in your STARTPCS.BAT after PCO or PCSMENU to stop all sessions without further interaction.

Stopping the AS/400 Router

If you are in PC operation, enter the Stop Router (STOPRTR) command at the DOS prompt. If PC Support sessions are active, you will receive a message indicating that programs are still communicating with the router.

If you still want to stop the AS/400 router, press the Enter key to stop the active sessions. However, if you do this and any virtual print files are open, the data in those files may be lost.

If you cannot use the STOPRTR command, you must:

1. Start the PC again. This is the recommended way.
2. Ask the system operator to disable communications to your personal computer. You will need to supply the system operator with your PC location name (the RTLN entry in the AS/400 configuration file on your personal computer).

Continue with "Starting the AS/400 Router."

Starting the AS/400 Router

If you ended the AS/400 router or it ended abnormally, you must start it again before you can run any virtual printer, transfer function, message function, shared folder, or work station function sessions. Do the following:

1. If you have not already done so, enter the Stop Router (STOPRTR) command at the DOS prompt to notify the PC router that the PC Support router has ended.
2. Start the PC router again by typing the name of your original batch file (such as STARTPCS.BAT). You can also enter the Start Router (STARTRTR) command at the DOS prompt.
3. Start any shared folders, virtual printer, message function or transfer function sessions again that were active before you try to use them. These programs were not informed that the router ended. When you try to start them again, a message may appear indicating that contact with the PC Support/400 ended. (This is normal.) Try the operation again.
4. Start any sessions that were active.

Starting the PC Operating System

If you have encountered an error from which recovery is not possible or one of the PC Support/400 programs is in a loop, you must start the operating system again. To do this, press the Ctrl+Alt+Del key sequence. If you were in a work station function display or printer session, press the key sequence twice.

If this sequence does not start the operating system again, you can start the personal computer again by turning it off for 20 to 30 seconds and then turning it back on. Once the personal computer is successfully started again, you can run PC Support/400 programs. If you still have problems, contact your system operator.

Chapter 32. Service Procedures

Running the DOS DEBUG Program	32-2
Setting an Address Stop	32-2
Dumping Portions of PC Storage	32-3
Preparing an Authorized Program Analysis Report (APAR)	32-3
PC Information	32-4
AS/400 Information	32-5
Additional Information	32-6
Transfer Request Information	32-6
Submit Remote Command Information	32-6
Shared Folder	32-6
Organizer	32-6
Virtual Printer	32-7
Work Station Function	32-7
Applying or Removing a Program Temporary Fix (PTF)	32-7

This chapter describes the information required when you need to perform one of the following functions:

- Run the DEBUG program.
- Unload the contents of the personal computer (PC) storage.
- Collect information for your service representative.
- Apply a program temporary fix (PTF).

If you think your problem might require an authorized program analysis report (APAR), report it to the AS/400 operator who will then report the problem to the service representative. The service representative will decide if an APAR is required. If an APAR is necessary, the service representative will then assign an APAR number to your problem and tell you what information to collect.

Running the DOS DEBUG Program

Because of the severity or complexity of some problems, you may have to run the DOS DEBUG program to provide information in addition to that normally collected for the APAR. For example, you may have to set address stops in the PC code, unload a certain portion of the PC code, and so forth.

The DOS DEBUG program can be used to:

- Provide a controlled testing environment to monitor and control the running of a program to be debugged. Problems in a program can be corrected, and then the program can be immediately run without reassembling to determine if the problems were resolved.
- Load, alter, or display any file.
- Run object files. Object files are programs that can be run in machine language format.

Setting an Address Stop

If you are required to set an address stop in a PC Support/400 program, use the DEBUG GO command.

To set an address stop, do the following:

1. Make sure the program you plan to stop is running under DEBUG by typing:

```
d:DEBUG d:program.ext
```

where **d:** is the letter of the diskette drive containing the DOS DEBUG program, **d:** is the letter of the diskette drive containing the program you are debugging, and **program.ext** is the name and extension of the program you are debugging (for example, VPRT.COM).

2. Press the Enter key.
3. Set the address stop by typing:

```
g xxxx
```

where xxxx is the address stop you desire.

Note: The address stop must be supplied by your service representative.

4. An address stop at address xxxx is set and the program runs. The program continues to run until it reaches the instruction at address xxxx.

5. The registers and flags then appear, and the DEBUG prompt, a dash (–), appears.

Dumping Portions of PC Storage

If you are preparing an APAR, portions of PC storage should be dumped to your PC printer and sent along with the other APAR information. This information helps to determine the status and configuration of your computer and makes it easier to re-create the problem.

If possible, this information should be gathered immediately after the problem occurs, so that valid status information can be collected. However, since gathering this information requires you to run the DEBUG program from the DOS prompt, certain situations such as a loop will not allow you to gather the information using DOS DEBUG. You will have to re-create the problem after installing a debug tool, such as the IBM Professional Debug function, that allows you to start the debug functions while another program is in a loop or hung.

To unload the required information, do the following:

1. Run the DEBUG program from the DOS prompt as follows:

```
d:DEBUG
```

where **d:** is the letter of the diskette drive containing the DOS DEBUG program diskette.

2. Press the Enter key. The DEBUG prompt, a dash (–), appears and the DOS DEBUG program is now ready to accept commands.
3. Make sure the PC printer power is turned on, the printer Ready light is on, and LPT1 is not assigned as a virtual printer.
4. Press and hold the Ctrl key, and then press the Print Screen key. Everything written to the PC display from now on is also written to the PC printer.
5. Write the registers, flags, and the next instruction to be run to the printer by typing *r* and pressing the Enter key.
6. Unload the PC communications and data to the printer by typing:

```
d 0:0 L600
```

Note: It will take about three minutes to print this information on the IBM matrix printer.

7. Next, unload the BIOS copyright area to the PC printer by typing the following:

```
d FFFF:0 L10
```

8. Press and hold the Ctrl key and then press the Print Screen key. The print display function is disabled.

Include the information just printed with the APAR being prepared.

Preparing an Authorized Program Analysis Report (APAR)

Before contacting support service, make sure you have read Chapter 30, "Personal Computer or PC Support/400 Problems," Chapter 31, "Communications Problems," and have contacted your service representative to help isolate the problem. If the problem is suspected to be an IBM product problem, prepare an

APAR with enough information to help isolate and re-create the problem with PC Support/400.

Attach a detailed description of the problem and detailed instructions on how to re-create the problem. Do not leave out information that you feel might be obvious. Any information left out may result in an APAR that is not valid.

If the output is incorrect, explain what output you expect and what output you actually got. If the personal computer is in a wait or a loop condition, include a list of all programs that were running at the time.

Reduce the problem to its simplest form. Vary the environment to try to isolate the problem. For example, if the problem occurred while you were using the transfer function to download a file to a folder, run the same transfer request again, this time to a real disk or diskette or to the display. Find out if the problem occurs when you were requesting all fields or just one particular field. Record the results and include this information with the APAR.

Note: The PC Support/400 tools folder (QIWSTOOL) on the AS/400 system contains an interactive program that can help you collect PC information for an APAR. For information on how to access the QIWSTOOL folder, see Appendix E, "The PC Support/400 Tools Folder."

PC Information

Include the following PC information when preparing an APAR:

Note: When you are asked to copy PC information to a diskette, use the DOS COPY command.

- *A copy of the QPTFIDX file if it exists.* Copy this file to a PC diskette and include the diskette with the information for the APAR. You can print the contents of the file to the PC printer. If a QPTFIDX file does not exist on your personal computer, and you can assign the QIWSFLR folder, copy the QPTFIDX file from the folder and include it with the APAR. Include the QPTFIDX file from both the host and personal computer, if available.
- *A printout of the PC display.* If you have a printer attached to your personal computer, use the hot-key sequence (press and hold the Alt key; then, press the Escape key) to enter PC operation. Make sure the printer is powered on and the printer Ready light is on. Press and hold Shift. Then press the Print Screen key. The output is sent to the PC printer.

Note: If printer emulation is active, place the printer in the suspend type of operation so the job will print.

- *A dump of selected portions of PC storage.* Refer to "Running the DOS DEBUG Program" on page 32-2 for information on what portions of storage should be unloaded and how to unload them.
- *The PC hardware configuration.* This is a description of the hardware installed or attached to the personal computer, including information such as total storage size, types of displays attached, type of display used when the error occurred, number of diskette drives configured, number of diskette drives actually attached, presence or absence of a corrected disk, and other installed adapters such as communications, printer, and so forth.

Most of this information can be obtained by running the PC tests. Refer to the *Operator's Guide* for more information.

- *The PC program environment.* This is a description of what (if any) other programs or application programs were running or installed in storage at the time of the failure (for example, whether any print spoolers or other interrupt handlers were running at the time of the failure). Also include the DOS version and the IBM Token-Ring Network installed in your personal computer.
- *A copy of the PC Support/400 error log (PCSERR.LOG).* This file is in your PC Support/400 directory. Copy this file to a PC diskette and include the diskette with the information for the APAR.
- *The release numbers of any PC Support/400 programs that were running at the time of the failure.* When started, each PC Support/400 program displays its copyright and release number. Record the release number of the PC Support/400 programs that are running, and send this information along with the APAR. You may have to run the programs again (possibly after turning the personal computer on) before the release numbers appear again.
- *A copy of all batch files that ran before the problem occurred.* Print all batch files that were run before the problem was encountered to the PC printer. This list includes the AUTOEXEC.BAT file (if present), and the STARTPCS.BAT file.
- *A copy (or printout) of the CONFIG.SYS file if it exists.* Copy the personal computer configuration file, CONFIG.SYS, to a personal computer diskette, and include the diskette with the APAR.
- *A copy (or printout) of the CONFIG.PCS file if it exists.* Copy the PC Support/400 configuration file, CONFIG.PCS, to a personal computer diskette, and include the diskette with the APAR. If you wish, you can print the contents of the file to the PC printer.
- *A copy of any alternative configuration files being used.* Copy to a diskette or print out any alternative configuration files that were being used, and include the diskette with the APAR.
- *A copy of any translation tables that were being used.* Copy any translation tables (ASCII-to- EBCDIC or EBCDIC-to-ASCII) that you were using when the problem occurred, and include the diskette or paper copy with the APAR.

AS/400 Information

Run the AS/400 Create APAR (CRTAPAR) command to help collect the necessary information. Include that information with the following when preparing an APAR:

- A printout of the AS/400 job log.
- *An AS/400 job dump.* Take an AS/400 job dump of the job that was running at the time of the failure, along with any jobs running in the subsystem.
- *A printout of the programming changes for the AS/400 library.* Using the AS/400 Display Program Temporary Fix (DSPPTF) command, print the programming changes for the AS/400 library QIWS.
- *Any other information.* Include any other information, such as history information, that may be useful in isolating and re-creating the problem.

Additional Information

Collect the following additional information (if applicable) and prepare it with the APAR.

Transfer Request Information

If you were running a transfer request when the problem occurred, include the following:

- *The specifications of the transfer request that failed.* This should be in the form of a saved transfer request file. It could be a computer printout of the saved transfer request file, or a print screen computer printout of all the interactive transfer function displays (with prompts filled in) used in creating the transfer request.
- *A copy of the file or files that were being transferred.* Use the AS/400 Save Object (SAVOBJ) command to copy AS/400 file or files that were being transferred at the time of the error to a AS/400 diskette. If you were transferring data from the personal computer to the AS/400 system, copy the personal computer file and its associated file description file (if any) to a PC diskette and include the diskette with the APAR.
- *A copy of the PC file description file that was being used during the transfer.* Copy the PC file description file (if any) that was being used at the time of the failure to a diskette and prepare that diskette with APAR.
- *A copy of the data dictionary that describes the file being transferred.* If you were transferring data from the personal computer to the AS/400 system, copy the data dictionary to a PC diskette and include the diskette with the APAR.

Submit Remote Command Information

If you were running a submit remote command request when the problem occurred, include either or both of the following:

- The command that was being run.
- A copy of the file of commands, if one was used.

Shared Folder

If you were using a personal computer drive letter assigned to a folder, include the following:

- *A copy of the folder.* Use the Save Document (SAVDLO) command on the AS/400 system to save the folder that was being used when the failure occurred.
- *A copy of the CONFIG.PCS file if it exists.* Copy the PC Support/400 configuration file, CONFIG.PCS, and any alternative configuration files to a PC diskette and include the diskette with the APAR. If you wish, you can print the contents of the file to the PC printer.
- *A copy of the CONFIG.SYS and AUTOEXEC.BAT files.*

Organizer

If you were using the organizer, include the following:

- *A copy of the shared folder.* Use the Save Document (SAVDLO) command on the AS/400 system to save the folder that was being used when the failure occurred.

- *A copy of the CONFIG.PCS file if it exists.* Copy the PC Support/400 configuration file, CONFIG.PCS, and any alternative configuration files to a PC diskette and include the diskette with the APAR. You can print the contents of the file to the PC printer.

Virtual Printer

If you were using a virtual printer, include the following:

- *A copy of the file or the data that was being printed on a virtual printer.* Copy to a personal computer diskette the PC file or program data that was being copied to a virtual printer at the time of the failure. If incorrect virtual printer output is the problem, include a copy of the data as it should appear when printed on an actual personal computer printer as well as a copy of the incorrect output.
- *A copy of the virtual printer parameters used for each active virtual printer.* Include a copy of the virtual printer parameters that were being used at the time of the failure. If the virtual printers were assigned using the CFGVPRT program, this information is contained in the CONFIG.PCS or alternative configuration file. Include this file with the APAR. If you assigned (or changed) the virtual printers using the SETVPRT program, obtain this information by running SETVPRT again to display the status of the virtual printers.

If possible, copy the information to the printer by pressing and holding the Shift key and then pressing the Print Screen key. If you cannot print this information on a printer, write down the necessary information. Include a copy of the printer file parameters for each active virtual printer that was assigned a printer file.

Work Station Function

If you were running the work station function when the problem occurred, include the following:

- A copy of the master profile (if any) used to start work station function.
- A copy of all session profiles defined in the master profile.
- A copy of the keyboard profile defined in the master profile.
- A copy of the printer function tables (PFT), if any, used by printer sessions.

Applying or Removing a Program Temporary Fix (PTF)

PTFs for PC Support/400 are distributed on an AS/400 PTF tape or through a support system. PTFs for the AS/400 portion are applied like other AS/400 PTFs, using the PTF procedure described in the *Operator's Guide*. PTFs for PC Support/400 are applied as follows:

- If you are applying the PTFs, you must sign on the system as QSECOFR or with a user ID that has a group profile of QSECOFR.
- PC Support/400 folders must not be in use while PC Support/400 PTFs are applied or removed. Users should not access the PC Support/400 folders or run INZPCS during PTF activity. To temporarily restrict access, change the folders authority to exclude the public, then restore the authority when PTF activity is finished. The CHGDLOAUT command is used to change authority.
- Apply the PTF to the AS/400 programs on the AS/400 system using the PTF procedure described in the *Operator's Guide*.

- You may receive a message indicating that the code on your personal computer needs a PTF applied. The PC Support/400 update function automatically does this when you start PC Support/400 on the personal computer.

Part 6. Appendixes

Appendix A. Using Expanded or Extended Memory with PC Support/400 . . .	A-1
Appendix B. PC Support Memory Requirements	B-1
Appendix C. PC Support/400 Installation Program	C-1
Appendix D. Installing PC Support/400 on Diskettes	D-1
Appendix E. The PC Support/400 Tools Folder	E-1
Appendix F. National Language Support for PC Support/400	F-1
Appendix G. Ethernet Address Considerations	G-1
Appendix H. Using PC Support/400 with the IBM PC LAN Program	H-1
Appendix I. Using PC Support/400 with the IBM OS/2 LAN Program and DLR	I-1
Appendix J. PC Support/400 and Novell NetWare 386 Coexistence	J-1

Appendix A. Using Expanded or Extended Memory with PC Support/400

Types of Personal Computer Memory	A-2
Conventional Memory	A-2
Reserved Memory	A-2
Extended Memory	A-2
Expanded Memory	A-3
LIM/EMS Standard	A-3
Page Frames	A-3
Software and Hardware Requirements	A-4
DOS 5.0 Expanded Memory Device Drivers	A-5
Installing Expanded Memory	A-5
Installing the Hardware	A-5
Installing the Software	A-5
Installing the DOS 5.0 EMS Device Drivers	A-5
Sample DEVICE Statements for EMM386.EXE	A-7
Resolving EMS Conflicts	A-7
PC Support Expanded Memory Device Driver	A-8
Installing EIMPCS.SYS	A-9
Configuration Examples	A-9
IBM PC or Personal System/2 Model 30	A-10
IBM Personal System/2 Models 50 and 60	A-10
IBM Personal System/2 Models 70 and 80	A-11
Using Extended Memory with PC Support	A-12
Specifying the Amount of Extended Memory to Use	A-12
Compatibility with Other Extender Applications	A-13
Memory Managers	A-13

This appendix describes how to use expanded memory and extended memory with PC Support. It describes:

- The types of memory used with the personal computer.
- The expanded memory device driver provided by PC Support.
- Examples of how to configure expanded memory on your personal computer.
- How to use extended memory with PC Support.

Types of Personal Computer Memory

There are four types of memory used with personal computers:

- Conventional memory
- Reserved memory
- Extended memory
- Expanded memory

Conventional Memory

Conventional memory is memory addressed from 0K through 640K. This is the basis of all memory used for DOS and the processing of your application programs.

Reserved Memory

Reserved memory is a range of memory addresses used for internal computer functions such as:

- Controlling and locating hardware adapters
- Reading input from the keyboard
- Writing output to the displays

On the personal computer this reserved area is between 640K and 1M.

Extended Memory

Extended memory is memory addressed above 1024K (1M), extending the regular conventional memory. It usually begins at address 100000.

Extended memory can only be used to store data or programs in a DOS environment, as follows:

- Some PC Support/400 functions automatically make use of extended memory when you use the extended DOS option of PC Support/400.
- Additional disks can be created in extended memory by using the /E parameter in the VDISK.SYS device driver.
- A cache can be created in extended memory by using the /E parameter in the IBMCACHE.SYS device driver.
- A program has been specially written to use extended memory for data storage.

The 8086/8088-based systems do not support extended memory. Extended memory is only available on 80286 and above systems and is tested during the Power On Self-Test (POST). A counter in the upper left corner of the display indicates the amount of memory installed.

Expanded Memory

Expanded memory is memory that is addressed through a combination of Expanded Memory Manager (EMM) device drivers and an expanded memory adapter. The EMM device driver maps, or puts expanded memory in a memory address below 1M.

Expanded memory can be used to store data and programs. You can also load and run programs in expanded memory. The use of expanded memory needs to be specifically written into the application program or the device driver installed. For example, an application program has been specially written so that part of the program resides and runs in expanded memory. Such as:

- IBM DisplayWrite 4 Version 2
- Shared folder function of PC Support
- LOTUS 1-2-3** Version 2

LIM/EMS Standard

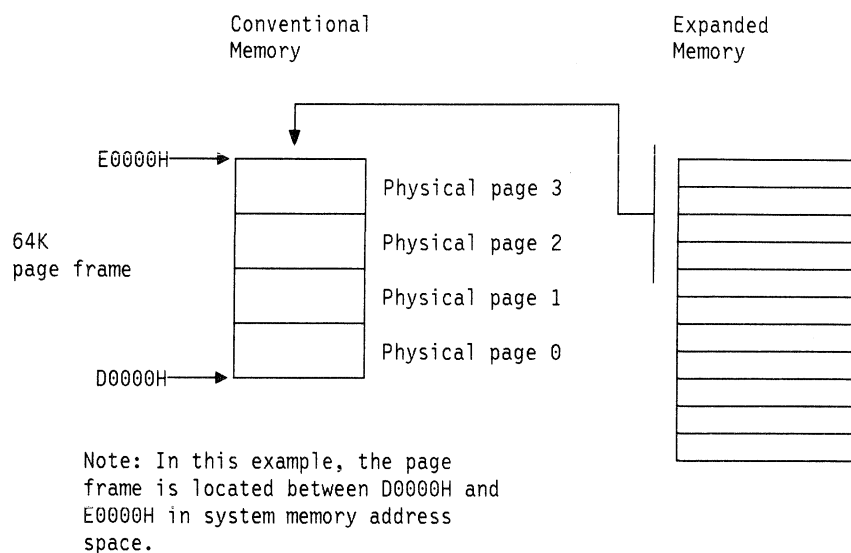
The Lotus/Intel/Microsoft** Expanded Memory Specification (LIM/EMS) was developed to allow programmers to write DOS applications that could address memory above the 640K limit. This specification describes a way to expand the memory addressing capabilities of the Intel** processors.

A program or data can remain in expanded memory while DOS reads or writes to it through the reusable register bank in low memory. No physical copying of pages from expanded to low memory is necessary, since the address-switching scheme lets a program use expanded memory directly. This special software interface has been developed by three personal computer software developers: Lotus Corporation, Intel**, and Microsoft as the expanded memory specification. LIM 3.2 supports up to 8M of expanded memory and requires four consecutive 16K pages. LIM 4.0 supports up to 32M of expanded memory and allows the use of any number of nonconsecutive 16K pages.

PC Support runs with LIM 3.2 and LIM 4.0, but the expanded memory manager must be configured with a 64K frame (four consecutive 16K pages).

Page Frames

The physical size of each page is fixed at 16K. Four consecutive 16K pages can be mapped into the system memory address space from expanded memory at the same time.



LIM 3.2 requires four consecutive 16K physical pages. LIM 4.0 allows the use of any number of nonconsecutive 16K physical pages.

PC Support runs with LIM 3.2 or LIM 4.0, but the expanded memory manager must be configured with 64K page frame (four consecutive 16K physical pages).

Software and Hardware Requirements

Expanded memory is available if you have a combination of the following hardware and software:

Processors

Required Hardware and Software

8086/8088

An expanded memory capable adapter card, such as the *IBM 2M Expanded Memory Adapter*.

The device driver is provided with the expanded memory adapter card.

80286

An expanded memory capable adapter card, such as the:

IBM PS/2 80286 Expanded Memory Adapter/A
IBM PS/2 80286 Memory Expansion Option
IBM PS/2 0 - 8M Expanded Memory Adapter/A
IBM 2M Expanded Memory Adapter

80386

Any memory installed above 640K, such as:

System board memory
IBM PS/2 80386 Memory Expansion Option
IBM PS/2 2 - 8M 80386 Memory Expansion Option

For 80386-based machines, EMS device drivers are required.

Note: If non-IBM memory expansion adapter cards are installed, use the EMS driver provided with the adapter card.

DOS 5.0 Expanded Memory Device Drivers

The following device drivers are provided with DOS 5.0 for expanded memory support (EMS) on an 80386-based (or higher) system:

HIMEM.SYS

This device driver manages the use of extended memory. It provides a way for programs that use extended memory or the high memory area (HMA) to manage their use in a flexible manner.

EMM386.EXE

This device driver uses extended memory to simulate expanded memory for programs that can use expanded memory. The EMM386.EXE device driver makes the 80386 extended memory emulate an 80286 Expanded Memory Adapter/A.

Installing Expanded Memory

This section describes installation procedures for expanded memory hardware and software, installation of the DOS 5.0 EMS device driver, and the resolution of EMS conflicts.

Installing the Hardware

Install all required hardware according to the installation instructions provided with the hardware. If necessary, update the reference diskette for the PS/2 models 50, 60, 70, and 80. For 8086-based and 8088-based systems, there are no reference diskettes to be updated.

Installing the Software

Install all required software according to the installation instructions provided with the software.

Installing the DOS 5.0 EMS Device Drivers

To install the DOS 5.0 EMS device drivers, add the following statements to the CONFIG.SYS file:

```
DEVICE=HIMEM.SYS  
DEVICE=EMM386.EXE memory FRAME=aaaa X=mmm-nnn
```

Notes:

1. The DEVICE statement for HIMEM.SYS must be placed in the CONFIG.SYS file before the DEVICE statement for EMM386.EXE and before the DEVICE statement for any other programs or device drivers that use extended memory.
2. The DEVICE statement for EMM386.EXE must be placed in the CONFIG.SYS file before the DEVICE statement for any other programs or device drivers that use expanded memory.

Parameters on the Device Statement

Memory

Specifies the amount of memory in kilobytes that you want to allocate to EMM386.EXE. This value is optional, but is recommended when you use PC Support. Valid values are in the range from 16 to 32768. The default is 256.

The amount you specify for the Memory parameter also controls the amount of memory that is available for all PC Support/400 functions that use the high

memory area. The following are some suggested methods for determining the amount to specify:

- Use a value that is approximately 500KB less than the total extended memory available after starting DOS.
- Use a value that is the sum of the amounts of extended memory and expanded memory that your PC Support configuration and other user applications are using.

To determine the amounts of memory needed for PC Support functions, refer to the tables in Appendix B, "PC Support Memory Requirements." EMM386.EXE rounds the value to the nearest multiple of 16.

FRAME = aaaa

Specifies the EMS frame address (aaaa). This value is optional for PC Support. If you do not specify a value, the EMM386.EXE program determines this address based on the available space in memory.

The frame consists of a 64K connecting space starting at the specified address. A frame equals about four 16K pages. Valid values for aaaa are in the range from 8000 through 9000 and from C000 through E000, in increments of 400. Make sure that the memory location used by the expanded memory device driver does not conflict with the memory locations used by adapters in the personal computer.

X = mmmm-nnnn

Prevents EMM386.EXE from using the specified range of segment addresses for a page. This parameter is optional for PC Support.

Valid values for *mmmm* and *nnnn* are in the range from A000 through FFFF. These values are rounded down to the nearest 4K boundary.

Note: The extended DOS option of PC Support is compatible with 386 EMS drivers that are compatible with the Virtual Control Program Interface (VCPI). EMS drivers that are not VCPI compatible (such as XMAEM) do not work with PC Support extenders on 386 or higher systems.

Some EMS drivers such as EMM386 have an optional parameter (NOEMS) that prohibits VCPI applications from using extended memory or expanded memory. You should not use this parameter because it prevents the PC Support extender support from using extended memory.

If you want to load applications in high memory and not allocate a 64K page frame for expanded memory use, use the FRAME = NONE parameter. This parameter instructs the 386 EMS driver to load the VCPI interface without allocating an EMS page frame and without enabling EMS support. Thus, the PC Support/400 extended DOS option can still use extended memory and the user can still load applications in high memory.

For more detailed information about installing the driver, refer to the DOS 5.0 manual.

Sample DEVICE Statements for EMM386.EXE

The following are examples of DEVICE statements for EMM386.EXE that can be used in the CONFIG.SYS file.

```
DEVICE=EMM386.EXE 1024
```

This statement loads the device driver and specifies that the amount of memory to be used by EMS is 1024KB.

```
DEVICE=EMM386.EXE 1024 FRAME=C000 X=A000-BFFF
```

This statement loads the device driver and specifies that the amount of memory to be used by EMS is 1024KB. The EMS frame address is to be C000. The addresses from A000 through BFFF are not to be used by EMS.

Resolving EMS Conflicts

The address space between A0000 and FFFFF is used by adapters and DOS internal functions. An EMS conflict occurs when the EMS driver is loaded in an address space previously defined for another function.

Note: If you want 2048KB of extended memory cache available for the shared folders function, the Memory parameter would have to be set at a larger value than the default, in this case at least 2500KB.

A 64K Frame Available: If you specify an address that is already being used, the following message is displayed when the CONFIG.SYS file is processed:

```
WARNING: Option ROM or RAM detected within page frame.
```

To resolve the conflict, you can remove the FRAME parameter from the DEVICE=EMM386.EXE statement. This allows the EMM386 program to determine an appropriate address.

A 64K Frame Not Available: If a 64K frame is not available, the following message is displayed when the CONFIG.SYS file is processed:

```
EMM386 not installed - unable to set page frame address.
```

To resolve the conflict, you need to change the physical address of an adapter. To change the physical address of an adapter, do one of the following:

- Use the reference diskette (Micro Channel adapters).
- Change the switches on the adapter (adapters other than Micro Channel adapters).

Important

Even if no warning messages appear when the EMS driver is installed, problems may occur when the EMS driver is used. The problems could be:

- Inability of a specific function to work correctly (assuming this function worked correctly when EMS was not installed).
- The personal computer locks up and needs to be turned off and turned on again.
- The personal computer continually runs in a loop when it is started.

These types of problems could be caused by the EMS device driver and an adapter card using the same address space. You can resolve this type of EMS conflict by changing the address of one of the following:

- Adapter card
- FRAME parameters

PC Support Expanded Memory Device Driver

PC Support provides a device driver (EIMPCS.SYS) that allows PC Support functions to use expanded memory. EIMPCS.SYS is a memory manager used to manage all memory usage for PC Support, including conventional memory and expanded memory.

PC Support functions are able to take advantage of expanded memory to reduce the amount of conventional memory required. This means that more conventional memory is available to other applications running on the personal computer.

The memory manager (EIMPCS.SYS) supplied with PC Support/400 requires you to configure the expanded memory device driver for a 64K page frame. A 64KB address range must be free to use an expanded memory page frame. This 64K area must not be used by any other adapter in the personal computer. If the 64K page frame for the memory manager uses a memory area that another adapter is also using, the personal computer will not operate correctly.

Since almost every personal computer adapter uses memory in the address range from 0A0000 to FFFFFF, you need to know the address ranges that are available for use. One example of memory use follows:

- 0A0000 to 0C0000 is reserved for display adapters
- 0CC000 is the starting address for the IBM token ring adapter
- 0DC000 is the starting address for the IBM work station emulation adapter

To find the memory areas used by the personal computer, refer to the technical reference manual for the personal computer and the installation instructions that come with the adapter cards.

The memory locations used by most adapters installed in the personal computer can be moved around in the address range C0000 to E0000. The memory locations used by the adapters installed in your personal computer should be moved so that a 64K range may be used by the expanded memory device driver. Use the quick reference card that comes with the Personal System/2 to display and change (if necessary) the memory locations used by the adapters. To

display or change the memory locations used by adapters in other personal computers, use the installation instructions that come with the personal computer and the adapter card.

Important

When you install the expanded memory device driver, specify the address of the 64K free space. If you do not specify this address for the expanded memory device driver, the default address may conflict with an address used by another adapter.

Installing EIMPCS.SYS

The EIMPCS.SYS device driver is installed by adding an entry for the device driver in the CONFIG.SYS file. The entry in the CONFIG.SYS file should be in the following format:

```
DEVICE=[d:][path] EIMPCS.SYS [P=nnnn] [I=mm][/E&rbr
```

d: Specifies the name of the disk or diskette where the device driver is located. Path specifies the directory where the device driver is located.

P=nnnn

Indicates the maximum number of 16K pages of expanded memory to assign to PC Support. The valid entries for this parameter are 0 through 2048. The default is 2048. If you specify 0 through 4, expanded memory is not used by PC Support. A minimum of five 16K pages is required for PC Support.

I=mm

Specifies the interrupt number to be used by the memory manager. The valid entries for this parameter are 60 through 66 and 69. Interrupt 67 is used by the EMS device driver and interrupt 68 is the default used by the PC Support router.

/E Delays PC Support EMS use by keeping the EMS support resident in memory even though expanded memory is not present when the personal computer is first started. The /E parameter allows you to use EMS programs started from the DOS prompt (EMS emulators).

If you do not specify the /E parameter, EIMPCS.SYS only checks for the expanded memory when the personal computer is powered on. If the EMS device drivers are not in the CONFIG.SYS file, all PC Support functions only use conventional memory.

Configuration Examples

It is important to make sure the memory location used by the expanded memory device driver does not conflict with the memory locations used by adapters in the personal computer. The following examples show how to set up expanded memory.

IBM PC or Personal System/2 Model 30

The following example shows how to configure expanded memory for an IBM PC AT, IBM PC XT, or Personal System/2 Model 30:

1. Use the installation instructions for the memory expansion adapter to configure the memory for the adapter.
2. Use the installation instructions for the adapters installed in your personal computer to find out if the memory locations used by the adapters are the same as the memory locations shown below for the DOS EMS driver (step 3) and the emulation adapter (step 4). It may be necessary to change one or more of the memory locations being used to avoid an addressing conflict.
3. Configure the page frame for the DOS EMS driver for memory location D000. This is done with the page frame parameter for the device driver (XMA2EMS.SYS).
4. Use the installation instructions for the emulation adapter to configure the memory locations used by the following adapters:

Token ring:

ROM = CC00
RAM = C400

5250 emulation:

RAM = CC00

Note: If you are using the Enhanced 5250 Emulation Adapter, see "Using the Enhanced 5250 Emulation Adapter" on page 1-11 for information about setting the I/O adapter address used by programs to communicate with the adapter card. See "Using the PC Support Twinaxial (TDLC) Router" on page 20-18 for information about the twinaxial adapter handlers.

The following is an example of the entries needed in the CONFIG.SYS file:

```
DEVICE=C:\DOS\XMA2EMS.SYS FRAME=D000  
DEVICE=C:\PCS\EIMPCS.SYS  
DEVICE=C:\PCS\ECYDDX.SYS  
DEVICE=C:\PCS\FSDD.SYS
```

The paths shown for the device driver entries indicate the directory where the device driver is located. If your device drivers are located in different directories, you must change the path shown in the device driver entries.

IBM Personal System/2 Models 50 and 60

The following example shows how to configure expanded memory for an IBM Personal System/2 Model 50 or 60:

1. Use the installation instructions for the memory expansion adapter to configure the memory for the adapter.
2. Use the Personal System/2 reference diskette to display the memory locations used for the adapters to make sure another adapter is not using the memory location shown for the DOS EMS driver (step 3) and the memory location shown for the emulation adapter (step 4 on page A-11).
3. Configure the page frame for the DOS EMS driver for memory location C000. This is done with the page frame parameter for the device driver (XMA2EMS.SYS).

4. Use the Personal System/2 reference diskette to configure the memory locations used by the following adapters:

Token ring

ROM = D0000 - D1FFF
RAM = D8000 - DBFFF

5250 emulation

RAM = DC000 - DFFFF

Hard disk controller

Memory location = D400

The following is an example of the entries needed in the CONFIG.SYS file:

```
DEVICE=C:\DOS\XMA2EMS.SYS FRAME=C000  
DEVICE=C:\PCS\EIMPCS.SYS  
DEVICE=C:\PCS\ECYDDX.SYS  
DEVICE=C:\PCS\FSDD.SYS
```

The paths shown for the device driver entries indicate the directory where the device driver is located. If your device drivers are located in different directories, you must change the path shown in the device driver entries.

IBM Personal System/2 Models 70 and 80

The following example shows how to configure expanded memory for an IBM Personal System/2 Model 70 or 80:

1. Use the installation instructions for the memory expansion adapter to configure the memory for the adapter.
2. Use the Personal System/2 reference diskette to display the memory locations used for the adapters to make sure another adapter is not using the memory location shown for the DOS EMS driver (step 3) and the memory location shown for the emulation adapter (step 4).
3. Configure the page frame for the DOS EMS driver for memory location C000. This is done with the page frame parameter for the device driver (XMA2EMS.SYS).
4. Use the Personal System/2 reference diskette to configure the memory locations used by the following adapters:

Token ring:

ROM = D0000 - D1FFF
RAM = D8000 - DBFFF

5250 emulation:

RAM = DC000 - DFFFF

Hard disk controller:

Memory location = D400

The following is an example of the entries needed in the CONFIG.SYS file:

```
DEVICE=C:\DOS\XMAEM.SYS  
DEVICE=C:\DOS\XMA2EMS.SYS FRAME=C000  
DEVICE=C:\PCS\EIMPCS.SYS  
DEVICE=C:\PCS\ECYDDX.SYS  
DEVICE=C:\PCS\FSDD.SYS
```

The paths shown for the device driver entries indicate the directory where the device driver is located. If your device drivers are located in different directories, you must change the path shown in the device driver entries.

Using Extended Memory with PC Support

The DOS extender technology used by PC Support is the DOS/16M product by Rational Systems, Inc. This product supports the Extended Memory Specification (XMS) and Virtual Control Program Interface (VCPI). Memory managers such as QEMM386 by Quarterdeck Office Systems and 386MAX by Qualitas, Inc. that support XMS or VCPI specifications will work with the PC Support extender interface (PCSXI).

If an extended memory manager is not present when PCSXI starts, PC Support manages all of the extended memory in the personal computer unless you specify otherwise using the SET DOS16M command.

Note: PCSXI looks in the following order for memory managers:

- DPMI managers (not currently used)
- VCPI managers (for example, EMM386 and QEMM386)
- XMS managers (HIMEM)
- No manager (PCSXI acts as a DOS/16M manager)

A value specified using the SET DOS16M command has overall control of the total high memory area that PC Support functions are allowed to use. This value sets the total high memory area available to PC Support when PCSXI starts.

Specifying the Amount of Extended Memory to Use

If you are using the extended DOS option of PC Support/400 with other applications that use extended memory (such as Microsoft Windows 3.0), you may not have enough memory when you try to load PC Support/400 functions or a shared folders cache. If this occurs, set the DOS16M environment variable to the sum of the extended memory used by the PC Support/400 functions used and the size of the shared folders cache.

To calculate the amount of extended memory needed by your PC Support configuration, refer to the memory requirement tables in Appendix B, "PC Support Memory Requirements."

To calculate the size of the shared folders cache, use the CFGPCS program or look in the CONFIG.PCS file for the MCAX identifier.

You can issue the SET DOS16M command from the DOS command prompt or add it to your AUTOEXEC.BAT file. The format of the command is:

```
SET DOS16M=[@start address[-end address]] [:size]
```

where *start address*, *end address*, and *size* represent numbers, expressed in decimal. The number may end with a K to indicate an address or size in kilobytes, or an M to indicate megabytes. If no suffix is given, the address or size is assumed to be in kilobytes. If both a size and range are specified, the more restrictive interpretation is used.

Specifying a start address is necessary only if you are using an older program that uses extended memory and does not follow one of the standard disciplines for its allocation.

Compatibility with Other Extender Applications

Applications that use the DOS/16M extender technology are compatible with the PC Support extender interface. Applications that use other extender technologies may find that PC Support takes control of all the extended memory.

Memory Managers

Memory managers that support XMS and VCPI are compatible with the PC Support extender interface. There are some special considerations when using one of these memory managers with PC Support extenders.

- When a memory manager is present, the PC Support extender interface always requests memory from the memory manager. Most memory managers that support XMS and VCPI have an option that allows you to control the amount of extended memory managed by the memory manager. You should not use this option unless the application you are running cannot request memory from the memory manager. You should allow the memory manager to handle all memory allocations.

For example, if you have 4MB of extended memory and you are using EMM386 from DOS 5.0, you should allow EMM386 to control all of extended memory unless you are running an application that cannot request memory from EMM386.

- You use the DEVICEHIGH and LOADHIGH (new for DOS 5.0) statements to load device drivers and applications in the high memory area (HMA).

If you want to maximize the use of upper memory blocks by eliminating Expanded Memory Specification (EMS), you should not use the option that specifies no EMS. (VCPI is accessed through the EMS interface, so when the memory manager is told to configure for no EMS, the VCPI interface is not available.)

To achieve the desired result, configure for no frame. On most memory managers, you do this using either the FRAME = NONE parameter or the NOFRAME parameter. Consult the documentation provided with the memory manager for the appropriate option to use. Configuring for no frame allows the memory to be controlled through VCPI and eliminates the page frame, thus maximizing upper memory blocks for loading programs in high memory. When using the FRAME = NONE option, place the PC Support EIMPCS device drive ahead of the EMS driver.

- Several memory managers may be used with extended DOS and Windows 3.0 Enhanced 386 Mode.
 - HIMEM/EMM386: If you are using DOS 5.0, use version 2.77 of HIMEM and version 4.20.06X of EMM386 from the DOS directory. With any other version of DOS, use version 2.60 of HIMEM and version 4.10.0419 of EMM386 from the Windows directory. In either case, use one of the following configuration values:

```
DEVICE=C:\DOS\HIMEM.SYS
DEVICE=C:\DOS\EMM386.EXE [nnnn] FRAME=[xxxx] RAM
DEVICE=C:\DOS\EMM386.EXE FRAME=NONE RAM
DEVICE=C:\DOS\EMM386.EXE RAM
```

In the example statements, [nnnn] signifies the amount of memory for the memory manager to control, and [xxxx] is the address of the EMS page frame in hexadecimal.

- QEMM386 v5.12: Version 5.12 and later versions of QEMM386 may be used with any version of DOS. Use one of the following configuration values:

```
DEVICE=C:\QEMM\QEMM386.SYS RAM FRAME=[xxxx]  
DEVICE=C:\QEMM\QEMM386.SYS RAM FRAME=NONE  
DEVICE=C:\QEMM\QEMM386.SYS RAM
```

- 386MAX/BlueMAX v5.12: Version 5.12 and later versions of 386MAX/BlueMAX may be used with any version of DOS. Install this memory manager and run the Qualitas MAXIMIZE utility to configure 386MAX/BlueMAX for your PC configuration. If your PC configuration changes, run the Qualitas MAXIMIZE utility again.

Notes:

1. The DOS 5.0 Edit function will not run if ROM (BASIC) is compressed.
 2. The WSEAH function of PC Support/400 will not run if ROM (ABIOS) is compressed.
- EMS Support: If you wish to use EMS Support with Windows 3.0 Enhanced 386 Mode, use DOS 5.0 EMM386.EXE and specify a page frame greater than or equal to A000.

Appendix B. PC Support Memory Requirements

PC Support Memory Requirements	B-2
Removing PC Support Functions	B-3
Resident Memory Requirements (without EMS)	B-3
Resident Memory Requirements (with EMS)	B-6
Resident Memory Requirements (with Extended DOS)	B-8
Using Extended DOS and Expanded Memory	B-10
Nonresident Memory Requirements	B-11
Memory Requirements Work Sheet	B-11

PC Support Memory Requirements

There are two basic considerations you need to know if you are trying to find the total memory required for running PC Support. The first consideration is how much resident memory is used and the second consideration is how much non-resident memory is used.

- Resident memory

Resident memory is the amount of memory used by programs or applications that do not return the memory used by the program when the program returns you to the DOS prompt. The program or application stays resident in memory. For example, when you start work station function (WSF), the program is loaded in memory. The conventional memory used by WSF is not available for use by any other program or application until the WSF sessions are stopped and the Remove PC Support command (RMVPCS) is run to remove WSF from memory.

- Nonresident memory

Nonresident memory is the amount of memory used by programs or applications that return all of the memory used by the program when the program ends. For example, when you start the work station function configuration program (CFGWSF), the configuration program is loaded in memory. The conventional memory used by CFGWSF is available for use by other programs or applications as soon as you exit the CFGWSF program.

The personal computer memory requirements depend on the size of the PC Support functions you want to use and on the other functions the personal computer uses.

In most cases, the PC Support functions can be run if your personal computer has 512KB of memory. However, depending on what equipment you are using and how you are using your personal computer, your memory requirements may be more or less than 512KB.

To determine approximately how much personal computer memory you need, you must determine how much memory is used for your configuration of PC Support and any application you plan to use. The amount of memory needed is the sum of memory needed for all of the PC Support functions that you have configured and the applications you plan to use.

The tables on the following pages show the approximate memory requirements for PC Support functions. The memory requirements for other resident programs or applications you are using are found in the manuals for those specific products.

A table is shown for expanded memory. See Appendix A, "Using Expanded or Extended Memory with PC Support/400" for information on using PC Support with expanded memory. A table is also shown for the extended DOS option of PC Support/400. See "Using the Extended DOS Option of PC Support/400" on page 1-13 for information on using the extended DOS option of PC Support/400.

Removing PC Support Functions

You can remove the following resident PC Support functions from memory:

- Data queues function
- Extended DOS interface
- Message function
- Organizer and text-assist
- Router
- Shared folders function (except type 0)
- Shared folders network connector
- Session manager
- Transfer function API
- Twinaxial adapter handler
- Virtual printer
- Work station function

The Remove PC Support (RMVPCS) command allows you to select and remove functions from memory and make the memory available for use by other applications. For example, the command RMVPCS DQ will remove the data queues function from memory. See the *PC Support/400 User's Guide for DOS* for information about using the RMVPCS command.

Resident Memory Requirements (without EMS)

The following table shows the approximate resident memory requirements for PC Support without expanded memory support (EMS). The *Conventional Memory Used* column shows the amount of conventional memory used after the function is loaded. The *Required to Load* column shows the total amount of conventional memory that is needed when the function is first loaded.

Table B-1 (Page 1 of 2). Memory Requirements (without EMS)

Function	Conventional Memory Used	Required to Load
DOS 5.0	15K (see Note 1)	
SHARE (see Note 2)	6K	
DOSSHLL	9K (see Note 3)	
Twinaxial Adapter handler (Enhanced Emulation)	8K	26K
Twinaxial Adapter handler (WSE)	13K	38K
IBM Local Area Network Support program	(see Note 9)	
Memory manager	2K	25K
Message function	23K	86K
Shared folders function type 0	78K	78K
Shared folders function type 1		
Non-removable (see Note 4)	22K	22K
Removable		
Main program	44K	88K
Communications buffer	14K (see Note 5)	
Cache program	31K	58K
Cache size	(see Note 6)	
Cache tables	(see Note 7)	
Shared folders function type 2		
Non-removable (see Note 4)	22K	22K
Removable		
Main program	46K	98K
Communications buffer	14K (see Note 5)	
Cache program	33K	61K
Cache size	(see Note 6)	

Table B-1 (Page 2 of 2). Memory Requirements (without EMS)

Function	Conventional Memory Used	Required to Load
Cache tables	(see Note 7)	
Virtual printer (one virtual printer)	18K	36K
Virtual printer (each additional)	4K	
Transfer function API	20K	38K
TDLC router	49K	183K
IBM Token-ring network router	60K	192K
SDLC router	60K	153K
Asynchronous communications router	63K	157K
Work station function (see Note 8)		
Display program	48K	140K
Each display session	7K	
Display save area	0K, 4K, or 16K (see Note 8)	
Mouse save area	1K	
Printer program	33K	75K
Each printer session	7K	
Printer online help information	11K	
Printer function tables (per printer)	3-6K	
Graphics display program	92K	
Each graphics display session	28K	
80 column display program	48K	140K
Each 80 column session	7K	
DOS display save area	0K, 4K, or 16K	
132 column display program using VGA/EGA/MCGA	62K	160K
DOS display save area	0K, 5K, or 16K	
Using 8514/A mode	68K	
HDILOAD.EXE	19K	
DOS display save area	0K, 5K, or 16K	
Each 132 column display session	10.5K	
Organizer		
Without DisplayWrite	19K	38K
With DisplayWrite	25K	38K
Text-assist type 0		
First display session	136K (see Note 10)	136K
Each additional display session	32K (see Note 10)	32K
Text-assist type 1		
First display session	190K (see Note 10)	190K
Each additional display session	32K (see Note 10)	32K
132-column support	10K	10K
DisplayWrite 4	341K	310K
DisplayWrite 4 version 2	380K	275K
Session manager		
If all sessions are 80 column sessions		
Base memory and one 80 column session	53K	64K
Each additional 80 column session	4K	
Each printer session	4K	
If any sessions are 80 column sessions		
Base memory and one 132 column session	67K	67K
Each additional 132 column session	8K	
Each additional 80 column session	4K	
Each printer session	4K	

Notes:

1. This assumes that DOS is loaded in the high memory area and set to the defaults.
2. SHARE must be loaded for DOS 4.0 if a hard disk partition size greater than 32M is used. SHARE is not necessary if you are using DOS 5.0.
3. If you use task switching, add 35K.
4. This part of the shared folders function is not removed from memory when the RMVPCS command is run.
5. You can configure the size of the communications buffer. The default is 14K. Valid values are 2K through 32K.
6. You can configure the size of the cache. The default is 0K (no caching). Valid values are 0K, and 3K to 640K.
7. When the cache is located in expanded memory and the cache tables are located in conventional memory, this size can be from 1K to 32K. The size of the cache tables is dependent on the size of the cache. The following formula can be used to estimate the size of the cache tables:

$$\frac{\text{Cache size (in KB)}}{\text{M times 32}} = \text{Cache table size}$$

- M = 1 for cache size 64K or smaller
- M = 2 for cache size 65K to 2M
- M = 4 for cache sizes larger than 2M

When both the cache and cache tables are located in the same area of memory (conventional or expanded), this size is zero.

8. Work station function has the following additional considerations:
 - If a serial printer or a plotter is configured, an additional 3K is needed.
 - Each graphics session varies between 28K and 72K, depending on the amount of VDI buffer size configured for that session.
 - Memory required for the work station function display save area:
 - 16K is required if you plan to run personal computer applications that use graphics in the DOS session.
 - 4K is required if your personal computer only has a monochrome adapter.
 - 0K is required if your personal computer has a graphics adapter (CGA, EGA, MCGA, or VGA) and your personal computer applications do not use graphics or use more than one display page.
 - Memory required for a Thai language display is 26K.
9. The amount of memory required by the LAN Support Program depends on the type of adapter card used:
 - Token-Ring Family 2 requires 10KB
 - Ethernet 3COM Family 2 requires 45KB
 - Ethernet Western Digital Family 2 requires 72KB
10. The text-assist function attempts to allocate two edit sessions for each display session, but allocates only one if there is insufficient memory for two. The 136K, 190K, and 32K values reflect the minimum requirement for one edit session; a second edit session requires an additional 32K per display session.

Resident Memory Requirements (with EMS)

The following table shows the approximate memory requirements for PC Support when expanded memory support (EMS) is used. See Appendix A, "Using Expanded or Extended Memory with PC Support/400" for more information on using expanded memory. The *Conventional Memory Used* column shows the amount of conventional memory used after the function is loaded. The *Required to Load* column shows the total amount of conventional memory that is needed when the function is first loaded. The *EMS Used* column shows how much expanded memory is used.

Table B-2 (Page 1 of 2). Memory Requirements (with EMS)

Function	Conventional Memory Used	Required to Load	EMS Used
DOS 5.0	15K (see Note 1)		
SHARE (see Note 2)	6K		
DOSSHELL	9K (see Note 3)		
Twinaxial Adapter handler (Enhanced Emulation)	8K	26K	
Twinaxial Adapter handler (WSE)	13K	38K	
IBM Local Area Network Support program	9K	14K	
Memory manager	1K	25K	16K
EMS device drivers	10K		
Message function	23K	86K	
Shared folders function type 0	30K	79K	64K
Shared folders function type 1			
Non-removable	22K (see Note 4)	22K	
Removable			
Main program	7K	98K	48K
Communications buffer			16K
Cache program	4K		32K
Cache size			128K (see Note 6)
Cache table	(see Note 5)	(see Note 5)	(see Note 7)
Shared folders function type 2			
Non-removable	22K (see Note 4)	22K	
Removable			
Main program	8K	98K	48K
Communications buffer			16K
Cache program	5K		32K
Cache size			128K (see Note 6)
Cache table	(see Note 5)	(see Note 5)	(see Note 7)
Virtual printer (one virtual printer)	18K	36K	
Virtual printer (each additional)	4K		
Transfer function API	19K	38K	
TDLC router	49K	183K	
IBM Token-ring network router	60K	192K	
SDLC router	60K	153K	
Asynchronous communications router	63K	157K	
Work station function (see Note 8)			
Display program	46K	140K	16K
Each display session	7K		
Display save area			0K or 16K
Mouse save area			1K
Printer program	4K	75K	32K
Each printer session	7K		
Printer online help information			16K
Printer function tables (per printer)			16K
Graphics display program	92K		
Each graphics session	28K		

Table B-2 (Page 2 of 2). Memory Requirements (with EMS)

Function	Conventional Memory Used	Required to Load	EMS Used
80 column display program	46K	140K	16K
Each 80 column session	7K		
DOS display save area			16K
132 column display program			
using VGA/EGA/MCGA	58K	160K	
DOS display save area			16K
Each 132 column session	11K		
Using 8514/A mode	68K	138K	
HDILOAD.EXE	19K		
DOS display save area	0K or 16K		
Each 132 column display session	11K		
Organizer			
Without DisplayWrite	19K	38K	
With DisplayWrite	25K	38K	
Text-assist type 0			
First display session	136K (see Note 9)	136K	
Each additional display session	32K (see Note 9)	32K	
Text-assist type 1			
First display session	190K (see Note 9)	190K	
Each additional display session	32K (see Note 9)	32K	
132-column support	10K	10K	
Image graphics support	(see Note 10)		
VDI program	8K		
Graphic buffer			16K to 64K
Image buffer			64K
Session manager (see Note 11)			
If all sessions are 80 column sessions			
1 display or printer session	7K	64K	64K
2 or 3 display or printer sessions	7K	64K	80K
4 or 5 display or printer sessions	7K	64K	96K
If any sessions are 132 column sessions			
1 display or printer session	12K	67K	64K
2 or 3 display or printer sessions	12K	67K	80K
4 or 5 display or printer sessions	12K	67K	96K

Notes:

1. This assumes that DOS is loaded in the high memory area and set to the defaults.
2. SHARE must be loaded for DOS 4.0 if a hard disk partition size greater than 32M is used. SHARE is not necessary if you are using DOS 5.0.
3. If you use task switching, add 35K.
4. This part of the shared folders function is not removed from memory when the RMVPCS command is run.
5. When both the cache and cache tables are located in the same area of memory (conventional or expanded), this size is zero.
6. You can configure the size of the cache. The default is 128K. Valid values are 32K through 4096K.
7. When the cache is located in conventional memory and the cache tables are located in expanded memory, the cache table size is 16K for cache size 1M or less.

8. Work station function has the following additional considerations:
 - If a serial printer or a plotter is configured, an additional 3K is needed.
 - The resident program size includes 56K for the virtual device interface (VDI) controller and one VDI driver.
 - Each graphics session varies between 28K and 72K, depending on the amount of VDI buffer size configured for that session.
9. The text-assist function attempts to allocate two edit sessions for each display session, but allocates only one if there is insufficient memory for two. The 136K, 190K, and 32K values reflect the minimum requirement for one edit session; a second edit session requires an additional 32K per display session.
10. Text-assist image graphics support requires that EMS be installed in your personal computer and that you have configured a work station function display session that can use graphics.
11. If the work station function program has not loaded the 8514 font file but the session manager program was requested to use 8514 support, the session manager program loads the 8514 font file into resident memory. This requires a maximum of 7K.

Resident Memory Requirements (with Extended DOS)

The following table shows the approximate memory requirements for PC Support/400 functions when using the extended DOS option. See "Using the Extended DOS Option of PC Support/400" for more information on using the extended DOS option. The *Conventional Memory Used* column shows the amount of conventional memory used after the function is loaded. The *Required to Load* column shows the total amount of conventional memory that is needed when the function is first loaded. The *Extended Memory Used* column shows how much extended memory is used.

Table B-3 (Page 1 of 2). Memory Requirements (with Extended DOS)

Function	Conventional Memory Used	Required to Load	Extended Memory Used
DOS 5.0	15K (see Note 1)		
SHARE (see Note 2)	6K		
DOSSHELL	9K (see Note 3)		
Extended DOS interface	21K	75K	180K
Twinaxial Adapter handler (Enhanced Emulation)	8K	26K	
Twinaxial Adapter handler (WSE)	13K	38K	
IBM Local Area Network Support program	9K	14K	
Memory manager	2K	25K	
EMS device drivers	10K		
Message function	23K	23K	
Shared folders function			
Non-removable	22K (see Note 4)	22K	
Removable			
Main program	2K	98K	60K
Communications buffer			8K
			(see Note 10)
Cache program			30K
Cache size			0K (see Note 5)
Network connector	5K		33K
Virtual printer (one virtual printer)	9K	36K	63K
Virtual printer (each additional)	2K		

Table B-3 (Page 2 of 2). Memory Requirements (with Extended DOS)

Function	Conventional Memory Used	Required to Load	Extended Memory Used
Transfer function API	20K	38K	
TDLC router	6K	14K	64K
IBM Token-ring network router	10K	15K	72K
SDLC router	10K	14K	77K
Asynchronous communications router	13K	14K	80K
Work station function (see Note 6)			
Display program	15K	80K	76K
Each display session	7K		
Display save area	0K or 16K		
Mouse save area	1K		
Printer program	33K	75K	
Each printer session	38K		
Printer online help information	11K		
Printer function tables (per printer)	3-6K		
Graphics display program	61K	140K	70K
Each graphics session	35K		
DOS display save area	0K or 16K		
132 column display program using VGA/EGA/MCGA	42K	90K	76K
DOS display save area	0K or 16K		
Each 132 column session	11K		
Using 8514/A mode	50K	100K	76K
HDILOAD.EXE	19K		
DOS display save area	0K or 16K		
Each 132 column display session	11K		
Organizer			
Without DisplayWrite	19K	38K	
With DisplayWrite 4	25K	38K	
Text-assist			
First display session	190K (see Note 7)		
Each additional display session	32K (see Note 7)		
132-column support	10K	10K	
Image graphics support (see Note 8)	133K		
Session manager (see Note 9)			
If all sessions are 80 column sessions			
1 display or printer session	7K	64K	
2 or 3 display or printer sessions	7K	64K	
4 or 5 display or printer sessions	7K	64K	
If any sessions are 132 column sessions			
1 display or printer session	12K	67K	
2 or 3 display or printer sessions	12K	67K	
4 or 5 display or printer sessions	12K	67K	
Data queues function	3K	28K	67K
Communications buffer	(see Note 11)		

Notes:

1. This assumes that DOS is loaded in the high memory area and set to the defaults.
2. SHARE must be loaded for DOS 4.0 if a hard disk partition size greater than 32M is used. SHARE is not necessary if you are using DOS 5.0.
3. If you use task switching, add 35K.

4. This part of the shared folders function is not removed from memory when the RMVPCS command is run.
5. You can configure the size of the cache. The default is 0K. Valid values are 3K through 8192K.
6. Work station function has the following additional considerations:
 - If a serial printer or a plotter is configured, an additional 3K is needed.
 - The resident program size includes 56K for the virtual device interface (VDI) controller and one VDI driver.
 - Each graphics session varies between 28K and 72K, depending on the amount of VDI buffer size configured for that session.
7. The text-assist function attempts to allocate two edit sessions for each display session, but allocates only one if there is insufficient memory for two. The 190K and 32K values reflect the minimum requirement for one edit session; a second edit session requires an additional 32K per display session.
8. Text-assist image graphics support requires that you have configured a work station function display session that can use graphics.
9. If the work station function program has not loaded the 8514 font file but the session manager program was requested to use 8514 support, the session manager program loads the 8514 font file into resident memory. This requires a maximum of 7K.
10. You can configure the size of the communications buffer. The default is 8K. Valid values are 1K through 64K. When using the token-ring or twinaxial router, this buffer is located in expanded memory, if available, or conventional memory, rather than extended memory.
11. The data queues communications buffer can be configured to meet your needs. The default size is 2K. The valid range is from 2K to 64K. This is the maximum amount of memory that the data queues function will use for each AS/400 system to which the data queues function is running. This is in addition to the function itself.

Using Extended DOS and Expanded Memory

If you want to use both the extended DOS option of PC Support/400 and expanded memory manager, you should not use the EMS device drivers supplied with DOS 4.0. These device drivers are not compatible with the extended DOS option of PC Support/400.

If you use the QEMM** or 386-to-MAX** EMS drivers, the amount of conventional memory used by PCSXI (the extended DOS interface) increases as follows:

QEMM with PCSXI: The Base PCSXI requires 20KB, plus 4KB for QEMM, for a total of 24KB. An additional 4KB may be required depending on where in memory PCSXI and QEMM are stored. Also, an additional 4KB of memory is required for every 4MB in the system being used by QEMM.

For example, a 16MB system using PCSXI and QEMM would require 40KB (20 + 4 + 4 + 4 + 4 + 4) if PCSXI and QEMM align optimally, or 44KB (20 + 4 + 4 + 4 + 4 + 4 + 4) if PCSXI and QEMM do not align optimally.

386-to-MAX with PCSXI: The Base PCSXI requires 20KB, plus 8KB for 386-to-MAX, for a total of 28KB. An additional 4KB may be required depending on where in memory PCSXI and 386-to-MAX are stored. Also, an additional 4KB is required for every 4MB in the system being used by 386-to-MAX.

For example, a 16MB system using PCSXI and 386-to-MAX would require 44KB (20 + 8 + 4 + 4 + 4 + 4) if PCSXI and 386-to-MAX align optimally, or 48KB (20 + 8 + 4 + 4 + 4 + 4 + 4) if PCSXI and 386-to-MAX do not align optimally.

Nonresident Memory Requirements

Use the following table to determine your approximate nonresident memory requirements. Your total nonresident memory requirement is the largest of all of the individual requirements for the various functions or commands you are using.

Table B-4. Nonresident Memory Requirements

Function or Command	Memory Requirements in Bytes
Remove PC Support (RMVPCS)	85K
Shared folders function (FSPC)	108K
Submit Remote Command (RMTCMD)	44K
Shared folders configuration (CFGFLR)	34K
Virtual printer (SETVPRT)	105K
Virtual printer (CFGVPRT)	27K
Transfer function – typical interactive use	
RTOPC	190K
RFROMPC	189K
Transfer function – AS/400 system-to-personal computer interactive transfers that display more than 100 data records or records over 2KB long.	
RTOPC	203K
RFROMPC	193K
PC Support menu (PCSMENU)	98K
PC Support configuration (CFGPCS)	211K
Work station function configuration (CFGWSF)	240K
Message function (MSG)	130K
Check File function (CHKFIL) without copying	58K
Check File function (CHKFIL) with copying	123K
Create a data queue (CRTDTAQ)	31K
Delete a data queue (DLTDTAQ)	29K
Clear a data queue (CLRDTAQ)	29K
Send to a data queue (SNDDTAQ)	97K
Receive from a data queue (RCVDTAQ)	33K
Query a data queue (QRYDTAQ)	30K
Stop a conversation (STPDTAQ)	29K

Memory Requirements Work Sheet

The following work sheet is provided so that you can record the amount of memory needed for the functions you plan to use. You may make as many copies as you need of this form.

Table B-5. Memory Requirements Work Sheet

Function	Conventional Memory Used	Required to Load	EMS or Extended Memory Used
DOS 5.0	_____	_____	_____
DOS Buffers (0.5K per buffer)	_____	_____	_____
Twinaxial Adapter handler (Enhanced Emulation)	_____	_____	_____
Twinaxial Adapter handler (WSE)	_____	_____	_____
IBM Local Area Network Support program	_____	_____	_____
Memory manager	_____	_____	_____
Extended DOS interface	_____	_____	_____
Message function	_____	_____	_____
Shared folder function type 0	_____	_____	_____
Shared folder function type 1	_____	_____	_____
Non-removable	_____	_____	_____
Removable	_____	_____	_____
Main program	_____	_____	_____
Communications buffer	_____	_____	_____
Cache program	_____	_____	_____
Cache size	_____	_____	_____
Cache table	_____	_____	_____
Shared folder function type 2	_____	_____	_____
Non-removable	_____	_____	_____
Removable	_____	_____	_____
Main program	_____	_____	_____
Communications buffer	_____	_____	_____
Cache program	_____	_____	_____
Cache size	_____	_____	_____
Cache table	_____	_____	_____
Virtual printer (one virtual printer)	_____	_____	_____
Virtual printer (each additional)	_____	_____	_____
Transfer function API	_____	_____	_____
TDLC router	_____	_____	_____
IBM Token-ring network router	_____	_____	_____
SDLC router	_____	_____	_____
Asynchronous communications router	_____	_____	_____
Work station function	_____	_____	_____
Display program	_____	_____	_____
Each display session	_____	_____	_____
Color graphics adapter	_____	_____	_____
Printer program	_____	_____	_____
Each printer session	_____	_____	_____
Printer online help information	_____	_____	_____
Printer function tables (per printer)	_____	_____	_____
Graphics display program	_____	_____	_____
Each graphics session	_____	_____	_____
Organizer	_____	_____	_____
Without DisplayWrite 4	_____	_____	_____
With DisplayWrite 4	_____	_____	_____
Text-assist type 0	_____	_____	_____
Text-assist type 1	_____	_____	_____
Image graphics support	_____	_____	_____
Session manager	_____	_____	_____
Data queues function	_____	_____	_____
Communications buffer	_____	_____	_____
Total	_____	_____	_____

Appendix C. PC Support/400 Installation Program

Personal Computer Files	C-2
Files Created or Changed for PC Support/400	C-2
AS/400 Objects	C-4
Objects Created for the PC Support User	C-5
Objects Created for the Communications Connection	C-5
Keyboard Language Types in Device Descriptions	C-5

The installation program will set up entries in the two configuration files, CONFIG.SYS and CONFIG.PCS, and in the STARTPCS.BAT for the functions selected when PC Support was installed. All PC Support/400 functions will be available as soon as STARTPCS is run. Some functions require further configuration after the installation is complete.

Personal Computer Files

If PC Support has been installed on the personal computer before, the file CONFIG.SYS may already exist in the root directory and the file CONFIG.PCS may already exist in the PCS directory. The file containing the command to start PC Support/400, STARTPCS.BAT, may also already exist in the PCS directory. If these files already exist, they will be replaced by new files during installation. Backup copies of the original files will be created (CFGSYS.BAK, CFGPCS.BAK, and STARTPCS.BAK). If these backup files already exist, they will be replaced by the new backup files and the original backup files will be deleted. If you wish to save the original backup files, rename them or move them to a different directory.

Files Created or Changed for PC Support/400

The following personal computer files can be created or changed when you run the installation program:

- Root directory files:
 AUTOEXEC.BAT
 CONFIG.SYS
- PCS directory files:
 CONFIG.PCS
 STARTPCS.BAT

Note: You should use the PC Support configuration program (CFGPCS.EXE) to make any changes to these files.

AUTOEXEC.BAT

The AUTOEXEC.BAT file is a special type of batch file that is automatically run when you first start the personal computer. This file is useful if you want to run certain programs or commands each time you start the personal computer.

If you select during installation to have PC Support/400 started automatically when you start your personal computer, the STARTPCS command is added to the file. If the file does not exist, the PC Support/400 installation program creates it.

CONFIG.SYS

The CONFIG.SYS file is the configuration file used by DOS to set up the personal computer.

If CONFIG.SYS already exists, the existing file is copied to CFGSYS.BAK. If the CFGSYS.BAK file already exists, the old file is replaced with the new CFGSYS.BAK file.

For the extended DOS option, the following entries are added to the CONFIG.SYS file:

```
DEVICE = d:\PCS\EIMPCS.SYS
FILES = 20
```

Where d: corresponds to the drive letter you specified in the installation program.

For the basic DOS option, the following entries are added to the CONFIG.SYS file:

```
DEVICE = d:\PCS\EIMPCS.SYS
DEVICE = d:\PCS\ECYDDX.SYS
FILES = 15
```

Where d: corresponds to the drive letter you specified in the installation program.

EIMPCS.SYS

This device driver manages all memory used by PC Support/400, including conventional memory and expanded memory.

ECYDDX.SYS [DRIVES = nn][FILES = nn][STACKS = nn]

This device driver is required in order to use the shared folders function for the basic DOS option of PC Support/400. The device driver is not used for the extended DOS option. If you use the extended DOS option and ECYDDX is not needed by any other program, the statement is removed.

The optional DRIVES parameter allows you to specify how many virtual drives you want reserved for the shared folders function to use. The shared folders function allows you to assign up to eight consecutive drives. The range you can assign depends on which drives are already defined on your personal computer. For example, if drives A through D are already defined, the shared folders function can use drives E through L. You should specify more than eight drives only if you want to use shared folders and an optical disk on the same personal computer.

The optional FILES parameter allows you to specify the maximum number of files that can be open at the same time on shared folders. For shared folders function type 2, the minimum is 1 and the maximum is 160. For shared folders function types 0 and 1, the maximum is 200. The default is 8.

The optional STACKS parameter allows you to specify the number of stacks that ECYDDX uses. You should not need to specify this parameter.

Note: As you increase the number for the DRIVES and FILES parameters, ECYDDX requires more memory. You should specify them according to your needs so that resident memory will not be used unnecessarily.

FILES = xx

This entry in the CONFIG.SYS file is set by the DOS option of PC Support/400 that you are using. The minimum value for the extended DOS option is FILES = 20. The minimum value for the basic DOS option is FILES = 15. If you already have a FILES = entry in your CONFIG.SYS file and the number is greater than the minimum required, the entry is not changed.

If present, the following entries are deleted from the CONFIG.SYS file:

```
DEVICE=FSDD.SYS
DEVICE=VDSK.SYS
DEVICE=FSDDX.SYS
```

CONFIG.PCS

The CONFIG.PCS file in the PCS directory is the configuration file used by PC Support/400 to set up the environment for PC Support.

This file is created each time you run the installation program. The entries in the file are determined by the selections you make when you run the installation program.

If CONFIG.PCS already exists, the existing file is copied to the file CFGPCS.BAK and a new CONFIG.PCS file is created. If both the CONFIG.PCS and the CFGPCS.BAK files already exist, the existing CONFIG.PCS file is copied to CFGPCS.BAK and replaces the old CFGPCS.BAK, and a new CONFIG.PCS file is created.

If you plan to use more than one adapter, you must run the installation program for each adapter you have installed in the personal computer. Before you run the installation program beyond a second time, you need to rename the CFGPCS.BAK file or move it to a different directory.

STARTPCS.BAT

The STARTPCS.BAT file in the PCS directory is used to start PC Support/400. The entries in the file are determined by the selections you make when you run the installation program.

If STARTPCS.BAT already exists, the existing file is copied to STARTPCS.BAK. If the STARTPCS.BAK file already exists, the old file is replaced with the new STARTPCS.BAK file.

PC Support/400 uses the following environment variables:

EHNL

Determines the active language PC Support/400 uses. For example,

```
SET EHNL=2924
```

sets the active language to English.

EHNM

Determines whether or not PC Support/400 will log messages in the PC Support/400 error log. The valid options are EHNM = A (log all messages) or EHNM = N (log no messages). See Chapter 29, "The PC Support/400 Error Logging Function" on page 29-1 for information about the PC Support/400 error log.

EHNP

Determines the drive and directory path of the PC Support/400 directory. For example,

```
SET EHNP=C:\PCS
```

sets the path to the C: drive. This environment variable is used by the error logging function and the work station function configuration program (CFGWSF.EXE).

AS/400 Objects

Installing PC Support on the AS/400 system creates the mode description QPCSUPP. This mode description identifies the attributes of the communications sessions that are established between the personal computer and the AS/400 system. You can use the Display Mode Description (DSPMODD) command to see this mode description.

Objects Created for the PC Support User

When you create a PC Support user, the AS/400 objects created depend on whether or not the user profile already exists. If the user profile already exists, the user profile is added to the system directory. If the user profile does not already exist, the following AS/400 objects are created first:

- The user profile
- An output queue
- A job description
- A message queue

Objects Created for the Communications Connection

In order for a personal computer to communicate with the AS/400 system, the following objects must exist:

- A line description
- A controller description
- A device description

If you are using automatic configuration in a local area network connection, the PC Support/400 host installation program creates a model controller. The name of this model controller is the same as the name of the line description it is associated with.

This model controller is used as a basis for creating new controllers. Changing this controller allows you to control how new controllers are created. For more information about model controllers, see the *Communications: Advanced Peer-to-Peer Networking Guide*, SC41-8188.

When you sign on to the AS/400 system, a device description is created for each session you use. Each device description is named using the PC location name and the number of the session you are using. The format for the device description is:

xxxSn

where xxx is the PC location name and n is the session number.

Keyboard Language Types in Device Descriptions

When display sessions are started by the work station function, the AS/400 system automatically creates the necessary device description. The value used for the **Keyboard language type** parameter of the device description depends on what you specified as your keyboard type.

You can specify your keyboard type in several ways:

- If you used the Initialize PC Support/400 (INZPCS) command:
 - If you specified a value in the *Keyboard type* field, the value you specified is used as your keyboard language type.
 - If you did not specify a value in the *Keyboard type* field, the system value QKBDTYPE is used as your keyboard language type.
- If you have not used the Initialize PC Support/400 (INZPCS) command:
 - The system value QKBDTYPE is used as your keyboard language type.

The work station function ignores the third letter of the keyboard language type and supplies a fixed value as shown in Table C-1.

Note: In the following table, x indicates any character that, when used with the two preceding characters, results in a valid keyboard language type.

Table C-1. Keyboard Language Types in Device Descriptions

Keyboard Language Type	Device Description KBDTYPE Parameter	Keyboard Language Type	Device Description KBDTYPE Parameter
AGx	AGB	NCx	NCB
BLx	BLI	NEx	NEI
BRx	BRB	NWx	NWI
CAx	CAB	PRx	PRI
CLx	CLB	SFx	SFI
DMx	DMI	SGx	SGI
FAx	FAB	SPx	SPI
FNx	FNI	SSx	SSB
GKx	GKB	SWx	SWB
GNx	GNB	THx	THB
ICx	ICB	TKx	TKB
INx	INI	UKx	UKB
ITx	ITB	USx	USB

Appendix D. Installing PC Support/400 on Diskettes

	General Considerations for Installing on Diskettes	D-2
	Preparing Diskettes for Installation	D-2
	Backing Up Your Diskettes	D-2

General Considerations for Installing on Diskettes

- If you are installing on diskettes, you must use the basic DOS option of PC Support/400.
- If you do not have a hard disk on your personal computer, you must install PC Support/400 on diskettes.
- If you install on two 360K diskettes, you do not receive the error help text files or the PC Support/400 help (PCSHELP) function.
- If you want to run any PC Support/400 functions from the personal computer, you may be limited by the amount of available space on the diskette.
- If you are using a local area network connection, the Local Area Network Support Program (Program 5601-075) must be installed on the diskette. If your connection is Ethernet, you must use the Local Area Network Support Program Version 1.2 (Program 5871-AAA). For information about how to do this, see the *Local Area Network Support Program User's Guide*. The LAN Support Program must be ordered separately; it is not packaged with PC Support/400.

Note: If you are using the basic DOS option of PC Support/400 and are installing PC Support/400 onto diskettes, you should install the LAN Support program on the diskette after installing PC Support/400.

Preparing Diskettes for Installation

If you plan to install PC Support/400 on diskettes instead of on a hard disk, do the following:

1. Create a system diskette. Insert a diskette into drive A and type the following command:

```
FORMAT A: /S
```

Label this diskette DSKT01.
2. If your diskettes are 5-1/4 inch 360K diskettes or 3-1/2 inch 720K diskettes, you will need an additional diskette. Insert a diskette into drive A and type the following command:

```
FORMAT A:
```

Label this diskette DSKT02.
3. Copy the COMMAND.COM file from your DOS diskette to diskette DSKT02.

Backing Up Your Diskettes

After installing PC Support/400 on diskettes, you should make backup copies of the diskettes and store them in a safe place. If you change or update any of the files on the diskettes, be sure to make backup copies of the changed diskettes.

Appendix E. The PC Support/400 Tools Folder

Using the Tools Folder	E-2
------------------------------	-----

When you install PC Support/400 on the AS/400 system, you have the option of installing the QIWSTOOL folder. This folder contains various PC Support/400 utilities and sample programs.

Note: The programs and related information in the folder QIWSTOOL have not been submitted to any formal IBM test and are provided on an “as is” basis without any warranty either expressed or implied. The QIWSTOOL folder is not available in all countries or languages.

Using the Tools Folder

To use the tools folder, do the following:

1. Assign a shared folders function drive to the QIWSTOOL folder. You can use the PC Support/400 configuration program (see Chapter 14, “Managing Information in Folders” for information about assigning folders), or use the FSPC command. Make the assigned drive the current drive.

For example, to assign the QIWSTOOL folder to the J drive using the FSPC command, type the following at the PC command prompt:

```
I:FSPC ASSIGN J: QIWSTOOL  
J:
```

2. At the PC command prompt, type `IWSTOOL` and press the Enter key.
3. To display the abstract for a package, use the mouse or cursor to select the package and press the Enter key.
4. To use the displayed package, page down to the end of the abstract. In the input field, type the name of a valid (existing) directory or folder and press the Enter key.

The files listed in the abstract are copied to the specified directory or folder.

5. When you have finished selecting packages, press the Esc key to return to the PC prompt.
6. For information on how to use a package, change to the directory or folder and then browse or print any files with an extension of `.ABS` or `.DOC`. Some of the sample programs contain additional information at the beginning of the source file.

Appendix F. National Language Support for PC Support/400

	Using PC Support/400 Language Options	F-2
	Changing the Language Option Used on the Personal Computer	F-2
	Language Options Available for PC Support/400	F-3
	Changing the Default Keyboard Codes and Code Pages	F-3
	Using the Thai Language	F-6
	Installing PC Support/400 for the Thai Language on the AS/400 System	F-6
	Restrictions for Using the Thai Language	F-7

Using PC Support/400 Language Options

PC Support/400 allows you to use any language that is installed on the AS/400 system for PC Support/400. Languages are installed from tape using the Work with Licensed Programs display on the AS/400 system. You can display this menu by typing the following on any AS/400 command prompt:

```
GO LICPGM
```

When you install PC Support/400 on the personal computer, you install for only one language. You can use the PC Support/400 configuration program to change the language that the personal computer uses.

Changing the Language Option Used on the Personal Computer

To change the language you use on the personal computer, do the following:

1. Start the PC Support/400 configuration program. See "Starting the PC Support/400 Configuration Program" on page 12-2 for instructions. The PC Support/400 Configuration display appears.
2. Select General options. The General Options for PC Support/400 display appears.
3. Select National language options. The following display appears:

National Language Options for PC Support

Active language. . : 2925 Finnish

Listed below are the languages currently available to you. Position the cursor to the language you want to use for PC Support, then press Enter.

National Language	
2924	English
2925	Finnish
2926	Danish
2928	French

Enter Esc=Cancel F1=Help F3=Exit

This list shows you all the languages installed on the AS/400 system. The *Active language* field indicates which language you are currently using. To change active languages, move the cursor to the language you want to use and press the Enter key.

4. Press F3 (Exit). A window appears allowing you to save your changes or exit without saving.
5. If you choose to save your changes, the PC Support/400 configuration program copies the necessary files from the appropriate folder on the AS/400 system to your personal computer. The language you selected automatically becomes the active language the next time you start PC Support/400.

Language Options Available for PC Support/400

The following language options can be used with PC Support/400.

Table F-1. National Language Feature Codes

Language	Feature Code
Belgium Dutch	2963
Belgium French	2966
Brazilian Portuguese	2980
Canadian French	2981
Chinese – Traditional (double-byte)	2987
Danish	2926
Dutch	2923
English	2924
English (double-byte)	2984
English Uppercase (single-byte)	2950
English Uppercase (double-byte)	2938
Finnish	2925
French	2928
French (multi-national set)	2940
German	2929
German (multi-national set)	2939
Greek	2957
Icelandic	2958
Italian	2932
Italian (multi-national set)	2942
Japanese (double-byte)	2962
Korean (double-byte)	2986
Norwegian	2933
Portugese	2922
Portugese (multi-national set)	2996
Spanish	2931
Swedish	2937
Thai	2924
Turkish	2956

Changing the Default Keyboard Codes and Code Pages

When you install the PC Support/400 licensed program on the AS/400 system, a folder is created that contains all your language-specific information. The system default keyboard code is used, and the ASCII code page is selected based on this keyboard code. The keyboard is determined from system value QKBDTYPE. United States keyboard styles (USB and USI) result in ASCII code page 437. Most other keyboard styles result in ASCII code page 850.

If you want to use a keyboard code or code page other than the system-selected defaults for the secondary language, you need to use the Initialize PC Support (INZPCS) command.

You can run this command by choosing option 30 from the PC Support Tasks menu:

```

PCSTSK                                PC Support Tasks

Select one of the following:

User Tasks
  1. Copy PC document to database
  2. Copy database to PC document
  3. Work with documents in folders
  4. Work with folders
  5. PC Support Organizer

Administrator Tasks
 20. Work with PC Support administrators
 21. Enroll PC Support users
 22. Configure PC connections

 30. Change keyboard and conversion tables

Selection or command
===> 30
-----
F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F13=User support
F16=System main menu

```

When you select option 30, the following display appears:

```

                                Initialize AS/400 PC Support (INZPCS)

Type choices, press Enter.

Keyboard type . . . . . *DFT          *DFT, AGB, AGI, BLI, CAB...
ASCII code page number . . . . . *DFT    *DFT, 437, 850, 851, 857...
EBCDIC code page number . . . . . *DFT    *DFT, 037, 273, 277, 278...
Language feature code . . . . . *DFT     *DFT, 2922, 2923, 2924...

                                                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys

```

This display allows you to specify what code pages and keyboard code you want to use for a particular language.

If you use multiple languages, you should use EBCDIC code page 500 on the AS/400 system and ASCII code page 850 on your personal computers if possible. This is to avoid loss of certain language-specific characters. For example, a PC Support/400 user may send a message from a US English personal computer (ASCII code page 437) to another PC Support/400 user on a Portuguese personal computer (ASCII code page 860). Because of the differences in the ASCII code pages, some of the characters in the message may be displayed incorrectly. This problem will not occur if PC Support/400 is initialized to use ASCII code page 850 and EBCDIC code page 500.

The following table shows the defaults for the language and keyboard codes when you initialize PC Support/400:

Table F-2. Default Keyboard Styles When Using Initialize PC Support/400 Command

Language or Country	Keyboard Code	International Keyboard Code
Arabic X/Basic	CLB	
Austrian/German	AGB	AGI
Belgium		BLI
Canadian	CAB	CAI
Chinese (Simplified)	RCB	
Chinese (Traditional)	TAB	
Danish	DMB	DMI
Dutch	NEB	NEI
English (United Kingdom)	UKB	UKI
English (United States)	USB	USI
Finnish	FNB	FNI
French (AZERTY)	FAB	FAI
French (QWERTY) ¹	FQB	FQI
Greek	GKB	GNB
Hebrew	NCB	
Icelandic	ICB	ICI
International	INB	INI
Italian	ITB	ITI
Japan (English)	JEB	JEI
Japan (Kanji)	JKB	
Japan (Kanji and US English)	JUB	
Japan (Katakana)	KAB	
Korea	KOB	
Latin American Spanish Speaking	SSB	SSI
Norwegian	NWB	NWI
Portuguese	PRB	PRI
Portuguese (Brazilian)	BRB	
Spanish	SPB	SPI
Swedish	SWB	SWI
Swiss/French		SFI
Swiss/German or Swiss/Italian		SGI
Thai	THB	
Turkish	TKB	

¹ If you will be using the work station function with PC Support/400, the French (QWERTY) keyboard style is not available. The codes for this style can be used, but the French (AZERTY) keyboard style will be used as the default keyboard style instead of the French (QWERTY) keyboard style.

The following table shows the language and ASCII and EBCDIC code pages when you use the INZPCS command:

Table F-3 (Page 1 of 2). ASCII and EBCDIC Values When Using Initialize PC Support/400 Command

Primary Using Country	Language	ASCII Code Pages	EBCDIC Code Pages
Arab States	Arabic X/Basic	864	420
Belgium	Dutch ¹	850, 437	500
Belgium	French ¹	850, 437	500
Brazil	Portuguese	980, 850	697, 037
	French ¹	437, 850	500
China	Chinese (Traditional)	904	037
Canada	Canadian French ¹	863, 850	500

Table F-3 (Page 2 of 2). ASCII and EBCDIC Values When Using Initialize PC Support/400 Command

Primary Using Country	Language	ASCII Code Pages	EBCDIC Code Pages
Denmark	Danish	865, 850	277
Finland	Finnish	437, 850	278
France	French	437, 850	297
Germany	German	437, 850	273
Great Britain	English	437, 850	285
Greece	Greek	851, 869	423, 875
Iceland	Icelandic	861, 850	871
International	English Upper case	437, 850	500
Israel	Hebrew	862	424
Italy	Italian	437, 850	280
Japan	Japanese	897	290
Korea	Korean	891	833
	Chinese (Simplified)	903	836
Latin America	Spanish	437, 850	284
Netherlands	Dutch	437, 850	037
Norway	Norwegian	865, 850	277
Portugal	Portuguese	860, 850	037
	Portuguese ¹	860, 850	500
Spain	Spanish	437, 850	284
Sweden	Swedish	437, 850	278
Switzerland	French ¹	437, 850	500
	German ¹	437, 850	500
	Italian ¹	437, 850	500
Thailand	Thai	874	838
Turkey	Turkish	857	1026
United States	English Upper/Lower	437, 850	037

¹ Indicates the multinational character set keyboard code for the language.

The following example selects the U.S. basic keyboard, ASCII code page 437, and EBCDIC code page 037:

```
INZPCS KBDTYPE(USB) ASCII(437) EBCDIC(037)
```

The following example selects the French (AZERTY) international keyboard, ASCII code page 850 and EBCDIC code page 500:

```
INZPCS KBDTYPE(FAI) ASCII(850) EBCDIC(500)
```

Using the Thai Language

If you intend to use the Thai language with PC Support/400, some extra tasks are required when you install the language on the system. Some other restrictions apply when using the language.

Installing PC Support/400 for the Thai Language on the AS/400 System

To prepare the AS/400 system for using PC Support/400 with the Thai language, do the following:

1. Install PC Support/400 for the English language (2924) on the system. The Initialize PC Support (INZPCS) command is automatically run when the English language is installed.
2. Install PC Support/400 for the Thai language. The INZPCS command does not run at this time.

3. Run the INZPCS command for the Thai language:

```
INZPCS KBDTYPE(THB) ASCII(874) EBCDIC(838) LANGUAGE(2924)
```

Specify the values for the keyboard type (THB), ASCII code page (874), and EBCDIC code page (838) associated with the Thai language. There is no language feature code associated with the Thai language. You must use the language feature code (2924) associated with the English language installed on the system.

Restrictions for Using the Thai Language

- There is no coded character set identifier (CCSID) associated with the Thai language. For each user that uses the Thai language, you should set the CCSID value in the user profile to 65535. If the user uses Distributed Relational Database Architecture (DRDA), you should set the CCSID value in the user profile to 838.
- The Thai composing function (for composing new characters) cannot be used while the text-assist function is active.

Appendix G. Ethernet Address Considerations

Whether Reverse Addressing Affects You	G-2
Why Addresses are Reversed	G-2
How to Convert an Address	G-3
Method of Converting an Address	G-3
Example of Converting an Address	G-4
When to Use the Converted Address	G-4

Whether Reverse Addressing Affects You

If you use an Ethernet connection in your network, you may need to convert addresses before they will be properly recognized in your network. This is because the addresses transmitted will be bit-reversed before they are received.

If you follow the method in "Before You Begin – Ethernet Addresses" on page 7-2 to create all of your addresses, you do not need to worry about address conversion. If you cannot follow this method, the following chart will help you determine whether or not you need to convert the addresses:

Table G-1. Is Address Conversion Necessary?

Local Area Network Connections		Address conversion necessary?
Personal computer is on:	AS/400 system is on:	
Ethernet network	Ethernet network	<ul style="list-style-type: none">• If you use the default personal computer address assigned to the adapter card, the personal computer's addresses will be correctly recognized by the AS/400 system. However, you will need to convert the AS/400 system's address when you enter this information on the personal computer.• If you override the personal computer's default adapter address, you will need to convert the addresses.
Ethernet network	Token-ring network	<ul style="list-style-type: none">• If you override the default address assigned to the personal computer's adapter card, the addresses will be correctly recognized.• If you use the default address assigned to the personal computer's adapter card, the AS/400 system's address will be correctly recognized. However, you will need to convert the personal computer's address when you enter this information on the AS/400 system.
Token-ring network	Ethernet network	The addresses will need to be converted.
Token-ring network	Token-ring network	The addresses will be correctly recognized.

Why Addresses are Reversed

Every system that is attached to a local area network has a unique physical address for its attachment adapter. This address is composed of a 12-digit hexadecimal number.

When you configure the AS/400 system for communications with a personal computer, you may be asked to specify the adapter address of the personal computer. Likewise, when you install PC Support on the personal computer, you are asked to specify the adapter address of the AS/400 system. This address is used when the personal computer attempts to contact the AS/400 system. The personal computer searches the local area network for an AS/400 system with the specified adapter address. Likewise, when the AS/400 system needs to communicate with the personal computer, the AS/400 system searches the local area

network for a personal computer with the specified adapter address. For this reason, every address on the local area network must be unique.

When a system searches the local area network, it uses the destination address to locate the receiving system. While both the token-ring and Ethernet protocols use the 12-digit hexadecimal addressing scheme, the protocols transmit the addresses in a different bit order.

Since the order of the bits in each byte is changed, the address accepted by the receiving system will be different from the address sent by the transmitting system. In order for the two systems to recognize each other, you must compensate for the address reversal by converting the destination address while configuring the transmitting system.

For more details about these address formats, see the *Communications: Local Area Network Guide*, SC41-0004.

How to Convert an Address

The following method shows you how to convert the address so that it will be correctly recognized on the network.

Method of Converting an Address

1. Separate the 12-digit hexadecimal address into sets of two digits, for example:

62 89 C2 B8 7A 31

2. Reverse the positions of the characters in each of the 2-digit sets:

62 89 C2 B8 7A 31
↓ ↓ ↓ ↓ ↓ ↓
26 98 2C 8B A7 13

3. Use Table G-2 on page G-4 to bit-reverse each digit. For example:

26 98 2C 8B A7 13
↓↓ ↓↓ ↓↓ ↓↓ ↓↓ ↓↓
46 91 43 1D 5E 8C

4. After bit-reversing each digit, combine the 6 pairs into a 12-digit hexadecimal address:

4691431D5E8C

Table G-2. Bit-Reversal Table

Original Bit	Becomes	Converted Bit
0	----->	0
1	----->	8
2	----->	4
3	----->	C
4	----->	2
5	----->	A
6	----->	6
7	----->	E
8	----->	1
9	----->	9
A	----->	5
B	----->	D
C	----->	3
D	----->	B
E	----->	7
F	----->	F

Example of Converting an Address

The following example shows the entire process of converting an Ethernet address:

Beginning address	6289C2B87A31
Separate into 2-digit sets	62 89 C2 B8 7A 31
Reverse digit positions	26 98 2C 8B A7 13
Bit-reverse each digit	46 91 43 1D 5E 8C
Converted address	4691431D5E8C

When to Use the Converted Address

If Table G-1 on page G-2 indicates that the addresses in your network must be converted, you need to do the following:

- When configuring an AS/400 system for communications with a personal computer:
 - When prompted for the AS/400 system's address, use the normal, unconverted address.
 - If prompted for the personal computer's LAN address, convert the personal computer's address and enter the converted address.
- When installing PC Support on the personal computer:
 - When you specify the personal computer's LAN address in the CONFIG.SYS file, use the normal, unconverted address.
 - When prompted for the AS/400 system's address, convert the AS/400 system's address and enter the converted address.

Appendix H. Using PC Support/400 with the IBM PC LAN Program

Using PC Support/400 with the PC LAN Program	H-2
Planning Your PC Support and PC LAN System	H-2
Performance	H-2
Security	H-2
Limitations	H-2
Configuration Considerations	H-3
Setup and Operational Procedures	H-3

This appendix describes using PC Support with the IBM PC local area network (LAN) program. The PC LAN program is a licensed program that provides resource sharing for a network of personal computers. Through the network, the physical resources of one personal computer (disks, directories, and printers) can be shared with other personal computers. Refer to the IBM PC local area network program publications for additional information.

The PC LAN program includes:

- Base services for sharing of PC LAN resources
- Support for display stations without diskette or hard disk drives
- Extended services for the administration of a set of PC LAN shared resources

Using PC Support/400 with the PC LAN Program

Using PC Support and the PC LAN program provides additional resource sharing. Work station users can have access to AS/400 system resources in addition to personal computer resources from other personal computers. An example is the simultaneous use of folders (AS/400 system resource) and a network drive (personal computer resource).

Planning Your PC Support and PC LAN System

When planning your PC Support and PC LAN system, consider the following:

- Performance
- Security
- Limitations

Performance

Consider performance when sharing PC Support resources. For example, for faster processor time, we suggest you use the /TSI:00 parameter to prevent the personal computer server from being used as a work station. All work station requests, including interactions with the AS/400 system, are processed one at a time. Performance is reduced if you process all requests one at a time using the /TSI:00 parameter. Personal computers, such as the PS/2 Model 80, should be used as the server when you are sharing PC Support resources.

Security

When sharing AS/400 system resources, consider using passwords to ensure that AS/400 system resources are properly protected. Refer to the PC LAN program publications for more security information.

Limitations

When you run PC Support and the PC LAN program, the following limitations exist:

- Work station function printer emulation cannot be directed to a network printer. Printer emulation can be directed only to locally attached personal computer printers.
- When you run PC Support and the PC LAN program version 1.3 at the same time on a personal computer server, work station function printer emulation cannot be directed to a personal computer printer at the same time that it is also being used as a PC LAN program network printer.

- When you run PC Support with the PC LAN program on a personal computer server, the server cannot be used as a personal computer work station.

Note: Errors and loss of data may result if you use the PC LAN server as a work station after the AS/400 resources have been shared.

When you use the PC LAN program, resource sharing must be temporarily stopped during the shared resources session.

- A synchronous data link control (SDLC) connection between a personal computer work station and the AS/400 system is supported.
- The 640KB memory may limit the use of PC Support and the PC LAN program when they are used at the same time.
- When sharing the AS/400 system resources as network resources, the PC LAN program version 1.3 server cannot share virtual printer resources with shared folder resources at the same time.
- When sharing virtual printer as network resource, you cannot change the characteristics of a print file if separator pages are used.
- The DOS TREE command is not supported for a network device that is assigned to shared folders.
- When sharing a folder as a network resource, the PC LAN program version 1.3 NET FILE command does not display names of open files located a shared folder.

Configuration Considerations

When planning your configuration, use the following guidelines:

- A work station can use AS/400 system resources and personal computer resources at the same time. An example is using a network disk and an AS/400 system virtual printer to run a spreadsheet program from a controlling personal computer server and print its output on an AS/400 printer.
- A controlling personal computer server can share both local resources (disks and printers) and AS/400 system resources (printers and folders) with work stations. An example is sharing a local disk for program loads and sharing a PC Support folder for data sharing and integration with other AS/400 system users.

Setup and Operational Procedures

When you run PC Support with the PC LAN program, use the following setup and operational procedures:

1. If a local area network is being used for PC Support, the required LAN program version 1.3 device driver (DXMT0MOD.SYS) must be configured as follows:
 - To provide at least one additional service access point SAP (ES = 1).
 - To provide at least three additional link stations (EST = 3).
 - To open the LAN adapter with a buffer size of 2048 (DS = 2048).
 - To open the LAN adapter at CONFIG.SYS load time (OPEN.ON.LOAD = Y or using the default configuration).
 - If the PC Support maximum number of router links (TRRL) parameter is increased from the default of three (to support connection to more than

three systems), the extra stations value (EST) must be increased to match the TRRL parameter.

2. When PC Support shares a virtual printer as a network resource, the virtual printer must be assigned before the PC LAN program is started. The PC LAN program recognizes and redirects printer data to the virtual printer.
3. When the AS/400 system printers and shared folders are shared, the following procedures are recommended:
 - Use PC Support to assign the resource and then use the PC LAN program to share the resource. This prevents work stations from using network resources that are not yet assigned to the AS/400 system.
 - Use the PC LAN program to stop sharing the resource and then use PC Support to release the resource. This prevents work stations from using network resources that are no longer assigned to the AS/400 system.

Appendix I. Using PC Support/400 with the IBM OS/2 LAN Program and DLR

Planning Your PC Support/400 and OS/2 LAN System	I-2
Performance	I-2
Security	I-2
Limitations	I-2
Configuration Considerations	I-3
Setting Up and Operating the OS/2 LAN Server/Requester	I-4
Setting Up and Operating the DOS LAN Requester	I-4

This appendix describes using PC Support/400 with the IBM OS/2 local area network (LAN) program and the IBM DOS local area network requester (DLR). The OS/2 LAN program and the DLR are licensed programs that provide resource sharing for a network of personal computers. Through the network, the physical resources of one personal computer (disks, directories, and printers) can be shared with other personal computers. Refer to the IBM OS/2 local area network and DOS local area network program publications for additional information.

The OS/2 LAN program provides:

- Base services for sharing OS/2 LAN resources
- Extended services for administration of a set of OS/2 LAN resources
- Support for work stations without diskette or hard disk drives

Using PC Support/400 and the OS/2 LAN program provides additional resource sharing. Work station users can have access to AS/400 system resources in addition to personal computer resources from other personal computers. An example is the simultaneous use of folders (AS/400 resource) and a network drive (personal computer resource).

Planning Your PC Support/400 and OS/2 LAN System

When planning your PC Support/400 and OS/2 LAN system, consider the following:

- Performance
- Security
- Limitations

Performance

Consider performance when sharing PC Support/400 resources. For example, redirecting requests to PC Support/400 shared folders by the server will take longer than accessing the server's local resources. Personal computers should be used as the server when you are sharing PC Support/400 resources.

Security

When sharing AS/400 system resources, consider using LAN access control to ensure that AS/400 system resources are properly protected. Refer to the OS/2 LAN program publications for more security information.

Limitations

When you run PC Support/400 and the OS/2 LAN program or DLR program, the following limitations exist:

- The IBM OS/2 Extended Edition LAN server must be Version 1.2 with corrective service diskettes (CSD) WR04098 applied, or later compatible version.
- The IBM DOS LAN requester (DLR) must be Version 1.2 with corrective service diskettes (CSD) WR04064 applied, or later compatible version.
- For AS/400 Release 3.0, PC Support/400 PTF LF70655 must be applied to the OS/2 LAN server personal computer if you are sharing folders as a network resource.
- The 640KB memory may limit the use of PC Support/400 and the DLR program when they are used at the same time.

- When sharing a virtual printer as a network resource, you cannot change the characteristics of a print file if separator pages are used.
- When using DOS 3.3, the TREE command is not supported for a network device that is assigned to shared folders.
- The personal computer RESTORE command is not supported for a network device that is assigned to shared folders.
- The OS/2 LAN server holds resources on drives that it is sharing. Those resources may never be freed. The shared folders drive may never be allowed to be released after it has been shared by the OS/2 LAN server.
- When sharing a folder as a network resource, DOS applications may receive 0 bytes free when querying the available disk space. This happens because the value shared folders returns to the OS/2 server is too large to fit in the 16-bit variable which many DOS applications use. The large value is valid for OS/2 applications (the OS/2 LAN server).

To circumvent this problem, the AS/400 user profile used for the PC Support functions must be changed. Use the Change User Profile (CHGUSRPRF) command to specify a MAXSTG value that will limit the extra available storage to less than 2 gigabytes.

- The DOS LAN requester (DLR) NET USE command does not check for drives reserved by DOS device drivers (example, shared folders). The NET USE command appears to complete successfully, but DOS continues to route the requests to the device driver.
- The OS/2 LAN requester NET USE d: /D command (release a drive) will release a PC Support/400 shared folder assigned to that drive. Any attempt to reassign that drive letter to a shared folder will result in a TRAP D and the system is stopped.

Configuration Considerations

When planning your configuration, use the following guidelines:

- A work station can use AS/400 system resources and personal computer resources at the same time. An example is using a network disk and an AS/400 system virtual printer to run a spreadsheet program from a controlling personal computer server and print its output on an AS/400 printer.
- A controlling personal computer server can share both local resources (disks and printers) and AS/400 system resources (folders and printers) with work stations. An example is sharing a local disk for program loads and sharing a PC Support/400 folder for data sharing and integration with other AS/400 system users.
- To allow applications using compatibility mode open operations to use the shared folders save cache, changes can be made to the SRV Heuristics parameter in the IBMLAN.INI file on the OS/2 Server. See the *IBM Operating System/2 Local Area Network Server Version 2.0 Network Administrator Reference*, S04G-1032-00, for more information.

Setting Up and Operating the OS/2 LAN Server/Requester

When you run PC Support/400 with the OS/2 LAN server/requester, use the following setup and operational procedures:

1. If a local area network is being used for PC Support/400, ensure that the OS/2 Extended Edition communications manager configuration has enough resources configured to support both PC Support/400 and the OS/2 LAN server/requester. PC Support/400 requires the following:
 - One service access point (SAP).
 - One link station for each AS/400 system you intend to access.
2. When PC Support/400 virtual printer and shared folders are to be shared, the following procedures are required:
 - Use PC Support/400 to assign the resource and then use the OS/2 LAN server to share the resource. This prevents work stations from using network resources that are not yet assigned to the AS/400 system.
 - Use the OS/2 LAN server to stop sharing the resource and then use PC Support to release the resource. This prevents work stations from using resources that are no longer assigned to the AS/400 system.

Setting Up and Operating the DOS LAN Requester

If a local area network is being used for PC Support/400 and you run PC Support/400 with the DOS LAN requester (DLR), be sure that the required LAN program (version 1.3 or version 2.0) device driver (DXMTOMOD.SYS) is configured as follows:

- To provide at least one additional service access point SAP (ES = 1).
- To provide at least three additional link stations (EST = 3).
- To open the LAN adapter with a buffer size of 2048 (DS = 2048).

If you use the PC Support/400 TRMF router identifier to increase the token-ring maximum frame size, change the DS parameter to match the TRMF value. A 16MB token-ring environment is required to use a frame size greater than 2048.

- To open the LAN adapter at CONFIG.SYS load time (O=Y, OPEN.ON.LOAD=Y or let it default to O=Y).
- To increase the extra stations value (EST) so it matches the PC Support/400 maximum number of router links (TRRL) parameter.

Note: This is only necessary if, in an effort to connect to more than three systems, you have increased the TRRL parameter to a number greater than its default value of three.

Appendix J. PC Support/400 and Novell NetWare 386 Coexistence

Configuring Network Drives	J-2
Configuring Network Printers	J-2
Other Restrictions	J-3
General Restrictions	J-3
ø Restrictions	J-3
PC Support/400 Restrictions	J-3
Work Station Function and PC Support/400 Menu Restrictions	J-4

A personal computer on a token-ring network containing both an AS/400 system and a NetWare 386 server can attach to both the AS/400 system and the NetWare 386 server simultaneously using a single token-ring adapter card. File transfer is possible between the network and the AS/400 system by using the PC Support/400 transfer function. Although the AS/400 system and the NetWare 386 server co-exist on the same token ring, they are unaware of each other's existence since they use different programs to communicate with the personal computer.

The personal computer can establish multiple sessions with host systems on the network. It is also possible to use the PC Support/400 organizer function in this environment to pass commands to the network through the personal computer just as you would DOS commands. The personal computer can have local drives, network drives, and shared folders simultaneously, consistent with available drive letters.

Configuring Network Drives

Interaction between the PC Support/400 program and the Novell** NetWare** 386 program is complex and requires some manipulation of the standard installation for PC Support/400.

The shared folders function requires one or more virtual drives from the redirector's list of available drives. This assignment may conflict with NetWare's use of these virtual drives. The number of drives available is limited, so care must be used to prevent hardware drives, virtual drives, network drives and shared folder drives from interfering with each other. Unpredictable errors can occur if this situation exists.

In order to avoid this problem, you need to modify the CONFIG.SYS file to indicate which drives you want to reserve for shared folders. You should add the following command to your CONFIG.SYS file to indicate that the I: drive is the last drive you want to reserve for use by DOS:

```
LASTDRIVE = I
```

Then, you should change the ECYDDX.SYS entry in the CONFIG.SYS file to indicate the number of virtual drives you have up to and including the I: drive. For instance, if your hard disk is divided into a C: and a D: partition, you would want to reserve drives E, F, G, H, and I for shared folders:

```
DEVICE = ECYDDX.SYS DRIVES=5
```

If you have only a C: partition, you would want to reserve 6 drives: D, E, F, G, H, and I.

Configuring Network Printers

If you have a personal printer configured as a NetWare 386 network printer, you should not configure a PC Support/400 work station function printer session for that printer.

If you have configured a virtual printer for your personal computer, the virtual printer function overrides any network printer definitions you have configured. Your output will be sent only to the virtual printer, not to the network printer.

Other Restrictions

The following are considerations you should be aware of when running both PC Support/400 and the Novell** NetWare 386 program:

General Restrictions

- The PC Support/400 configuration files should not be stored on a network drive. The configuration program will be unable to change these files if they are currently being used by another user.
- If NetWare 386 is running and the LAN cable is disconnected from the personal computer, the personal computer will need to be started again.

DOS Restrictions

- Using the DOS TREE command on a NetWare 386 directory lists only every other directory.
- If you set your DOS prompt to \$P\$G to display the current directory, path names longer than 66 characters on the server are truncated to 66 characters at the prompt.

PC Support/400 Restrictions

- Shared folders drives should not be mapped to NetWare 386 directories. Likewise, NetWare 386 directories should not be mapped to shared folders drives.
 - Using the shared folders function to assign a drive that has been mapped to a NetWare 386 directory causes conflict. The interactive shared folders (FSPC) program will access the drive and its NetWare 386 subdirectories instead of the intended system folder.
 - Using the shared folders function to release a drive that has been assigned to a system folder and then mapped to a NetWare 386 directory causes unpredictable results. The drive will no longer be mapped to the NetWare 386 directory, but to the server root directory.
- When the current NetWare 386 drive is set as the NetWare system drive, an error occurs if the MENU command is used to call MAIN.EXE from an assigned folder (such as MENU I:\FLR\MAIN).
- The PC Support/400 menu session may be lost if you choose the Command option and start the PCSMENU program again, several times, while in the NetWare 386 environment.
- Simultaneous updates of the same NetWare 386 directory by more than one user causes inconsistent file listings on the users' personal computers. The update function will operate correctly, but not all files will be listed as being updated on all users' personal computers.
- If a user logs on to NetWare 386 from the PC command prompt of the PC Support organizer, NetWare 386 search drives will not be added to the DOS path until the organizer and work station function programs end.

Work Station Function and PC Support/400 Menu Restrictions

You may need to start your personal computer again if you do not have the memory to run the main menu options you selected. For example:

1. Exit the PC Support/400 menu by selecting the PC command prompt option.
2. Start the work station function program and use the hot key sequence to go to the AS/400 display.
3. Start MENU MAIN from the NetWare 386 server.
4. Select an option that is too large to load (such as SYSCON).
5. Exit the main menu and exit back to the PC Support/400 menu.
6. Exit the PC Support/400 menu.
7. Start MENU MAIN from the NetWare 386 server again.
8. Select another option that is too large to load (such as SYSCON).

Note: The cause of this error may be insufficient memory to run main menu options. This error may occur in other situations, such as when work station function and the organizer are both running.

Index

Numerics

- 5250 emulation**
 - router identifiers 24-9
- 5250 emulation router**
 - setting up your PC information 20-4
 - starting 20-3
 - stopping 20-4
 - TDLC 20-18
- 5250 Emulation Session Manager**
 - introducing 16-35
 - personalizing 16-36
 - starting 16-38
- 5294 remote control unit 1-5**
- 5394 (SDLC) connections**
 - configuring on the system 10-2
 - device description 10-5
 - local location address 10-6
 - name of system to connect to 10-8
 - PC location name 10-6
 - work station address 10-6
- 5394 (X.25) connections**
 - configuring on the system 10-6
 - controller description 10-7
 - device description 10-7
 - name of system to connect to 10-8
 - PC location name 10-7
 - work station address 10-7
- 5394 remote communications**
 - configuring on the system 10-2
 - installation form 10-2
 - installing PC Support/400 10-2
 - installing PC Support/400 on personal computer 10-8
- 5394 remote control unit 1-5**
- 5494 (SDLC) connections**
 - configuring on the system 11-4
 - name of system to connect to 11-27
 - PC location name 11-27
 - work station address 11-27
- 5494 (token-ring) connections**
 - configuring on the system 11-21
- 5494 (X.25) connections**
 - configuring on the system 11-13
 - name of system to connect to 11-27
 - PC location name 11-27
 - work station address 11-27
- 5494 remote communications**
 - configuring on the system 11-4
 - installation form 11-1
 - installing PC Support/400 11-1
- 5494 Remote Control Unit**
 - token-ring attachment configuration illustration 11-4
 - token-ring gateway configuration illustration 11-3

A

- A2ET 24-30**
- about this guide xi**
- action parameter 24-20**
- adapter**
 - IBM Token-Ring Network 20-7
 - using more than one adapter 1-10
- adapter cards**
 - personal computer requirements 1-7
- adapter switch settings 1-11**
- adding a PC Support/400 user**
- address stops 32-2**
- administering PC Support/400**
 - allowing administration 3-12
 - changing user configurations 3-13
 - configuration files 3-3
 - controlling updates 3-18
 - creating installation diskettes 3-15
 - custom installation diskettes 3-2
 - enrollment authority 3-5
 - model configuration files 3-2
 - model configurations 3-8, 3-9
 - overview 3-2
 - QIWSADM folder 3-2
 - restrictions 3-19
 - setting up administration 3-4
 - starting the function 3-6
 - user configurations 3-10
 - using multiple host systems 3-7
- administration**
 - controlling RUMBA/400 updates 4-13
- administration function**
 - description 1-19
- ADMN**
 - description 24-29
 - source 24-29
 - target 24-29
 - update directly 24-29
 - update list option 24-39
 - update option 24-29
 - update subdirectories option 24-29
- ADRS**
 - name of link 24-8
 - system name 24-8
 - user ID 24-8
- AEP1 24-26**
- AEP2 24-26**
- AEP3 24-26**
- AFPDS printer driver**
 - assumed printer capabilities 13-7
 - capabilities 13-4
 - creating overlays and page segments 13-7
 - overview 13-4
 - using with IBM Facsimile Support/400 13-7

- allow hotkey 24-28
- APAR 32-3
- application program interface support
 - work sheet 24-49
- application program support
 - changing 12-6
- APPN network
 - connecting to AS/400 system 24-9, 24-13, 24-16
- AS/400 disk storage requirements 1-6
- AS/400 messages 27-2
- AS/400 printers 15-2
- AS/400 system
 - requirements 1-5
- ASBR 24-17
- ASDB 24-17
- ASMI 24-17
- ASPN 24-17
- ASPR 24-17
- ASSB 24-17
- assigning a drive
 - configuration program 14-3
- assigning color to WSF sessions 16-39
- asynchronous communications
 - adapter cards 1-10
 - baud rates 1-10
 - bringing up a connection 9-13
 - cables to use 9-12
 - configuration form 9-2
 - configuring on the system 9-2
 - considerations for using PC Support/400 9-12
 - installing PC Support/400 9-2
 - installing PC Support/400 on personal computer 9-5
 - line type 9-3
 - Microsoft Windows program to use 9-15
 - name of system to connect to 9-4
 - PC location name 9-4
 - poll timer support 9-14
 - protocols 9-13
- asynchronous router
 - configuring system information 20-32
 - setting up your PC information 20-4
 - starting 20-3
 - stopping 20-4
 - system information 20-32
- authority errors 30-3
- AUTOEXEC.BAT C-2
- automatic virtual printer program 15-13

B

- backup copy, creating 5-6
- batch error codes
 - update function 21-9
 - virtual printer function 15-14
 - work station function 16-52
- baud rate 24-17
- bidirectional support
 - cursive 16-54

- bidirectional support *(continued)*
 - noncursive 16-55
 - overview 16-53
 - starting 16-54
 - status indicators and display information 16-55
- blinking chart features 30-26
- block number/ID number 24-12, 24-15
- broken print file output 30-14
- buffer size 24-29

C

- cables to use
 - asynchronous 9-12
- cache
 - shared folders 24-20, A-12
- cache buffers
 - shared folders 24-20
- cache size for conventional memory 24-19
- cache size for expanded memory 24-19
- cache size for extended memory 24-19
- cache table 24-20
- cache, memory 14-10
- CBSZ 24-20
- CCSID 1-15
- CFGVPRT
 - program 15-13
- CFGWSF.EXE 16-6
- changing
 - AS/400 system information 20-4
 - PC Support functions 12-6
 - PC Support/400 general options 12-3
 - PC Support/400 startup options 12-5
 - personal computer information 20-4
 - work station function 16-5
 - working set 12-5
- characters per inch 24-23
- characters per line 24-24
- checklist
 - See ?
- Clear to Send Pacing 9-12
- CN2 (connection retry) 24-11
- CO (command override) 24-25
- coded character set identifier (CCSID) values 1-15
- codes, batch error level
 - update function 21-9
 - virtual printer function 15-14
 - work station function 16-52
- coloring utility 16-39
- coloring work station function sessions 16-39
- combined printer output 30-20
- command file
 - changing 23-2
- command override 24-25
- commands
 - CFGVPRT 15-14
 - PCSETUPW 4-5
 - relationship to router identifiers 24-3
 - SETVPRT 15-5

commands *(continued)*

SM5250 16-35
STARTRTR /b 20-37
STARTRTR /r 20-37
STARTWSF 16-43
STOPWSF 16-52
WSFCOLOR 16-39

common user ID 23-7, 24-8**communications buffer size** 24-20**communications buffers** 24-20**communications problems** 31-2**completed work sheet**

display session 25-3
graphics session 25-3
keyboard profile 25-4
master profile 25-5
message function 24-37
organizer 24-38
other PC Support values 24-39
printer session 25-4
router 24-31
session profile 25-3
shared folders function 24-35
update function 24-38
virtual printer function 24-36
work station function 25-2

CONFIG.PCS file

adding router identifiers 23-7
adding token-ring router identifiers 23-8
changing 23-6
creating C-4

CONFIG.SYS file C-2**configuration**

application program support 12-6
connecting to additional systems 23-9
data queues function 19-3
editor
 changing identifiers 23-5
 copying text 23-6
 deleting lines 23-6
 displaying the DOS command prompt 23-5
 highlighting identifiers 23-4
 inserting blank lines 23-6
 marking and unmarking text 23-5
 moving text 23-6
 selecting identifiers 23-4
 starting 23-2
file identifiers, changed 1-17
files 3-3
message function 18-2
organizer 17-3
PC Support functions 12-6
program (CFGPCS) 1-19
router
 asynchronous system information 20-32
 SDLC system information 20-24
router example 23-7
token-ring router example 23-8

configuration *(continued)*

work station function
 completed work sheet 25-2

configuration editor 12-6

editing a file 23-3
starting 23-2

configuration program

assigning a drive 14-3
changing application program support 12-6
description 12-2
ending 12-6
performance tuning 14-3
releasing a drive 14-3
selecting a function to configure 12-6
starting 12-2
using 12-2
using with folders 14-2

configuring

5394 (SDLC) connections 10-2
5394 (X.25) connection 10-6
5394 remote communications 10-2
5494 (SDLC) connections 11-4
5494 (token-ring) connections 11-21
5494 (X.25) connections 11-13
5494 remote communications 11-4
5494 remote control units 11-2
asynchronous communications connections 9-2
Ethernet connections 7-3
for Microsoft Windows 13-2
SDLC connections 8-2
token-ring connections 6-2
twiaxial connections 5-4

connect timer 24-15, 24-18**connecting to AS/400 system**

in APPN network 24-9, 24-13, 24-16
through intermediate system 24-9, 24-13, 24-16
using EMLI identifier 24-9
using SDLI identifier 24-16
using TRLI identifier 24-13

connection method 24-15**connection retry** 24-11**connection timer** 24-11**control options** 24-27**control unit**

remote 5294 1-5
remote 5394 1-5

controller description

5394 (X.25) connection 10-7
5494 (SDLC) connection 11-7, 11-11
5494 (token-ring) connection 11-21, 11-25
5494 (X.25) connection 11-16, 11-19
SDLC 8-4
token-ring 6-4

controlling display information 17-8**copying text** 23-6**copying the PC Support functions to the personal computer** 8-12

CPI (characters per inch) 24-23
CPL (characters per line) 24-24
CT1 (connection timer) 24-11
CTS Pacing 9-12
custom installation diskettes
 creating 1-13, 3-16

D

data queue
 definition 19-2
data queues function
 configuring 19-3
 description 1-19
 identifiers 24-29
 removing from memory 19-4
 starting 19-2
 using with Microsoft Windows 4-9
DBCS (double-byte character set) 1-4
DE5250.COM 1-8
default system name 24-8
defer printing until output file closed 24-25
delaying a playback sequence 16-32
deleting lines 23-6
description identifier 24-29
destination SAP 24-10
detecting PC viruses 14-6
device description
 5394 (X.25) connection 10-7
device drivers
 considerations 16-46
 DOS 5.0 expanded memory
 using with PC support A-5
 INIT-VDI 16-45
 initializing 16-45
DFP (defer printing until output file closed) 24-25
directing output to NUL
 tracing errors 17-8
directory drive, user's 3-11
disk input/output 30-10
DISKCOPY command 5-6
diskettes
 installation
 creating 3-15
 installing on D-1
display information
 controlling 17-8
display options
 work sheet 25-10
display session
 completed work sheet 25-3
 work sheet 25-5
display-speed 24-30
display-type 24-30
displaying messages 27-2
DisplayWrite editors 17-6
divided printer output 30-20
DOS
 AUTOEXEC.BAT C-2

DOS (continued)
 CONFIG.PCS C-4
 CONFIG.SYS C-2
 memory
 nonresident B-2, B-11
 requirements B-2
 requirements work sheet B-11
 resident B-2, B-3
 resident (with EMS) B-6
 resident (with extended DOS) B-8
 RMVPCS B-3
 STARTPCS.BAT C-4
DOS 5.0
 expanded memory device drivers
 using with PC Support A-5
 shell 1-15
DOS extender applications
 compatibility with PC Support A-13
DOS messages 26-2
DOS prompt
 displaying from the PC Support editor 23-5
DOS16M environment variable
 setting for PC Support A-12
double-byte character set (DBCS) 1-4
DP5250.COM 1-8
DQBS 24-29
drive letter 24-20
drivers for Windows
 network
 installing and removing 4-5
 printer
 installing and removing 4-6
drivers, DOS 16-7
DSPL
 display-speed 24-30
 display-type 24-30
E
E2AT 24-30
E5250AH.COM 20-16
ECYDDX.SYS C-3
editing
 document made with another editor 17-7
 file 23-3
editor
 configuration 23-2
 selecting for the organizer 17-6
editor type 24-28
EHNL C-4
EHNH
 messages C-4
EHNP
 path C-4
EIMPCS.SYS C-3
EMLI
 system name for link 24-9
 user ID 24-9
 using to connect to another system 24-9

EMLI (*continued*)
 work station address 24-9

EMM386.EXE A-5
 sample DEVICE statements for A-7

EMS
 resolving conflicts when using DOS 5.0 A-7

enhanced 5250 emulation adapter 1-11

Enhanced Graphics Adapter (EGA) messages 30-26

enrolling PC Support/400 users 2-3

environment
 asynchronous communications
 adapter cards 1-10

Ethernet
 adapter cards 1-9

SDLC
 adapter cards 1-9

TDLC
 adapter cards 1-8
 requirements 1-5

token-ring
 adapter cards 1-8

environment variable
 DOS16M
 setting for PC Support A-12
 language C-4

error codes
 See batch error codes

error log 29-2

error notify
 asynchronous 20-36
 SDLC 20-29
 twinaxial 20-21

errors
 tracing when output is directed to NUL 17-8

Ethernet
 adapter cards 1-9
 address considerations 7-2
 addresses 7-2
 automatic configuration 7-5
 configuration form 7-2
 configuring on the system 7-3
 controller description 7-6
 installing LAN on personal computer 7-7
 installing PC Support/400 7-2
 local adapter address 7-4
 local LAN adapter address 7-5
 name of system to connect to 7-7
 PC LAN address 7-5
 PC location name 7-6
 system LAN address 7-4

examples
 configuration work sheet 24-30
 printing 22-2
 sharing printers 22-16
 virtual printers 22-2
 work station function printers 22-2

expanded memory
 DOS 5.0
 installing for PC Support A-5

expanded memory (*continued*)
 DOS 5.0 device drivers
 using with PC Support A-5
 using with PC Support/400 A-1

extended DOS interface 1-14

extended DOS option of PC Support/400 1-6, 1-13

extended memory
 and the extended DOS option of PC
 Support/400 1-13
 using with PC Support A-12
 using with PC Support/400 A-1

extender interface (PC SXI) A-12

F

FEMU

action 24-20
 cache buffers 24-20
 cache table 24-20
 communications buffers 24-20
 drive letter 24-20
 folder name 24-21
 program 24-20
 system name 24-21

file compatibility 1-16

files
 CFGPCS.BAK 1-10
 changing a configuration file 23-2
 CONFIG.PCS 1-10
 created or changed 1-10, C-2
 directory (PCS) 1-10
 editing with the PC Support editor 23-3
 STARTPCS.BAK 1-10
 STARTPCS.BAT 1-10

FILES = 15 C-3

FILES = 20 C-3

folder

language 1-5
 PC Support/400 1-3
 QIWSADM 1-4
 QIWSADM/MODEL 1-4
 QIWSADM/USER 1-4
 QIWSFL2 1-4
 QIWSFL2D 1-4
 QIWSFLR 1-4
 QIWSFLRD 1-4
 QIWSOS2 1-4
 QIWSOS2D 1-4
 QIWSTOOL 1-4, E-1
 QRUMBA 1-4
 QRUMBAD 1-4

folder name 24-21

folders

See shared folders function

frame retry 24-11

FTYP 24-20

function

data queues 19-2
 message 18-2

function (*continued*)

- organizer 17-2
- shared folders 14-2
- update 21-2
- virtual printer 15-2
- work station 16-3

functions available with PC Support/400 1-19

functions, list B-3

G

general options

- changing 12-3
- work sheet 25-8

general session options 16-16, 16-21

- work sheet 25-9

graphics

- See *also* work station function
- configuring 16-18
- problem 30-24

graphics session

- completed work sheet 25-3

graphics session options 16-7

guide, who should use this xi

H

HIMEM.SYS A-5

host system

- PC Support/400 coexistence PRPQ
- support available 1-18

hot key 16-11, 16-27, 16-31, 17-4, 30-21

HOTKEY 17-5

I

IBM Facsimile Support/400

- using with printer driver 13-7

identifiers

- A2ET 24-30
- ADMN
 - description 24-29
 - source 24-29
 - target 24-29
 - update directly 24-29
 - update list option 24-39
 - update option 24-29
 - update subdirectories option 24-29
- ADRS
 - name of link 24-8
 - system name 24-8
 - user ID 24-8
- AEP1 24-26
- AEP2 24-26
- AEP3 24-26
- ASBR 24-17
- ASDB 24-17
- ASMI 24-17
- ASPN 24-17

identifiers (*continued*)

- ASPR 24-17
- ASSB 24-17
- asynchronous
 - router 24-17
- CBSZ 24-20
- changing existing identifiers in a file 23-5
- data queues function 24-29
- DQBS 24-29
- DSPL
 - display-speed 24-30
 - display-type 24-30
- E2AT 24-30
- EMLI
 - system name for link 24-9
 - user ID 24-9
 - work station address 24-9
- FEMU
 - cache buffers 24-20
 - cache table 24-20
 - communications buffers 24-20
 - program 24-20
- FTYP 24-20
- highlighting groups in a file 23-4
- INTL 24-8
- list of 24-3
- LPT1 24-26
- LPT2 24-26
- LPT3 24-26
- MCAC 24-19
- MCAE 24-19
- MCAx 24-19
- MDEF
 - control options 24-27
 - system name 24-26
- message function 24-26
- MMRI 24-27
- MTIM 24-27
- organizer function 24-27
- other PC Support identifiers 24-29
- PCOM
 - allow hotkey 24-28
 - editor type 24-28
 - load editor 24-28
- PCOP
 - session number 24-27
 - system command 24-27
- PCSI 24-30
- PRNT
 - CO (command override) 24-25
 - CPI (characters per inch) 24-23
 - CPL (characters per line) 24-24
 - DFP (Defer printing until output file closed) 24-25
 - LPI (lines per inch) 24-24
 - LPP (lines per page) 24-24
 - NC (number of copies) 24-24
 - PCP (PC printer) 24-21
 - PCS (PC printer character set) 24-25

identifiers *(continued)*

- PRNT *(continued)*
 - PD (printer device) 24-21
 - PDT (printer data type) 24-23
 - PF (printer file) 24-22
 - PFL (printer file library) 24-21
 - PL (page length) 24-24
 - SN (system name) 24-21
 - TOV (time-out value) 24-24
 - UC (untranslatable character) 24-25
- PTIM 24-28
- relationship to AS/400 commands 24-3
- RMRS 24-8
- router 24-7
 - 5250 emulation 24-9
 - asynchronous 24-17
 - SDLC 24-14
- RTCU 24-8
- RTDN 24-8
- RTLN 24-8
- RTYP 24-8
- SDCM 24-15
- SDDE 24-16
- SDLC
 - router 24-14
- SDLF 24-15, 24-18
- SDLI
 - block number/ID number 24-15
 - connect timer 24-15, 24-18
 - local station address 24-14, 24-18
 - number of time-outs 24-15, 24-18
 - system name for link 24-14, 24-18
 - time-out value 24-15, 24-18
 - user ID 24-14, 24-18
- SDLT 24-15, 24-18
- SDMR 24-16
- selecting 23-4
- SFLR
 - action 24-20
 - drive letter 24-20
 - folder name 24-21
 - system name 24-21
- shared folders function 24-19
- SWAD 24-16, 24-19
- SWAR 24-16, 24-19
- token-ring router
 - optional 24-10
 - required 24-10
- TRAL 24-12
- TRAN 24-12
- TRAS 24-12
- TRLI
 - block number/ID number 24-12
 - CN2 (connection retry) 24-11
 - CT1 (connection timer) 24-11
 - destination SAP 24-10
 - MAXIN (receive window count) 24-11
 - MAXOUT (transmit window count) 24-11
 - N2 (frame retry) 24-11

identifiers *(continued)*

- TRLI *(continued)*
 - system address 24-10
 - system name for link 24-10
 - TimerT1 (response timer) 24-11
 - TimerT2 (receive acknowledgement timer) 24-11
 - TimerTl (inactivity timer) 24-11
 - user ID 24-10
- TRMF 24-13
- TRRL 24-12
- TRSS 24-12
- update function 24-28
- UPDT
 - description 24-29
 - source 24-28
 - target 24-28
 - update directly 24-28
 - update option 24-28
 - update subdirectories option 24-28
 - virtual printer function 24-21
 - VPCP 24-26
- inactive System Available indicator** 30-22
- inactivity timer** 24-11
- incorrect printer messages** 30-13
- incorrect transferred data** 30-14
- indicators**
 - printer operator panel status 16-50
- information table** xii
- Input inhibited indicator time-out value** 24-28
- inserting blank lines** 23-6
- installation**
 - program C-2
 - verifying 2-2
- installation attempt failure** 30-7
- installation diskettes**
 - custom 3-16
 - standard 3-17
- installation form**
 - 5394 remote communications 10-2
 - 5494 remote communications 11-1
 - asynchronous 9-2
 - Ethernet 7-2
 - SDLC 8-2
 - token-ring 6-2
 - twinaxial (TDLC) 5-2
- installation overview** 1-2
- installing**
 - hardware for DOS 5.0 EMS A-5
 - software for DOS 5.0 EMS A-5
- installing PC Support/400 with Windows** 4-2
- installing RUMBA/400** 4-10
- Interactive Virtual Printer Program (SETVPR)**
 - stopped 30-15
- Interrupt number** 24-30
- INTL** 24-8

J

job logs, locating 30-21

K

KBPC.PRO 17-7

keyboard

- printing layout 16-33
- profile 16-34
- profile options 16-26
- selecting the special-character set 16-33
- states 16-27
- work station function
 - style, changing 16-12

keyboard differences

- using PC Support organizer 17-7

keyboard layout

- See work station function

keyboard profile

- completed work sheet 25-4
- work sheet 25-7

keyboard, locked 30-23

L

LAN program

- configuration considerations H-3
- limitations H-2
- performance H-2
- security H-2
- setup and operational procedures H-3

language folder 1-5

language options

- available for PC Support/400 F-3
- changing on the personal computer F-2
- using with PC Support/400 F-2

languages

- using Thai F-6

library

- PC Support/400 1-3
- QIWS 1-4
- QIWS2D 1-4
- QIWS2S 1-4
- QIWSFD 1-4
- QIWSFS 1-4
- QIWSFD 1-4
- QIWSFS 1-4
- QIWSFD 1-4
- QIWSFS 1-4
- QIWSFD 1-4
- QIWSFS 1-4
- QIWSFD 1-4
- QIWSFS 1-4
- QRUMBA 1-4
- QRUMBAD 1-4

licensed program

- folders created 1-3
- libraries created 1-3
- options 1-3

line description

- SDLC 11-4
- token-ring 11-21
- X.25 11-13

line facility 24-15, 24-18

line problems 20-29, 20-36

line type 24-15, 24-18

lines per inch 24-24

lines per page 24-24

link name

- starting additional links 20-10

- stopping a link 20-11

load editor 24-28

loading errors 30-5

LOADTA 17-5

local and remote attached

- nonresident memory B-11

local area network

token-ring

- installing on personal computer 6-6

Local Area Network Support Program 1-7

local station address 24-14, 24-18

locked keyboard 30-23

lost sessions 30-24

LPI (lines per inch) 24-24

LPP (lines per page) 24-24

LPT1 24-26

LPT2 24-26

LPT3 24-26

M

marking and unmarking text 23-5

master profile

- completed work sheet 25-5
- options 16-9
- saving 16-13
- work sheet 25-7

MAXIN (receive window count) 24-11

MAXOUT (transmit window count) 24-11

MCAC 24-19

MCAE 24-19

MCAX 24-19

MDEF

- control options 24-27
- system name 24-26

memory

DOS

- requirements B-2
- requirements work sheet B-11
- expanded A-1
- extended A-1
- nonresident B-2, B-11
- removing PC Support functions B-3
- resident B-2

memory cache 14-10

memory management

- with PC Support
 - using expanded memory A-5
 - using extended memory A-12

menu

- Configuring PC Support 18-2
- options, changing 17-9

message display time-out value 24-27

message function

- alternative configuration file 18-4
- completed work sheet 24-37
- configuring 18-2
- description 1-19
- identifiers 24-26
- using 20-16
- using with Microsoft Windows 4-8
- work sheet 24-47

message queue errors 30-4

message receive interval 24-27

Microsoft Windows

- configuring PC Support/400 for 13-2
- considerations for using with PC Support/400 4-2
- installing and using RUMBA/400 4-10
- installing PC Support/400 with 4-2
- network driver 4-5
- PC Support/400 files supplied for 4-9
- printer driver 4-6, 13-4
- removing from PC Support/400 13-8
- setup program (PCSETUPW) 4-4
- using with PC Support/400 functions
 - data queues function 4-9
 - message function 4-8
 - router function 4-7
 - shared folders function 4-7
 - transfer function 4-8
 - virtual printer function 4-8
 - work station function 4-7

migration considerations 1-16

MMRI 24-27

MODE command failure 30-19

model configuration files 3-2

modem

- auto-answer 20-28
- automatic dial 20-27
- initialization 20-38
- SDLC environment 1-9
- signals 20-35

modem initialization string 24-17

modem rate 24-16

moving text 23-6

MTIM 24-27

N

N2 (frame retry) 24-11

name of link 24-8

NC (number of copies) 24-24

NetWare 386 J-1

network driver for Windows

- installing and removing 4-5

nonresident memory B-2

nonresident memory requirements B-11

Novell NetWare 386 J-1

NRZI data 24-16

number of copies 24-24

number of data bits 24-17

number of systems 24-12

number of time-outs 24-15, 24-18

O

OEM

- definition 30-6

OfficeVision/400 editor

- description 17-6

options

- for installing on the system 1-3
- printer equipment characteristics 16-22

organizer

- command line parameters 17-5
- completed work sheet 24-38
- configuring 17-3
- controlling display information 17-8
- introduction 17-2
- keyboard differences 17-7
- personalizing the organizer menu 17-9
- preparing to use 17-2

organizer function

- description 1-19
- identifiers 24-27
- selecting an editor 17-6
- work sheet 24-47
- working with sessions 17-3

original equipment manufacturer

- definition 30-6

original equipment manufacturer cards 30-6

OS/2 2.0 1-15

OS/2 LAN program

- configuration considerations 1-3
- limitations 1-2
- performance 1-2
- security 1-2

out-of-space condition, messages displayed 30-8

overlays, creating 13-7

overriding the CCSID default of 65535 1-15

P

package file 21-3

packaging 1-3

page length 24-24

page segments, creating 13-7

parity 24-17

pausing a playback sequence 16-32

PC application failure 30-7

PC location name 24-8

PC printer 24-21

PC printer character set 24-25

PC Support

- configuration program
 - for message function 18-2
 - planning 24-2
 - starting 12-2
- customizing 12-2

PC Support *(continued)*

- directory drive 3-11
- editing configuration file
 - changing identifiers 23-5
 - copying text 23-6
 - deleting lines 23-6
 - displaying the DOS command prompt 23-5
 - highlighting identifiers 23-4
 - inserting blank lines 23-6
 - marking and unmarking text 23-5
 - moving text 23-6
 - selecting identifiers 23-4
- files created or changed C-2
- installation program C-2
- message function
 - performance considerations 18-4
- organizer
 - changing menu options 17-9
 - text editor 17-6
- other PC Support values
 - completed work sheet 24-39
 - work sheet 24-49
- removing PC Support functions B-3
- using with DOS 5.0 expanded memory device drivers A-5
- work station function, advanced configuration 16-3

PC Support error log

- description 1-20

PC Support help

- description 1-20

PC Support introduction

- description 1-20

PC Support menu

- description 1-20

PC Support/400

- 5394 remote communications
 - installing on personal computer 10-8
- 5494 remote communications
 - installing on personal computer 11-27
- administration
 - allowing administration 3-12
 - changing user configurations 3-13
 - configuration files 3-3
 - controlling updates 3-18
 - creating installation diskettes 3-15
 - custom installation diskettes 3-2
 - enrollment authority 3-5
 - model configuration files 3-2
 - model configurations 3-8, 3-9
 - overview 3-2
 - QIWSADM folder 3-2
 - restrictions 3-19
 - setting up 3-4
 - starting on the personal computer 3-6
 - user configurations 3-10
 - using multiple host systems 3-7
- asynchronous communications
 - installing on personal computer 9-5

PC Support/400 *(continued)*

- coexistence PRPQ 1-18, 1-19
 - configuration program
 - description 1-19, 12-2
 - identifiers 24-29
 - configuring for Microsoft Windows 13-2
 - considerations for using with Microsoft Windows 4-2
 - data queues function
 - configuration 19-2
 - enrolling users 2-3
 - error logging 29-1
 - Ethernet
 - installing on personal computer 7-7, 7-8
 - extended DOS option 1-13
 - files for using with Microsoft Windows 4-9
 - folders 1-3
 - functions 1-19
 - installing for 5394 remote communications 10-2
 - installing for 5494 remote communications 11-1
 - installing for asynchronous communications 9-2
 - installing for Ethernet connections 7-2
 - installing for SDLC connections 8-2
 - installing for TDLC connections 5-2
 - installing for token-ring connections 6-2
 - installing with Windows 4-2
 - language options F-2
 - libraries 1-3
 - message function
 - configuration 18-2
 - options 1-3
 - planning to install 1-2
 - removing Microsoft Windows from 13-8
 - router
 - 5250 emulation router 20-18
 - programs 20-6
 - starting 20-3
 - twinaxial router 20-18
 - SDLC
 - installing on personal computer 8-6
 - SDLC router
 - setting up 20-22
 - setup program for Windows (PCSETUPW) 4-4
 - token-ring
 - installing on personal computer 6-7
 - token-ring router
 - performance 20-7
 - tools folder E-1
 - twinaxial
 - installing on personal computer 5-6
 - update function 21-2
 - verifying installation 2-2
- PC Support/400 problems**
- 30-3

PC virus

- detecting in folders 14-6
- preventing in folders 14-5

PCO command

- parameters 17-5

- PCO.EXE inactive** 30-5
- PCOM**
 - allow hotkey 24-28
 - editor type 24-28
 - load editor 24-28
- PCOP**
 - session number 24-27
 - system command 24-27
- PCP (PC printer)** 24-21
- PCS (PC printer character set)** 24-25
- PCSETUPW** 4-4
- PCSI** 24-30
- PCSWIN program** 4-4
- PCSXI** 1-14, A-12
- PD (printer device)** 24-21
- PDT (printer data type)** 24-23
- performance improvement**
 - shared folders function
 - changing your memory cache size 14-10
 - token-ring router 20-7
- performance tuning**
 - shared folders function
 - using the configuration program 14-3
- personal computer**
 - memory requirements B-2
 - requirements 1-6
 - sending data to 15-15
 - storage requirements 1-7
- personal computer problems** 30-3
- Personal Computer-to-AS/400 system**
 - connection 20-2
- personalize PC Support organizer, example** 17-9
- personalizing session manager** 16-36
- PF (printer file)** 24-22
- PFL (printer file library)** 24-21
- pie charts appear oblong** 30-25
- PL (page length)** 24-24
- planning**
 - packaging 1-3
 - PC Support/400 installation 1-2
- playback sequence** 16-31
- plotter** 16-48
- plotter does not produce charts** 30-26
- poll timer support** 9-14
- port number** 24-17
- preparing to use the organizer** 17-2
- preventing PC viruses** 14-5
- print screen** 16-47
- printer**
 - command override 15-11
 - sessions 16-3
 - setting up, example 22-2, 22-8
 - sharing 22-16
 - work station function
 - configuring 16-19
- printer data type** 24-23
- printer device** 24-21
- printer driver**
 - assumed printer capabilities 13-7
 - capabilities 13-4
 - creating overlays and page segments 13-7
 - overview 13-4
 - using with IBM Facsimile Support/400 13-7
- printer driver for Windows**
 - installing and removing 4-6
- printer file** 24-22
- printer file library** 24-21
- printer function tables**
 - changing, example 22-12
- printer ID** 16-22
- printer options**
 - work sheet 25-10
- printer session**
 - blank work sheet 25-6
 - completed work sheet 25-4
- printing**
 - messages 27-2
 - work station function keyboard layout 16-33
- PRNT**
 - CO (command override) 24-25
 - CPI (characters per inch) 24-23
 - CPL (characters per line) 24-24
 - DFP (defer printing until output file closed) 24-25
 - LPI (lines per inch) 24-24
 - LPP (lines per page) 24-24
 - NC (number of copies) 24-24
 - PCP (PC printer) 24-21
 - PCS (PC printer character set) 24-25
 - PD (printer device) 24-21
 - PDT (printer data type) 24-23
 - PF (printer file) 24-22
 - PFL (printer file library) 24-21
 - PL (page length) 24-24
 - SN (system name) 24-21
 - TOV (time-out value) 24-24
 - UC (untranslatable character) 24-25
- profile**
 - keyboard profile
 - blank work sheet 25-7
 - completed work sheet 25-4
 - master profile
 - blank work sheet 25-7
 - completed work sheet 25-5
 - saving 16-26
 - session profile
 - blank work sheet 25-5
 - completed work sheet 25-3
 - session, configuring 16-13
- program parameter** 24-20
- programs**
 - configuration program (CFGPCS) 1-19
 - installation C-2
 - that stay resident 17-8
- PRPQ, PC Support/400 coexistence** 1-18, 1-19

PTF (Program Temporary Fix) 32-7
PTIM 24-28

Q

QBASE subsystem

routing entries 1-5
understanding 1-5

QCMN subsystem

routing entries 1-5
understanding 1-5

QIWS library 1-4

QIWS2D library 1-4

QIWS2S library 1-4

QIWSADM folder 1-4, 3-2

QIWSADM/MODEL folder 1-4

QIWSADM/USER folder 1-4

QIWSFD library 1-4

QIWSFL2 folder 1-4

QIWSFL2D folder 1-4

QIWSFLR folder 1-4

QIWSFLRD folder 1-4

QIWSFS library 1-4

QIWSOS2 folder 1-4

QIWSOS2D folder 1-4

QIWSPD library 1-4

QIWSPS library 1-4

QIWSTL library 1-4

QIWSTOOL folder 1-4, E-1

QRUMBA folder 1-4

QRUMBA library 1-4

QRUMBAD folder 1-4

QRUMBAD library 1-4

QXFPCS subsystem 1-6

R

receive acknowledgement timer 24-11

receive window count 24-11

related printed information xi

releasing a drive

configuration program 14-3

remote control unit

5294 1-5

5394 1-5

remove PC Support

description 1-20

remove system name 24-8

removing from memory

data queues function 19-4

removing Microsoft Windows from PC

Support/400 13-8

requirements

AS/400 system 1-5

AS/400 system disk storage 1-6

DOS

memory B-2, B-6, B-11

memory work sheet B-11

extended DOS

memory B-8

requirements (*continued*)

nonresident memory B-11

personal computer 1-6

personal computer adapter cards 1-7

personal computer storage 1-7

resident memory B-3

reserve additional links 24-12

reserved additional service access points 24-12

resident memory

removing PC Support functions B-3

requirements for PC Support without EMS B-3

understanding B-2

resident programs 17-8

resolving EMS conflicts A-7

resource security for folders 14-4

response timer 24-11

restrictions, keyboard

See work station function

resuming a playback sequence 16-32

reverse addressing G-2

RMRS 24-8

RMVPCS B-3

router

5250 emulation

configuring, example of 23-7

identifiers 24-9

AS/400 system

setting up 20-4

asynchronous

configuring 20-31, 20-32

identifiers 24-17

setting up 20-31

completed work sheet 24-31

concepts 20-2

connecting to additional systems 23-9

identifiers 24-7

personal computer

setting up 20-4

programs 20-6

SDLC

auto-answer modems 20-28

configuring 20-24

identifiers 24-14

starting 20-3, 31-6

stopping 20-4, 31-6

TDLC

configuring system information 20-20

token-ring

configuring, example of 23-8

identifiers, required 24-10

setting up 20-11

twinaxial

configuring 20-19

setting up connection 20-19

twinaxial emulation

configuring, example of 23-7

understanding 20-2

work sheet 24-40

- router function**
 - using with Microsoft Windows 4-7
- router type** 24-8
- RTCU** 23-7, 24-8
- RTDN** 24-8
- RTLN** 24-8
- RTYP** 24-8
- RUMBA/400**
 - controlling updates 4-13
 - description 1-20
 - folder
 - QRUMBA 1-4
 - QRUMBAD 1-4
 - icons
 - creating 4-12
 - installing 4-10
 - library
 - QRUMBA 1-4
 - QRUMBAD 1-4
 - session profiles
 - assigning to icons 4-12
 - using with icons 4-12
- running the installation program more than twice** 1-10

S

- SBCS (single-byte character set)** 1-4
- screen design aid** 17-9
- SDA** 17-9
- SDCM** 24-15
- SDDE** 24-16
- SDLC**
 - adapter cards 1-9
 - configuration form 8-2
 - configuring on the system 8-2
 - connection type 8-3
 - controller description 8-4
 - installing on personal computer 8-6
 - installing PC Support/400 8-2
 - line type 8-3
 - local station address 8-4
 - name of system to connect to 8-6
 - NRZI data encoding 8-3
 - PC location name 8-4
 - router 20-22
 - router information 20-22
- SDLC environment**
 - modem requirements 1-9
- SDLC router**
 - configuring system information 20-24
 - setting up your connection 20-22
 - setting up your PC information 20-4
 - starting 20-3
 - stopping 20-4
 - system information 20-24
- SDLF** 24-15, 24-18
- SDLI**
 - block number/ID number 24-15

- SDLI (continued)**
 - connect timer 24-15, 24-18
 - local station address 24-14, 24-18
 - number of time-outs 24-15, 24-18
 - system name for link 24-14, 24-18
 - time-out value 24-15, 24-18
 - user ID 24-14, 24-18
 - using to connect to another system 24-16
- SDLT** 24-15, 24-18
- SDMR** 24-16
- security**
 - for folders 14-4
- selecting a text editor** 17-6
- service procedures** 32-2
- session manager**
 - description 1-20
 - program 16-35
- session number** 24-27
- session profile**
 - completed work sheet 25-3
 - configuring 16-13
 - work sheet 25-5
- sessions**
 - changing 16-45
 - defined 16-3
 - display
 - configuring 16-16, 16-17
 - definition 16-3
 - general options 16-16
 - graphics
 - configuring 16-6, 16-18
 - definition 16-4
 - printer
 - configuring 16-19
 - definition 16-3
 - work station function 16-49
 - saving 16-26
 - session names 25-5, 25-8
 - starting 16-43
 - stopping 16-45
 - work station function 16-3
- sessions lost** 30-24
- setup program for Windows (PCSETUPW)** 4-4
- SETVPR command** 15-5
- shared folders function**
 - assigning a drive 14-3
 - cache A-12
 - cache buffers 24-20
 - cache table 24-20
 - caching 14-10
 - completed work sheet 24-35
 - concepts 14-2
 - configuring 14-2
 - controlling access 14-4
 - description 1-20
 - extended DOS type 14-10
 - identifiers 24-19
 - improving performance 14-7

- shared folders function** *(continued)*
 - installation attempt failure 30-7
 - introducing 14-2
 - more than one system 20-17
 - performance tuning 14-3
 - QXFPCS subsystem 14-12
 - releasing a drive 14-3
 - security 14-4
 - starting the QXFPCS subsystem 14-12
 - subsystem (QXFPCS) 14-12
 - tailoring the QXFPCS subsystem 14-12
 - type 0 14-9
 - type 1 14-9
 - type 2 14-10
 - types 14-8
 - understanding 14-2
 - using with Microsoft Windows 4-7
 - work sheet 24-44
- shared folders function type** 24-20
- sign-on attempts, invalid** 30-24
- single-byte character set (SBCS)** 1-4
- slow printer error messages** 30-12
- SM5250** 16-35
- SN (system name)** 24-21
- software interrupt number** 24-8
- source** 24-28, 24-29
- standard installation diskettes**
 - creating 1-13, 3-17
- starting PC Support/400** 5-11
- starting the configuration program** 12-2
- Starting... message** 30-22
- STARTPCS.BAT**
 - DOS C-4
- STARTRTR**
 - command line parameters 20-3
 - command to start the router 20-3
- startup options**
 - changing 12-5
- STARTWSF** 16-43
- stop bits per byte** 24-17
- stopped transfer function** 30-9
- stopping the router** 20-4
- storage requirements**
 - AS/400 system 1-6
 - personal computer 1-7
- submit remote command**
 - description 1-20
- substitution characters in data** 30-14
- subsystems**
 - QBASE
 - routing entries 1-5
 - QCMN
 - routing entries 1-5
 - QXFPCS 1-6, 14-12
- summary of changes** xiii
- SWAD** 24-16, 24-19
- SWAR** 24-16, 24-19

- switched automatic dial function** 24-16, 24-19
- switched automatic dial response** 24-16, 24-19
- synchronous data link control**
 - See SDLC
- synchronous data link control (SDLC) router** 20-22
- system**
 - attaching to more than one 20-8
- system address** 24-10
- System Available indicator** 30-22
- system command** 24-27
- system name** 24-8, 24-21, 24-26
- system name for link** 24-9, 24-10, 24-14, 24-18
- System/36** 1-18

T

- TA1** 17-5
- target** 24-28, 24-29
- TDLC**
 - adapter cards 1-8
 - address 5-2
 - automatic configuration 5-4
 - configuring 5-4
 - system information 20-20
 - device description 5-4
 - host requirements
 - port address 1-5
 - installing on personal computer 5-6
 - name of system to connect to 5-6
 - PC location name 5-4
 - port 5-2
 - Print Device Address command 5-2
 - requirements 1-5
 - work station address 5-4
- text assist**
 - description 1-20
- text editor**
 - organizer function 17-6
- text-assist function**
 - requirements 17-6
- Thai language** F-6
- time-out value** 24-15, 24-18, 24-24
- TimerT1 (response timer)** 24-11
- TimerT2 (receive acknowledgement timer)** 24-11
- TimerTI (inactivity timer)** 24-11
- token-ring**
 - adapter 20-7
 - adapter cards 1-8
 - attachment configuration
 - 5494 Remote Control Unit illustration 11-4
 - automatic configuration 6-4
 - configuration form 6-2
 - configuring on the system 6-2
 - controller description 6-4
 - gateway configuration
 - 5494 Remote Control Unit illustration 11-3
 - identifiers
 - optional 24-10
 - required 24-10

token-ring (continued)

- installing LAN on personal computer 6-6
- installing PC Support/400 6-2
- installing PC Support/400 on personal computer 6-7
- local adapter address 6-3
- local LAN adapter address 6-4
- name of system to connect to 6-6
- PC LAN address 6-4
- PC location name 6-4
- router 20-11
 - adding links 20-13
 - adding systems 20-13
 - changing links 20-13
 - deleting links 20-13
 - identifiers, required 24-10
 - improving performance 20-7
 - performance considerations 20-7
 - setting up your PC information 20-4
 - starting 20-3
 - stopping 20-4
 - system information 20-13
 - setting up 20-11
 - system LAN address 6-3
- token-ring adapter number** 24-12
- token-ring maximum frame size** 24-13
- token-ring service access point** 24-12
- tools folder**
 - installing E-1
 - using E-2
- TOV (time-out value)** 24-24
- tracing errors when output is directed to NUL** 17-8
- TRAL** 24-12
- TRAN** 24-12
- transfer function**
 - description 1-20
 - using with Microsoft Windows 4-8
- transfer request submitted** 30-14
- translation table**
 - changing 15-12
- translation table filename** 24-26, 24-30
- transmit window count** 24-11
- TRAS** 24-12
- trigger file** 21-3
- TRLI**
 - block number/ID number 24-12
 - CN2 (connection retry) 24-11
 - CT1 (connection timer) 24-11
 - destination SAP 24-10
 - MAXIN (receive window count) 24-11
 - MAXOUT (transmit window count) 24-11
 - N2 (frame retry) 24-11
 - system address 24-10
 - system name for link 24-10
 - TimerT1 (response timer) 24-11
 - TimerT2 (receive acknowledgement timer) 24-11
 - TimerTI (inactivity timer) 24-11
 - user ID 24-10

TRLI (continued)

- using to connect to another system 24-13
- TRMF** 24-13
- TRRL** 24-12
- TRSS** 24-12
- truncated print records** 30-15
- truncated printer lines** 30-20
- twinaxial**
 - See *also* TDLC
 - configuration form 5-2
 - installing PC Support/400 5-2
 - router 20-18
- twinaxial cable problems** 31-2
- types of memory** A-2
- types of shared folders function**
 - extended DOS 14-10
 - type 0 14-8, 14-9
 - type 1 14-8, 14-9
 - type 2 14-8, 14-10

U

- UC (untranslatable character)** 24-25
- unexpected errors** 30-4
- unexpected output** 30-18
- unreadable Document Content Architecture output** 30-19
- unreadable output** 30-18
- untranslatable character** 24-25
- update directly** 24-28, 24-29
- update function**
 - batch error level codes 21-9
 - completed work sheet 24-38
 - considerations for using 21-9
 - description 1-20
 - examples 21-6
 - identifiers 24-28
 - introduction 21-2
 - work sheet 24-48
- update list option** 24-39
- update option** 24-28, 24-29
- update subdirectories option** 24-28, 24-29
- updates on the personal computer**
 - using the administration function to control 3-18
- UPDT**
 - description 24-29
 - source 24-28
 - target 24-28
 - update directly 24-28
 - update option 24-28
 - update subdirectories option 24-28
- upgrading to a new release** 1-12
- user**
 - enrolling for PC Support/400 2-3
- user ID** 24-8, 24-9, 24-10, 24-14, 24-18
- user's PC Support directory drive** 3-11
- using more than one adapter** 1-10

V

verifying installation of PC Support/400 2-2

virtual disk support 1-18

virtual DOS machine 1-15

virtual printer function

- adding a printer definition 15-2
- batch error level codes 15-14
- CFGVPRT command 15-14
- CFGVPRT program 15-13
- changing a printer definition 15-4
- changing the startup method 15-3
- completed work sheet 24-36
- concept 15-2
- configuring a printer 15-2
- considerations for virtual printer 15-14
- deleting a printer 15-4
- description 1-20
- ending the interactive virtual printer program 15-13
- identifiers 24-21
- printing example 22-2
- programs
 - automatic virtual printer program 15-13
 - interactive virtual printer program 15-6
 - resident virtual printer programs 15-5
- SETVRPT program 15-6
- starting resident virtual printer programs 15-5
- untranslatable character 15-12
- using with Microsoft Windows 4-8
- work sheet 24-45

virus

- definition 14-5
- detecting in folders 14-6
- preventing in folders 14-5

VPCP 24-26

W

who should use this guide xi

WIN.INI file 4-4

Windows

- configuring PC Support/400 for 13-2
- considerations for using with PC Support/400 4-2
- installing and using RUMBA/400 4-10
- installing PC Support/400 with 4-2
- network driver 4-5
- PC Support/400 files supplied for 4-9
- PC Support/400 group
 - creating 4-5
- printer driver 4-6
- removing from PC Support/400 13-8
- setup program (PCSETUPW) 4-4
- using with PC Support/400 functions
 - data queues function 4-9
 - message function 4-8
 - router function 4-7
 - shared folders function 4-7
 - transfer function 4-8
 - virtual printer function 4-8

Windows (continued)

using with PC Support/400 functions (continued)

work station function 4-7

WIN.INI file 4-4

word processing function 17-6

work sheet

- application program interface support 24-49
- display options 25-10
- display session 25-5
- general options 25-8
- general session options 25-9
- keyboard profile 25-7
- master profile 25-7
- memory requirements B-11
- message function 24-47
- organizer function 24-47
- other PC Support values 24-49
- PC Support configuration 24-40
- printer options 25-10
- printer session 25-6
- router 24-40
- session profile 25-5
- shared folders function 24-44
- update function 24-48
- virtual printer function 24-45
- work station function 25-5, 25-8

work station address 24-9

work station emulation adapter 1-10

work station function

- advanced PC Support/400 work station function
 - work sheet 25-8
- advanced work station function configuration 16-3
- batch error level codes 16-52
- changing 16-5
- changing the general options 16-9
- coloring sessions 16-39
- configuration 16-3
 - completed work sheet 25-2
 - saving profiles 16-26
 - work sheet 25-5
- configuration program
 - starting 16-5
- configuring
 - display session options 16-16
 - display sessions 16-17
 - general session option 16-16
 - graphics 16-18
 - graphics sessions 16-6
 - printer sessions 16-19
- description 1-20
- display session
 - coloring 16-39
- ending 16-52
- general session options 16-16, 16-21
- graphics
 - CFGWSF.EXE 16-6
 - characteristics 16-18
 - configuring a session for graphics 16-6
 - displaying graphics sessions 16-47

work station function *(continued)*

- graphics *(continued)*
 - editing CONFIG.SYS for use with 16-6
 - installing 16-6
 - print screen 16-47
 - requirements 16-6
 - special considerations 16-47
 - using a plotter 16-48
 - using graphics sessions 16-45
- introducing 16-3
- keyboard
 - alt graphics state 16-27
 - alt keyboard state 16-27
 - assigning a playback sequence to a key 16-31
 - assigning a single function to a key 16-30
 - base keyboard state 16-27
 - changing a keyboard profile 16-34
 - creating a keyboard profile 16-28
 - defining keys with the Define Keyboard display 16-29
 - defining the keyboard 16-28
 - hot key 16-31, 16-47
 - printing layout 16-27, 16-33
 - requirements for keyboard profiles 16-27
 - restrictions 16-30
 - saving keyboard layout 16-33
 - selecting keyboard type and style 16-29
 - selecting keys 16-29
 - setup 16-27
 - shift keyboard state 16-27
 - states 16-27
 - style, changing 16-12
- keyboard profile
 - delay 16-32
 - pause 16-32
 - resume 16-32
- master profile
 - options 16-9
 - saving 16-13
 - setting up 16-9
- pre sign-on display 16-43
- printer
 - operator panel status indicators 16-50
 - sessions 16-49
- printer configuration
 - example 22-8
- printing
 - on a PC printer 16-52
 - on an AS/400 printer 16-52
 - the display 16-52
- profiles
 - defined 16-4
 - understanding 16-4
- session profile
 - setting up 16-13
- sessions
 - changing 16-45
 - coloring 16-39
 - displaying graphics 16-47

work station function *(continued)*

- sessions *(continued)*
 - printer sessions 16-49
 - starting 16-43
 - STARTWSF command 16-43
 - stopping 16-45
 - switching 16-47
 - understanding 16-3
 - using graphics sessions 16-45
 - starting work station function 16-41
 - STOPWSF 16-52
 - using with Microsoft Windows 4-7
- work station function checklist** 25-5, 25-8
- work station function coloring utility**
 - description 1-21
- work station function configuration program**
 - description 1-21
- working set**
 - changing 12-5
- WSE.COM** 1-8
- WSEAH.EXE** 1-8, 20-18
- WSFCOLOR** 16-39



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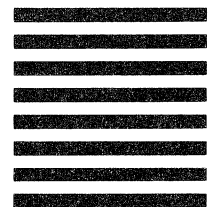
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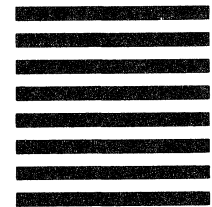
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