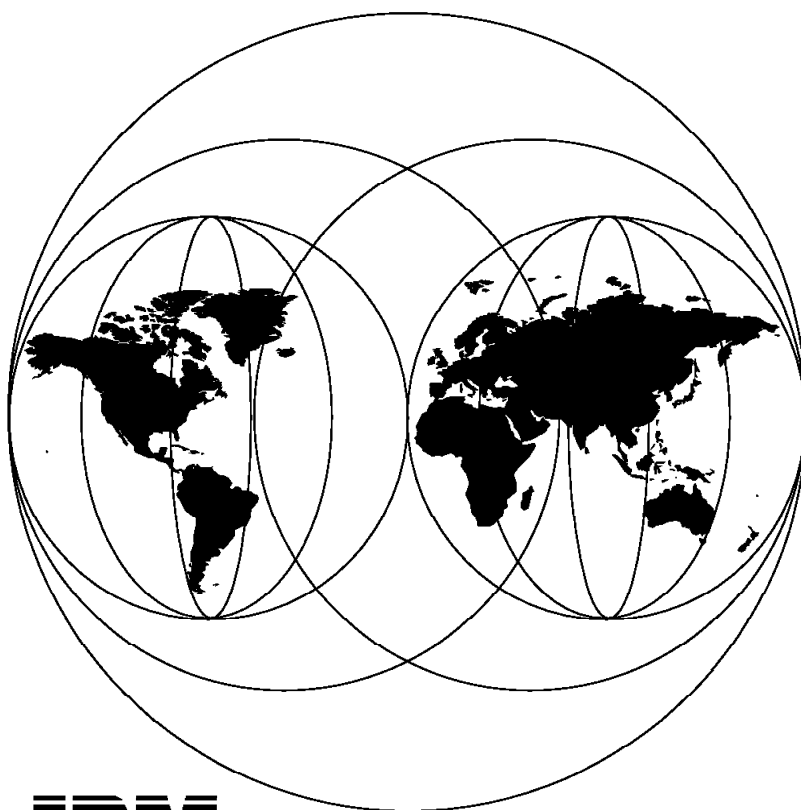


Personal Communications for Coax, LAN, and WAN Users DOS, Windows 3.1, and OS/2

November 1996



**International Technical Support Organization
Raleigh Center**



International Technical Support Organization

SG24-4688-00

**Personal Communications for Coax, LAN, and WAN Users
DOS, Windows 3.1, and OS/2**

November 1996

Take Note!

Before using this information and the product it supports, be sure to read the general information in Appendix B, "Special Notices" on page 277.

First Edition (November 1996)

This edition applies to Personal Communications family Version 4.1 of products for use with the IBM Operating System/2 (OS/2) or IBM Disk Operating System (DOS) environment.

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Preface

This redbook describes how to customize and use IBM Personal Communications Version 4.1 for 3270 or 5250 host-system communications, and provides information about all the relevant connection options. This book is intended for the Coax, LAN, and WAN users of Personal Communications for DOS, Windows 3.1 or OS/2, and for administration and service personnel who set-up the Personal Communications family for use in a local environment.

This book is part of a series of three ITSO redbooks about the Personal Communications family. It does not attempt to describe every feature of PCOMM, nor does it describe PCOMM's mobile connections; these subjects are covered in the following redbooks:

- *Personal Communications Version 4.1 Implementation Guide*, SG24-4681, which fully describes the Personal Communications family functions, requirements, compatibility and limitations. It includes guidance on installation, customization and describes the use of many features, such as data and file transfer, printing or the trace facility.
- *Personal Communications for the Mobile User - DOS, Windows and OS/2*, SG24-4456, which contains guidance on Personal Communications remote access to host systems as asynchronous and synchronous communications. It describes Personal Communications in combination with LAN Distance or in a Wireless LAN environment. Definitions are included for related products such as CM/2, 3174 Asynchronous Emulation Adapter, and the 8235 Dial-in Access to LANs (DIALs) Server.

All these books should be used as a supplement to the product documentation, and assumes a working knowledge of 3270 or 5250 workstation-to-host communications and of the OS/2, DOS or Windows environments.

This book does not include information about Personal Communications for Windows 95; that is detailed in a separate book, *Personal Communications Version 4.1 for Windows 95 Implementation Guide*, SG24-4689.

Note: In many cases, Personal Communications will be referred to as *PCOMM* for the sake of brevity. Similarly, the 3270 emulator will be referred to as *PC/3270*, and the 5250 emulator as *PC400*.

How This Redbook Is Organized

This redbook is organized as follows:

- Part 1, "Product Overview and Installation"

This first part of the document provides an introduction to the IBM Personal Communications family, describes the features that are new in Version 4.1, lists connection types available, and gives brief details about installation and customization.

- Part 2, "Coax Connection"

This second part of the document describes the coax connections, which can be done with the Personal Communications family of products in a coax environment.

- Part 3, "LAN Connections"

This third part of the document describes the LAN connections, which can be implemented by using the Personal Communications family of products in a local area network environment.

- Part 4, "WAN Connections"

This fourth part of the document describes the WAN connections, which can be done with the Personal Communications family of products in a wide area network environment.

- Part 5, "Appendix"

This fifth part of the document provides an overview of some important utilities and functions, which may work with Personal Communications.

The Team That Wrote This Redbook

This redbook was produced by a team of specialists from around the world working at the Systems Management and Networking ITSO Center, Raleigh.

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Comments Welcome

We want our redbooks to be as helpful as possible. Should you have any comments about this or other redbooks, please send us a note at the following address:

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Your comments are important to us!

Part 1. Product Overview and Installation

This first part of the document provides an overview, an introduction, and a requirements and installation section covering all the IBM Personal Communications family products.

- Chapter 1, "Personal Communications Version 4.1 Family Overview"
 - 1.1, "Personal Communications/3270 Version 4.1 (PC/3270)"
 - 1.2, "Personal Communications AS/400 Version 4.1 (PC400)"
- Chapter 2, "Installation and Customization"

Chapter 1. Personal Communications Version 4.1 Family Overview

The IBM Personal Communications (PCOMM) Version 4.1 family provides powerful client communications on all major PC operating systems. It offers 3270 and 5250 display and printer emulation and SNA-based client support for PCs running DOS (3270 only), Windows 3.1x, OS/2, and Windows 95. Personal Communications v4.1 for Windows 95 also provides 3270 and 5250 terminal emulation for Windows NT workstations.

The packaging of the products has changed in Version 4.1 - whereas there were previously three packages (3270, 5250 and combined), there are now only two (5250 and combined). This means that if you want 3270 emulation only (or both), you must buy the combined package known as Personal Communications AS/400 and 3270 Version 4.1. If you want the 5250 emulation only, you can buy Personal Communications AS/400 Version 4.1. The prices have been adjusted to reflect these changes, which apply to the products for all operating systems. There are also available PC400-only and combined CD-ROMs apart from PCOMM itself. These include all the Personal Communications publications, overviews of PCOMM and other useful documents.

The emulators provide many powerful, simple-to-use features, such as macros, keystroke record and playback, iconic toolbar (now customizable), Dynamic Data Exchange (DDE), and enhanced clipboard editing. PCOMM has the same look and feel on whichever operating system you are using, and whether you are using 3270 or 5250 emulation. A greater flexibility is offered to OS/2 users by the inclusion of the OS/2 Access Feature.

Personal Communications Version 4.1, offers several new connection types, APIs and other functions. These new features are listed in tables later in this chapter and are described as if they are related to coax, LAN and WAN communications. Full details are published in the ITSO redbook *Personal Communications Version 4.1 Implementation Guide*, SG24-4681.

The current Personal Communications family consists of the following products:

- Personal Communications AS/400 and 3270 Version 4.1 for Windows
- Personal Communications AS/400 Version 4.1 for Windows
- Personal Communications AS/400 and 3270 Version 4.1 for Windows 95
- Personal Communications AS/400 Version 4.1 for Windows 95
- Personal Communications AS/400 and 3270 Version 4.1 for OS/2
- Personal Communications AS/400 Version 4.1 for OS/2
- Personal Communications AS/400 and 3270 Version 4.1 CD-ROM
- Personal Communications AS/400 Version 4.1 CD-ROM

Note: The CD-ROMs include all three versions of the respective product.

1.1 Personal Communications/3270 Version 4.1 (PC/3270)

The 3270 members of the PCOMM family, collectively known as PC/3270, are as follows:

Personal Communications/3270 for DOS (Entry-Level Mode)

PC/3270 Entry DOS provides 3270 display emulation under DOS, with Control Unit Terminal (CUT) coax and Home3270 asynchronous dial-up connections. It includes the EHLLAPI and a keyboard-remap utility. Entry DOS needs only about 41 Kb of memory for a Home3270 session.

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

PC/3270 FF-DOS provides 3270 display and printer emulation under DOS, and also a 3270 gateway. It offers many different types of host connections, several APIs and a number of utilities.

Note: Entry and FF-DOS are included in the Personal Communications AS/400 and 3270 Version 4.1 for Windows package.

Personal Communications/3270 for Windows

PC/3270 for Windows provides 3270 display and printer emulation, as well as several utilities and administration tools. It offers many different types of host connections and is a native Microsoft Windows 3.1 application. It is part of Personal Communications AS/400 and 3270 Version 4.1 for Windows (there is no longer a separate 3270-only package).

Personal Communications/3270 for Microsoft Windows 95

PC/3270 Microsoft Windows 95 is a 32-bit application that runs on Windows 95 or Windows NT; it provides 3270 display and printer emulation, several utilities, and a number of programming interfaces, including APPC and CPI-C. It offers many types of host connections and operates as an SNA End Node and includes support for HPR and DLUR. PC/3270 is a part of the Personal Communications AS/400 and 3270 Version 4.1 for Microsoft Windows 95.

Personal Communications/3270 for OS/2

PC/3270 for OS/2 is a 32-bit application that runs on OS/2 and provides 3270 display and printer emulation, as well as many utilities. It can be used independently or can run on top of OS/2 Communications Manager/2 or OS/2 Access Feature if you need connection types that Personal Communications/3270 itself does not provide, or if you want to use the APPC or CPI-C programming interfaces. It is a part of the Personal Communications AS/400 and 3270 Version 4.1 for OS/2 (there is no longer a separate 3270-only package).

1.1.1 Enhancements and New Features of PCOMM V4.1

IBM PCOMM V4.1 provides numerous enhancements to the product as compared to Personal Communications Version 4.0. Features of PCOMM for Windows 95 are included for comparison.

Table 1 (Page 1 of 2). Enhancements and Features of PCOMM V4.1

Function	Version	DOS	WIN3.1	WIN95	OS/2
IBM Global Network (IGN) attachment (HPO)			X	X	X
IGN phone numbers built in			X	X	X
Display title with phone number		X	X	X	X
Easy selection of a backup phone number		X	X	X	X
Async performance enhancement (VCD)			X		
Autodial usability improvements		X	X	X	X
Idle timeout option (async and SDLC)			X	X	X
Additional modem support		X	X	(*4)	X
APPC3270 through APPN networks			X	X	(X)
APPN LEN/End node (APPC and CPI-C API)		(*1)	(*2)	X	(*3)
Dependent LU Requester (DLUR)				X	(*3)
High Performance Routing (HPR)				X	(*3)
SNA over TCP/IP (AnyNet)			X		(*3)
NetWare for SAA - for server & service names		X	X	X	X
TN3270E (LU1/LU3 host print, etc., over TCP/IP)			X	X	X
CM MOUSE automation utility		X	X	X	(X)
Toolbar pop-up description			X	X	X
Toolbar customization				X	X
Online publications				X	X
Printer Form-Feed options increased			X	X	X
Improved Drag-and-Drop GUI				X	X
32- and 16-bit interfaces for EHLLAPI, SRPI, PCSAPI				X	X
EHLLAPI multiple links				X	X
PCSAPI Connect/Disconnect Session				X	X
Programmed Symbol Set support			(X)		X
PCSAPI connect/disconnect				X	X
On/Off selection for PCSMON trace			X		X
Response Time Monitor		(X)	X		(X)
Print to Disk - Separate file			X	X	X
Installation - emulator selection (3270, 5250, both)			X	X	X
Installation - more granular component selection			X	X	X
Migration without reconfiguration		(X)	(X)	X	X
Restoration of a previous version			X	X	X
Uninstall option to remove/delete		(X)	X	X	X

<i>Table 1 (Page 2 of 2). Enhancements and Features of PCOMM V4.1</i>					
Function	Version	DOS	WIN3.1	WIN95	OS/2
Improvement for OS/2 locked device drivers					X
Support of ECID keywords (Copy, Migrate, Version, Copy/Delete)					X
Creation of CID response file from CM/2 configuration file					X
Keyboard-graphic layout with NLS (remap)			X	X	X
Choose keyboard layout - 3270, 5250, Combined			X	X	X
Support for the Microsoft Natural Keyboard			X	X	
Keyboard/Code Page support for many new languages		X	X	X	X
Performance improvements					X
Notes: (X) Previously available with PC/3270 V4.0 (*1) Supported with APPC Networking Services for DOS (CPI-C only) (*2) Supported with APPC Networking Services for Windows (CPI-C only) (*3) Supported with OS/2 Access Feature (*4) Uses Windows 95's modem configuration by default					

1.1.2 PCOMM V4.1 Connections to S/390

Personal Communications/3270 Version 4.1 supports a wide variety of communication adapters; except where precluded by hardware conflict, you can use any valid combination of adapters to communicate to System/390 or AS/400 hosts.

You can have up to 26 concurrent host sessions (display - LU2, or printer - LU1 or 3) in Windows or OS/2 modes, and up to eight in Full-Function DOS mode, depending upon the type and number of adapters installed and upon the amount of memory in your workstation.

Personal Communications/3270 Version 4.1 supports the connections shown in the following table.

<i>Table 2 (Page 1 of 2). PCOMM V4.1 Connections to S/390</i>					
PCOMM V4.1 to 3270 Host System		DOS Version	WIN3.1 Version	WIN95 Version	OS/2 Version
Interface	Attachment				
COM port	Home3270	(*3)	X	X	X
	Hayes AutoSync	X	X		X
	SNA-over-Async	X	X	X	X
	IBM Global Network (HPO) (*1)		X	X	X
	Advantis (IIN) via S/1 SNA Gateway	X	X	X	X
	DLUR			X	(*4)

Table 2 (Page 2 of 2). PCOMM V4.1 Connections to S/390

PCOMM V4.1 to 3270 Host System		DOS Version	WIN3.1 Version	WIN95 Version	OS/2 Version
Interface	Attachment				
SDLC	Synchronous Data Link Control	X G	X	X	X
	3270 Passthrough via AS/400	X	X	X	X
	APPC3270 via SNA Network (LU 6.2)		X(*1)	X	X
	DLUR			X	(*4)
LAN Token-Ring Ethernet FDDI ATM Wireless	IEEE 802.2 via LAN	X G	X	X	X
	NetBIOS via 3270 Emul. Gateway	X	X		
	IPX/SPX via NetWare for SAA	X	X	X	X
	TCP/IP Telnet3270 (*6)	X	X	X	X
	AnyNet (SNA over TCP/IP) (*1)		X		(*4)
	3270 Passthrough via AS/400		X	X	X
	APPC3270 via SNA Network (LU 6.2)		X(*1)	X	X
	DLUR			X	(*4)
	MS SNA Client (FMI) (*6)		X	X	
	MS SNA Client (LUA) (*1 *6)			X	
	MS SNA Client (APPC) (*1 *6)			X	
Coaxial	SNA Distributed Function Terminal	X G	X	X	X
	Non-SNA Distributed Function Terminal	X	X	X	X
	Control unit terminal	(*3)	X		X
	3174 Peer Communication (IEEE 802.2)	X	X		X
Twinaxial	3270 Passthrough via AS/400		X	X	X
	DLUR			X	(*4)
SNA CM/2 or OS/2 AF	LUA3270 via SNA Network (LU 0,1,2,3)				X
	APPC3270 via SNA Network (LU 6.2)				X
X.25	X.25 Co-Processor	X G			(*4)
Frame Relay	Wide Area Connector (WAC)				(*5)
ISDN	ISDN Co-Processor Card	X			(*4)
	WaveRunner ISDN				(*4)

Notes:

- (G) Also for Gateway (upstream)
- (*1) New attachment in this release
- (*2) New attachment since PC/3270 V4.0
- (*3) Supported by Entry-Level DOS Mode
- (*4) Supported with OS/2 Access Feature or CM/2 (except DLUR)
- (*5) Supported with RouteXpander/2 and CM/2 or OS/2 Access Feature
- (*6) Also supported on Windows NT Workstations

1.2 Personal Communications AS/400 Version 4.1 (PC400)

The 5250 members of the PCOMM family, collectively known as *PC400*, are described briefly below; all have support for Data Transfer, Text Assist and PC Organizer, and provide several administration tools.

PC400 V4.1 is available in two packages - alone or combined with PC/3270 - on each of three operating systems:

Personal Communications AS/400 for Windows

PC400 for Windows provides Windows-based 5250 terminal emulation under Microsoft Windows 3.1 or Windows for Workgroups V3.11, and lets you connect to AS/400, System/36 or System/38 computers. AS/400 Utilities, ODBC drivers and Database Access are new features in Version 4.1. The package includes two other applications: AnyNet SNA over TCP/IP for Windows, which allows PC400, configured to use APPC, to connect to an AS/400 over a TCP/IP network; and APPC Networking Services for Windows, which provides CPI-C programming interfaces.

Personal Communications AS/400 for Microsoft Windows 95

PC400 for Windows 95 is a 32-bit application that runs on Windows 95 or Windows NT and provides 5250 display and printer emulation, several utilities, and a number of programming interfaces, including APPC and CPI-C. It offers many types of host connections, operates as an SNA end node, and includes HPR in an APPN network. It lets you connect only to AS/400s.

Personal Communications AS/400 for OS/2

PC400 for OS/2 provides Presentation Manager-based 5250 terminal emulation when used in conjunction with OS/2 2.1 or later. It is a 32-bit application and has both 16- and 32-bit APIs. You can connect to AS/400, System/36 or System/38 computers. PC400 can run on top of the OS/2 Access Feature, which provides SNA End-Node, AnyNet, and HPR support, and is included in the packages.

Note: For simplicity, these programs will be referred to collectively as *PC400* from now on, unless a particular operating system is mentioned.

1.2.1 Enhancements and New Features of PC400 V4.1

IBM PC400 V4.1 provides numerous enhancements to the product as compared to Personal Communications Version 4.0. Features of PCOMM for Windows 95 are included for comparison.

Table 3 (Page 1 of 2). Enhancements and Features of PC400 V4.1				
Function	Version	WIN3.1	WIN95	OS/2
ASYNCR performance enhancement (VCD)		X		
Autodial usability improvements		X	X	X
Display title with phone number		X	X	X
Additional modem support		X	X(*3)	X
System/3X attachment (Twinax only)		X		X
Virtual Printer		X		
PCS/400 Router API		X		

<i>Table 3 (Page 2 of 2). Enhancements and Features of PC400 V4.1</i>				
Function	Version	WIN3.1	WIN95	OS/2
ODBC driver		X		
Database Access		X		
Router session no longer needed for SF, DT		X		
Toolbar pop-up description		X	X	X
Toolbar customization			X	X
APPN LEN/End Node (APPC and CPI-C API)		(*1)	X	(*2)
High Performance Routing (HPR)			X	(*2)
SNA over TCP/IP (AnyNet)		X		(*2)
SNA-over-Async (Console)		X		X
Online publications			X	X
Column-separator customization (lines/dots)		X	X	X
Improved drag-and-drop GUI			X	X
16- and 32-bit interfaces for EHLLAPI, SRPI, APPC			X	X
EHLLAPI multiple links			X	X
PCSAPI Connect/Disconnect Session			X	X
Setup utility for PCSMON trace parameters		X		X
Installation - emulator selection (3270, 5250, both)		X	X	X
Installation - more granular component selection		X	X	X
Migration without reconfiguration		X	X	X
Ability to stop installation		X	X	X
Restoration of a previous version		X	X	X
Uninstall option to remove/delete		X	X	X
Improvement for OS/2 locked device drivers				X
Support of ECID keywords (Copy, Migrate, Version, Copy/Delete)				X
Creation of CID response file from CM/2 configuration file				X
Keyboard-graphic layout with NLS (remap)		X	X	X
Support for the MS Natural Keyboard		X	X	
Keyboard/code page support for many new languages		X	X	X
Performance improvements				X
Notes: (*1) Supported with APPC Networking Services for Windows (*2) Supported with OS/2 Access Feature (*3) Uses Windows 95's modem configuration by default				

All features of previous versions are still included; many have been improved in Version 4.1.

1.2.2 PC400 V4.1 Connections to AS/400

Personal Communications AS/400 Version 4.1 supports a wide variety of communication adapters; except where precluded by hardware conflict, you can use any valid combination of adapters to communicate to AS/400 hosts. However, you can use only Twinax adapters to connect to S/36 or S/38.

You can have up to 26 concurrent sessions (display or printer), depending upon the type and number of adapters installed and upon the amount of memory in your workstation.

Personal Communications AS/400 Version 4.1 supports the connections shown in the following table.

<i>Table 4. Personal Communications AS/400 Version 4.1 Connections to AS/400 and S/3X</i>				
PC400 V4.1 Connections		WIN3.1 Version	WIN95 Version	OS/2 Version
Interface	Attachment			
COM port	Hayes AutoSync	X		X
	SNA-over-Async	X	X	X
	SNA-over-Async (Console)	X		X
SDLC	Synchronous Data Link Control	X	X	X
	PC Support/400 Router	X		X
LAN Token-Ring Ethernet FDDI ATM Wireless	IEEE 802.2 via LAN	X	X	X
	TCP/IP Telnet5250	X	X	X
	AnyNet (SNA over TCP/IP) (*1)	X		(*2)
	PC Support/400 Router	X		
	IPX/SPX via NetWare for SAA	(*3)		
Twinaxial	Twinaxial Data Link Control (APPC)	X	X	X
	Twinaxial Data Link Control (Console)	X		X
	PC Support/400 Router	X		X
Coaxial	3174 Peer Communication (IEEE 802.2)	(*4)		(*4)
CM/2 or OS/2 AF	APPC5250 via SNA Network (LU 6.2)			X
X.25	X.25 Co-Processor			(*2)
Frame Relay	Wide Area Connector (WAC)			(*5)
ISDN	ISDN Co-Processor			(*2)
	WaveRunner ISDN			(*2)
Notes: S/3x supports only a Twinax connection (*1) New attachment in this release (*2) Supported with OS/2 Access Feature or CM/2 (*3) Can be used with the PC Support/400 Router attachment (only for emulation, no utilities) (*4) This works but is not a supported connection (*5) Supported with RouteXpander/2 and OS/2 Access Feature or CM/2				

Chapter 2. Installation and Customization

This chapter gives a brief description on installing the Personal Communications family and provides guidance, hints and tips on customizing PCOMM for DOS, Windows 3.1 and OS/2. For a complete description on installing the product, you should look at the appropriate *Up and Running* book and use the online Help function on installation procedures.

All examples given in this book are for Coax, LAN and WAN users. Examples for mobile users can be found in the ITSO redbook, *Personal Communications for the Mobile User - DOS, Windows and OS/2*, SG24-4456.

Personal Communications is an easy-to-install application package. For each PCOMM environment of operation, the installation program offers a different directory structure:

PCS3270 for DOS (Entry-Level Mode)

PC3270 for DOS (Full-Function Mode)

PCOMWIN for Windows

PCOMOS2 for OS/2

Personal Communications is subdivided in many different application programs all in one package for your target environment. This means installation options are available to make it easy to install or migrate on a single workstation or over the network. Partitional installation as well as uninstall is possible.

Personal Communications runs in an SNA or non-SNA environment. If runs in conjunction with a 3270 and/or 5250 host system, the following host software is required:

- For a 3270 host system, it needs ACF/VTAM Version 3 (for SNA/SDLC) or ACF/NCP Version 4 Release 2 or later.
- For a 5250 host system, such as an AS/400, it needs one of the following AS/400 software.
 - OS/400 Version 2 Release 1 or later
 - OS/400 Version 3 Release 1 or later
 - IBM PC Support/400 Version 2 Release 2 or later

The following sections assume a new installation performed from diskettes or CD-ROM.

2.1 Install PC/3270 for DOS (Entry-Level Mode)

PC/3270 Entry DOS provides a coaxial Control Unit Terminal (CUT) attachment and a Home3270 asynchronous attachment through a protocol converter.

Note that there are HELP panels for every field in the installation and configuration programs (INSTALL, PCSINST and CONFIG).

These panels contain detailed information and we strongly recommend that you read each panel as you go through the configuration process for the first time.

To install PC/3270 Entry DOS:

1. Insert diskette #1 into the A: drive.
2. Type A:\INSTALL at the DOS prompt and press Enter
3. You will see the IBM logo panel and after a few seconds you get the introduction panel, which basically tells you how to use the function keys during the installation/configuration process. Press F8 to follow the configuration panels.

Note: The CD-ROM contains PC/3270 Entry DOS in the \DOS\INSTALL\ENTRYEM directory.

For information on customizing the CUT Connection, refer to 3.1.1, "Configuring PCOMM V4.1 for a CUT Attachment" on page 33.

2.2 Install PC/3270 for DOS (Full-Function Mode)

PC/3270 FF-DOS provides many different types of connection but in this book we discuss only the ones that provide communications for Coax, LAN, and WAN users; they are:

- Distributed Function Terminal (DFT)
- LAN through IEEE 802.2
- LAN through a NetWare-for-SAA gateway
- LAN via TCP/IP (Telnet3270)
- 3174 Peer Communication
- Synchronous Data Link Control (SDLC)
- CCITT X.25 Network

If you are familiar with previous versions of PC/3270 for DOS (Full-Function Mode) installation, Version 4.1 has some enhancements on screens and functions but its installation procedure remains the same. PC/3270 FF-DOS lets you choose from two installation methods:

- *Quick Installation* allows you to install with a minimum of installation steps by using many parameters by default.
- *Flexible Installation* provides you maximum flexibility by allowing you to choose values for nearly all the parameters.

Note that there are HELP panels for every field in the installation and configuration programs (INSTALL, PCSINST and CONFIG). These panels contain many detailed information and we strongly recommend that you read each panel as you go through the configuration process for the first time.

To install PC/3270 FF-DOS:

1. Insert diskette #1 into the A: drive.
2. Type A:\INSTALL at the DOS prompt and press Enter

3. You will see the IBM logo panel and after a few seconds you get the introduction panel, which basically tells you how to use the function keys during the installation/configuration process. Press F8 to follow the configuration panels.

Note: The CD-ROM contains PC/3270 Entry DOS in the \DOS\INSTALL\FULLFUNC directory.

2.3 Install PCOMM for Windows

PC400 V4.1 and PC400 and 3270 V4.1 for Windows are easy-to-install application packages for Microsoft Windows 3.1 or Windows for Workgroups 3.11. Installation and customization are separate functions in PCOMM for Windows, so customization will be dealt with in 2.5, "Customize PCOMM for OS/2 and for Windows" on page 15, and in the next chapters.

If you already have PCOMM V3.0, V3.1, or V4.0 installed, Version 4.1 will assume that you want to install it in the same directory (though you can change that). There is no difference in the format of .WS, .BCH, or .ADU files, so those that you already have will work with PCOMM V4.1.

Note: Do not install PCOMM over an existing version of AS/400 Client Access's PC5250. This causes some inexplicable problems.

PCOMM for Windows V4.1 does not support Microsoft Windows V3.0.

Installation Options in Version 4.1

The installation procedure of PCOMM for Windows provides different parameters for installation on Local Area Networks (LAN). This allows you to install only PCOMM's configuration files on the local PC and then share the program files from an application server. But for a mobile user, we recommend you keep all program files on your own PC. Therefore, PCOMM lets you choose how much of the package to install and from where you install. It can be done from diskettes, CD-ROM, or from a network file server.

During the installation process you are given the following choices:

- If you have the combined package, you can choose to install 3270 or 5250 emulation, or both.
- On all packages, you can choose from the following installation procedures:
 - *Full Installation*, which requires about 11.8 MB disk space; all the files relating to your choice of emulator(s) are installed, including the sample programs, all the PDFs and PDTs, and Help files.
 - *Partial Installation*, which requires 9.2 MB to 11.8 MB; you can choose whether to install the sample programs, any of three groups of PDFs and PDTs, and the Help files.
 - *Minimum Installation*, which requires about 9.2 MB; the sample programs, PDFs and PDTs, and Help files are not installed.

Note that PCOMM for Windows has an excellent Help feature. It provides help information for every field and parameter during the installation process. These panels contain detailed information and we strongly recommend that you read each panel.

To install PCOMM for Windows, perform the following steps:

1. Start Windows and insert diskette #1 into the A: drive.
2. Click on **File** in the Program Manager window and select **Run** to get the Run panel.
3. Type A:\INSTALL and click on **OK**.

The installation process will start and after a few seconds you will see the IBM logo panel. Follow these panels and make your selections on how to install the product.

Note: The CD-ROM contains PCOMM for Windows in the \WIN\INSTALL\EMULATOR directory. You can also use the File Manager to get there and double-click on the INSTALL.EXE.

2.4 Install PCOMM for OS/2

PC400 V4.1 and PC400 and 3270 V4.1 for OS/2 are easy-to-install application packages for an OS/2 Warp environment. Installation and customization are separate functions in PCOMM for OS/2, so customization will be dealt with in 2.5, "Customize PCOMM for OS/2 and for Windows" on page 15 and in the next chapters.

If you already have PCOMM V4.0 installed, Version 4.1 will assume that you want to install it in the same directory (though you can change that); there is no difference in the format of .WS, .BCH, or .ADU files, so those that you already have will work with PCOMM V4.1.

The installation procedure of PCOMM for OS/2 provides different parameters for installation on a LAN. This allows you to install only PCOMM's configuration files on the local PC and then share the program files from an application server. PCOMM for OS/2 is fully CID enabled and can migrate CM/2 configurations. But if you are also a mobile user, we recommend you keep all program files on your own PC. This way, PCOMM will let you choose how much of the package to install and from where you install. It can be done from diskettes, CD-ROM, or from a network file server.

During the installation process you are given the following choices:

- If you have the combined package, you can choose to install 3270 or 5250 emulation, or both.
- On all packages, you can choose to install one of the following:
 - *Full Installation*, which requires about 17.6 MB disk space; all the files relating to your choice of emulator(s) are installed, including the sample programs, all the PDFs and PDTs, Help files, and online publications.
 - *Partial Installation*, which requires 12.2 MB to 17.6 MB; you can choose whether to install the sample programs, any of three groups of PDFs and PDTs, the Help files, and the online publications.
 - *Minimum Installation*, which requires about 12.2 MB; the sample programs, PDFs and PDTs, Help files and online publications are not installed.

Note that PCOMM for OS/2 has an excellent Help feature. It provides help information for every field and parameter during the installation process. These panels contain detailed information that we strongly recommend you read.

To install PCOMM for OS/2, perform the following steps:

1. Open an OS/2 window.
2. Insert diskette #1 into the A: drive.
3. Type A:\INSTALL at the OS/2 prompt and press Enter.

The installation process will start and after a few seconds you will see the IBM logo panel. Follow these panels and make your selections on how to install the product.

Note: The CD-ROM contains PCOMM for OS/2 in the \OS2\INSTALL\EMULATOR directory.

2.5 Customize PCOMM for OS/2 and for Windows

This section provides guidance on customizing Personal Communications Version 4.1 for OS/2 and Windows. For all these products, the customization process is the same, therefore we do not need to explain it in separate sections. If it is necessary to be specific, we are using PCOMM for OS/2 or PCOMM for Windows to differentiate the two environments.

After you have finished the installation process and rebooted your system, you normally get a new program group or folder named Personal Communications with five or more icons in it. This depends on your installation selections and the PCOMM package, as shown in Figure 1 (assuming a new installation of PC400 and 3270 V4.1 for OS/2). If you have migrated from a previous version, you'll find other icons for each migrated Session and Batch procedure, as you had before.

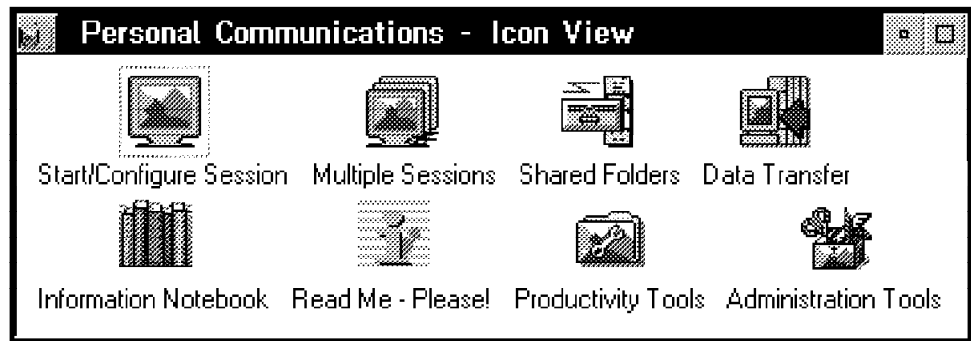


Figure 1. PC400 and 3270 V4.1 for OS/2 Program Folder

To customize PCOMM, we need only the first two icons. Let us briefly describe what these icons are for:

Start/Configure Session

This icon lets you start a single session and opens the Customize Communication panel automatically, as shown in Figure 2 on page 17.

It represents the program PCSWS.EXE, which is used to start and/or create the configuration profile for each host session. When PCOMM was installed the first time, there were no additional session profiles; you must create them by double-clicking on this icon in order to configure your host connections

After you have created a profile, you will be asked to name it. An icon with that name will be added to the program group you choose. This new icon then represents a host session, which is called a WorkStation in PCOMM's terminology. Each host session can be different from others, saved separately in a WorkStation profile (.WS) and can have its own icon. You can start a WorkStation by double-clicking on its icon.

Refer to 2.5.1, "Customize a WorkStation" for further details.

Multiple Sessions

This icon lets you start multiple WorkStation profiles at once. It represents the program PCSBAT.EXE which allows you to start several sessions and other programs at once. This is accomplished by the creation of a Batch program file (.BCH) which will contain commands to start sessions according to specific WorkStation profiles (.WS). Each Batch program file can have an icon identical to the WorkStation icon.

However, you can distinguish the WorkStation icons from the Batch program file icons because the latter will have the title in uppercase while the WorkStation icon will have the title in lowercase, if no description is given. The default icons for the Batch program file can also be distinguished by its multiple (three) displays lying on top of each other. When you double-click on the icon, all the WorkStation (sessions profiles), which are included in the Batch file, will start.

Refer to 2.5.2, "Starting Multiple WorkStations" on page 24 for further details.

2.5.1 Customize a WorkStation

Immediately after installation, you will see the Start/Configure Session icon in the Personal Communications program group. You *must* double-click on that icon in order to start a new WorkStation configuration.

However, if you have preconfigured or migrated WorkStation profiles or Batch program files, just double-click the icons to start them. This should match the configuration you had before. If you want to change any of its definitions, choose **Configure** from the **Communication** pull-down menu at the top of the session window; you will then see the Customize Communication panel, as shown in Figure 2 on page 17.

When you double-clicked on the **Start/Configure Session** icon, you get a blank session window, which will be overlaid by the IBM logo and a Welcome message panel. Click on **OK** to get the Customize Communication panel, which allows you to begin your customization.

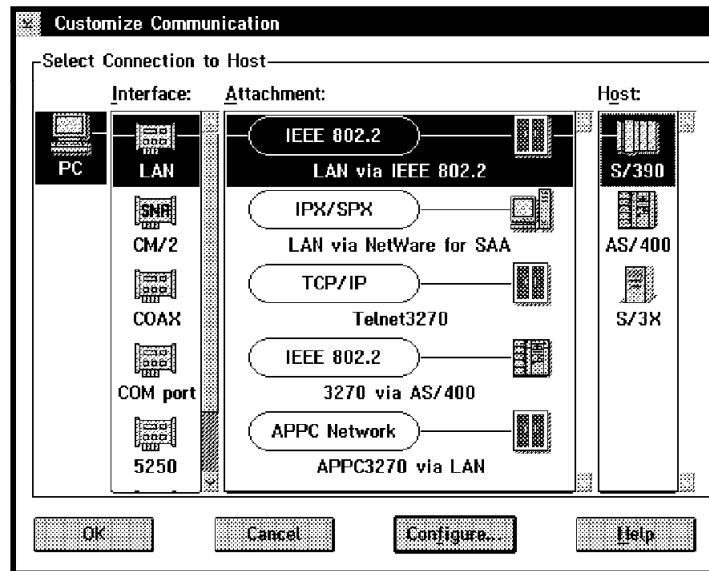


Figure 2. Customize Communication Panel of PC400 and 3270 V4.1

The Customize Communication panel shows you the default configuration of the first possible connection that can be done depending on the communication adapter and device driver already installed. Choose the **Host**, the **Interface**, and the **Attachment** you need, then click on **Configure...**. This takes you to the Customize Communication - 3270 Host panel as shown in Figure 3 on page 18 or to the Customize Communication - 5250 Host panel as shown in Figure 5 on page 19, depending on your host selection.

Note: Once you are familiar with the configuration process of PCOMM, you can directly double-click on the Host and/or Attachment type you want to get these customization panels.

Customize Communication - 3270 Host

The Customize Communication - 3270 Host panel (see Figure 3 on page 18) contains up to four boxes, as follows:

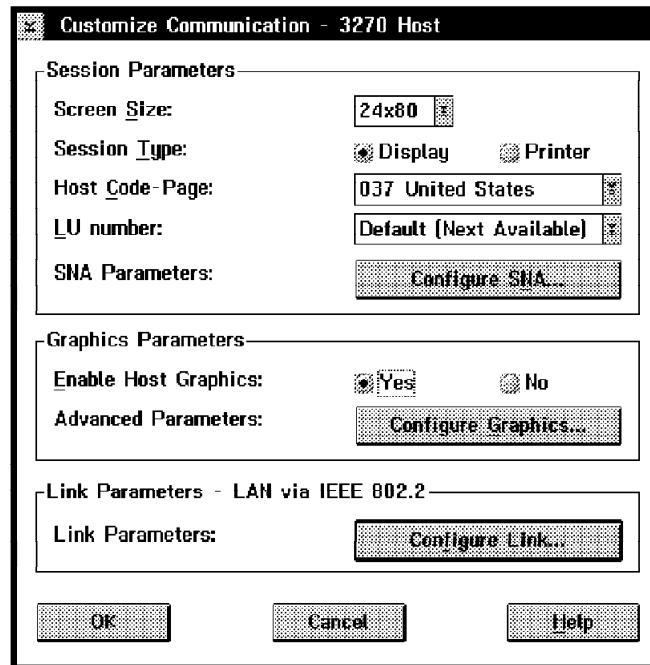
- Session Parameters
- Graphics Parameters
- Link Parameters
- Response Time Monitor Parameters (PCOMM for Windows)

In the Session Parameters box you can specify session characteristics such as Screen Size, Session Type (Display or Printer), Host Code-Page, LU number and the SNA parameters (if you click on **Configure SNA...**).

The LU number is used to correlate this WorkStation profile to a specific LU definition in the host. This is necessary, for instance, if you have a WorkStation session with singular characteristics, such as a printer session, or that predefined LU has unique network access privileges.

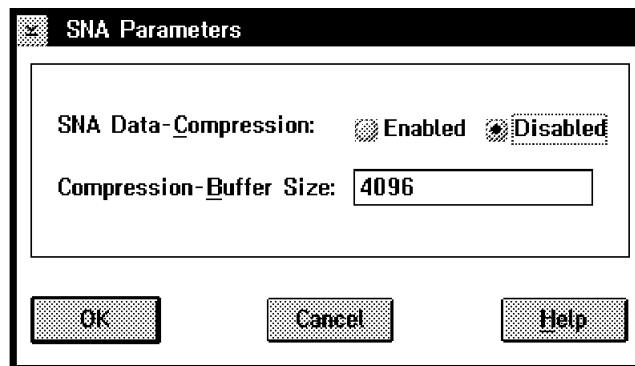
If the host (VTAM and/or NCP) definitions are identical for all LUs in the PU, and all LUs have the same network access privileges, then you can select Default (Next Available) for LU number.

Note: Be aware that the effective LU number (address) used depends on the gateway or controller customization that is mapping sessions of any kind to local addresses.



The 'Customize Communication - 3270 Host' panel is divided into three sections: Session Parameters, Graphics Parameters, and Link Parameters. The Session Parameters section includes fields for Screen Size (24x80), Session Type (Display selected, Printer unselected), Host Code-Page (037 United States), LU number (Default (Next Available)), and a button for SNA Parameters (Configure SNA...). The Graphics Parameters section includes a field for Enable Host Graphics (Yes selected, No unselected) and a button for Advanced Parameters (Configure Graphics...). The Link Parameters section is titled 'Link Parameters - LAN via IEEE 802.2' and includes a button for Link Parameters (Configure Link...). At the bottom are OK, Cancel, and Help buttons.

Figure 3. Customize Communication - 3270 Host Panel



The 'SNA Parameters' panel contains two settings: SNA Data-Compression (Enabled unselected, Disabled selected) and Compression-Buffer Size (4096). At the bottom are OK, Cancel, and Help buttons.

Figure 4. Customize Communication - SNA Parameters Panel

The SNA Parameters lets you enable the SNA Data compression/decompression support. This function is supported for the connection types for which the SNA BIND is handled by the PCOMM V4.1 (DFT, SDLC, X.25 and SNA LAN).

Therefore, SNA data compression/decompression is not supported for the following types of connectivity:

- CUT
- Home3270
- IBM Global Network
- IPX/SPX (NetWare for SAA)
- TCP/IP (Telnet3270)
- APPC3270

The SNA Parameters panel lets you specify the Compression Buffer Size, which is required when using SNA data compression. The proper buffer size is the larger of the maximum RU size specified for inbound or outbound in the session BIND. Notice that if the specified value is not enough for compression/decompression, this function may not be performed.

Customize Communication - 5250 Host

Customize Communication - 5250 Host

Session Parameters

Screen Size: 24x80 [Advanced...]

Session Type: ☒ Display ☐ Printer ☐ Router

Host Code-Page: 037 United States

System Location Name: USIBMRA . RALYAS4A

PC Location Name: USIBMRA . MOBILE

Workstation ID: []

Router-Status Icon: ☒ Show ☐ Hide

User Profile: [Configure User Profile...]

Link Parameters - LAN via IEEE 802.2

Link Parameters: [Configure Link...]

[OK] [Cancel] [Help]

Figure 5. Customize Communication - 5250 Host Panel

The Customize Communication - 5250 Host panel contains up to two boxes, as follows:

- Session Parameters
- Link Parameters

In the Session Parameters box you can specify session characteristics such as Screen Size, Session Type (Display, Printer or Router), Host Code-Page, System Location Name, PC Location Name, Workstation ID and the User Profile (if you click on Configure User Profile).

The names you give the System Location Name and PC Location Name depend on the APPC/APPN terminology of the SNA network. These names consist of the Network Identifier and the Location Name or also known together as the Full Qualified Network Name of the resource, such as a Control Point (CP) or a Logical Unit (LU). The Network Identifier defines the name of your SNA network, where your AS/400 and workstation is located (connected). The Location Name defines the name of your system, the AS/400 system name or the workstation name. It is also known as the Node name or Control Point name.

All these names can have one to eight characters, but note the following:

- The first character must be uppercase alphabetic (A-Z) or a special character (@, #, \$)
- The remaining characters can be alphanumeric (A-Z, 0-9) or special characters (@, #, \$)

The Workstation ID field identifies the session to the AS/400 host system. Normally you can leave this field blank because the AS/400 will create a workstation ID for you. It creates this name by using the logical unit (LU) name and the short session ID. If you want to type in your own workstation ID, it *must* match the workstation definitions at the AS/400 system. Use the same rules as described above.

Enable the User Profile support by clicking on the Configure User Profile bar. This allows you to continue the Logon process automatically with the user-ID and password that are set in the user profile specified.

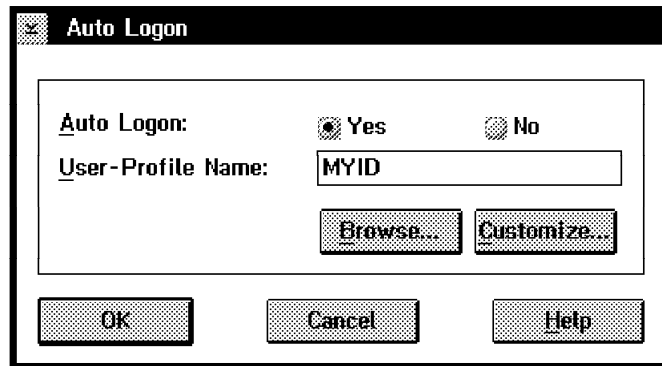


Figure 6. Customize User Profile - Auto Logon Panel

Select **Yes** and enter an User Profile name and then click on **Customize....** This lets you enter your user-ID and password (twice). By saving your user-ID and password in a user profile, PCOMM will not prompt you, to enter them each time you start a session. You will be logged on automatically.

The Link Parameters

On the Customize Communication panels (see Figure 3 on page 18 or Figure 5 on page 19) you will find the Link Parameters box, which allows you to customize the relevant link parameters for your selected attachment type. Details for configuring relevant link parameters for the different attachment types are given in subsequent chapters for a mobile environment. Please refer to the relevant chapter(s) for your attachment type(s).

For example, the LAN via IEEE 802.2 attachment can be a Token-Ring, PC Network, Ethernet or an FDDI connection, depending on the adapter you have installed and how you have configured the LAN Support Program (LSP) or the Microsoft Data Link Control (MSDL) in a DOS/Windows environment or the LAN Adapter Protocol Services (LAPS) or MultiProtocol Transport Services (MPTS) in an OS/2 environment previously.

Saving the WorkStation Profile

Once you make all your changes in the Customize Communication panels, click on the **OK** button until you return to the host session window. Before your configuration is finally closed, you may receive the PCSDLC010 message window, which means the changes to the system settings requires the system to be restarted.

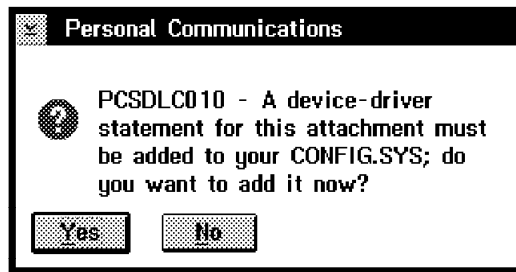


Figure 7. Personal Communications System Setting Message

If you made changes on an existing WorkStation profile or there are no changes that have to do with the system settings, the PCSCC041 message panel appears, as shown below.

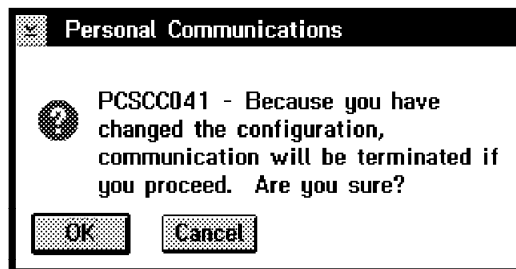


Figure 8. Personal Communications Termination Message

Click on **OK** to terminate your old communication and activate the new setup right now. If you click on **Cancel**, this takes you back to the Customize Communication panel shown in Figure 2 on page 17.

If you have configured a connection which requires changes to the system settings, the PCSDLC010 message panel (Figure 7) asks you whether to change them now. Choose **Yes**, and the settings will be changed. You will be asked to restart Windows as shown in Figure 10 on page 22 or receive a message that you need to shutdown your system and reboot it under OS/2, before your configuration is working.

If you choose **No**, you will receive a stop message panel (PCSDLC011), which tells you to run the Configuration and Program Options Administration Tool to add the required communication driver. It's easier to let the administration program do it for you.

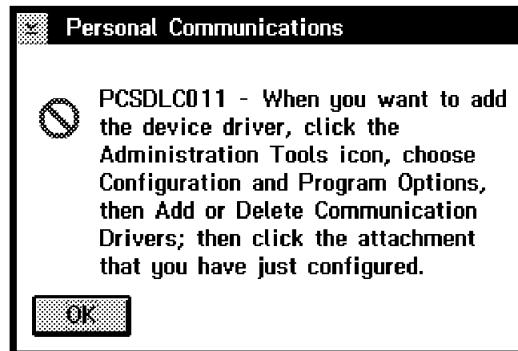


Figure 9. Personal Communications Stop System Setting Message

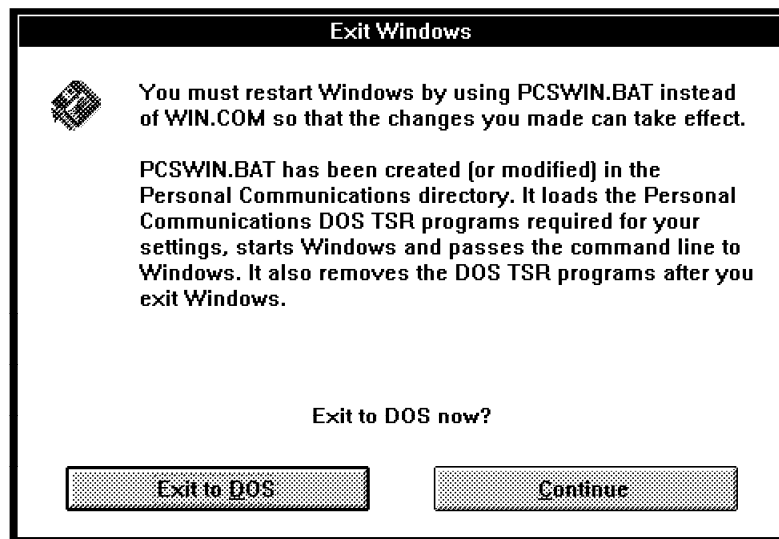


Figure 10. TSR Exit Windows Panel

Important

Do *not* choose the Exit to DOS button or you will be prompted to restart Windows at this time. You have to save your configured WorkStation profile first by clicking on the **Continue** button.

Depending on the type of host connection, you are told, as in the preceding figure, to restart Windows using PCSWIN.BAT instead of WIN.COM, so the required DOS TSR programs can be loaded ahead of Windows.

If you customize the first configuration from the Start/Configure Session icon, the configuration program lets you save the WorkStation profile. If not, choose **File** on the session menu bar of your host session window and click on **Save as...** from the pull-down menu. This lets you also save the new configuration to a WorkStation profile.

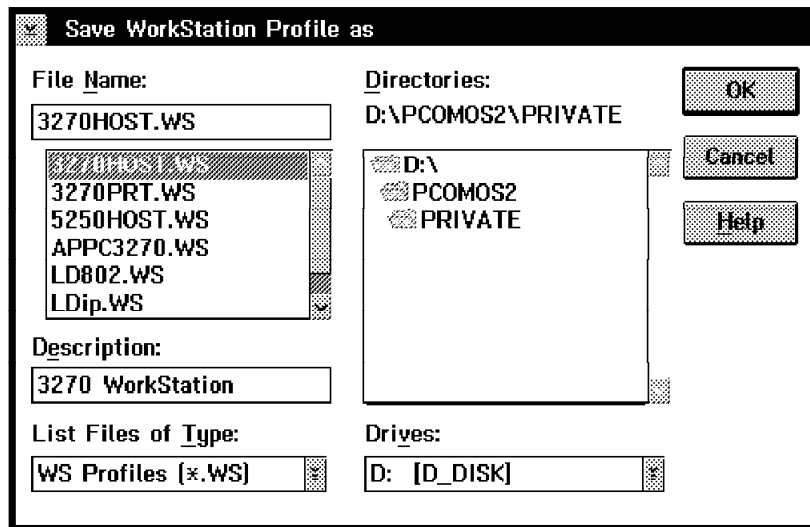


Figure 11. Save WorkStation Profile Panel

Type the name and description of your WorkStation profile, then click on **OK** in order to save it. The following message panel asks whether you want to add the new WorkStation icon to the OS/2 Desktop or the Windows Program Manager.

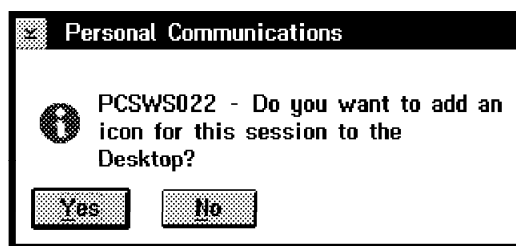


Figure 12. Add WorkStation (Session) Icon to OS/2 Desktop Message

Choose **Yes** and it will be added on the OS/2 Desktop, from here, you can move it anywhere you want. You will receive an information message telling you where the WorkStation profile icon will be.

PCOMM for Windows lets you select a program group for this WorkStation profile icon.

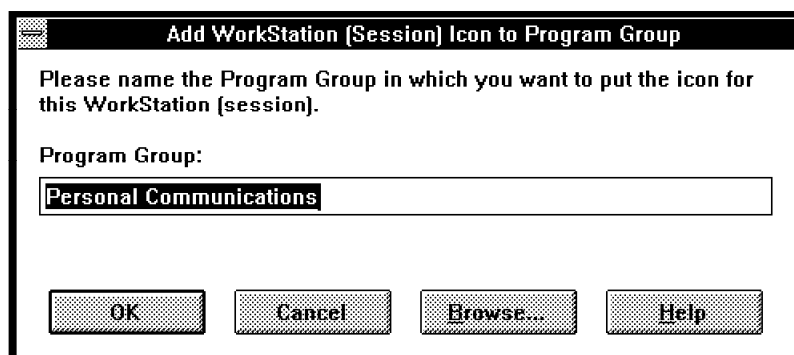


Figure 13. Add WorkStation (Session) Icon to Program Group Panel

Choose the default program group, or type in a new name or select an existing one by clicking on the **Browse** button. After clicking on **OK** an information message appears, which tells you the program group name where the icon for your WorkStation profile will be.

Repeat the steps of this section for each WorkStation (Session) that you want to configure and that has any difference to the previous WorkStation profile.

However, if you want to create another WorkStation that is exactly the same; just start that WorkStation multiple times.

If you want to create another WorkStation that has only one or two parameters different from the original configuration, start the original WorkStation, select **Save As...** from the File pull-down menu and save the profile with a new name. Then go back to change the required parameters and save it again.

Important

Only a WorkStation that does *not* have a specified LU number or Workstation ID can be started more times. This means, the LU number (LU/LT parameter) for 3270 sessions in Figure 3 on page 18 must be at its Default (Next Available) or the Workstation ID field for 5250 sessions in Figure 5 on page 19 must be blank.

2.5.2 Starting Multiple WorkStations

There are different ways to start multiple Personal Communications WorkStation sessions.

- Double-click on your customized **WorkStation** icon to start the first session. Double-click again to start the second WorkStation session and so on. All started sessions are identical. If you have different sessions, they need a WorkStation profile and icon for each session that are different from each other. Double-click on your icons to start the relevant WorkStation sessions.
- If one WorkStation is already active, select **File** on the session menu bar and click on **Run the same** or **Run others...** from the pull-down menu to start more WorkStation sessions.
- If you always need more than one WorkStation session, you can customize a Batch file with the Multiple Sessions icon in the Personal Communications folder or program group. This lets you start several host sessions at one time. Just double-click on your customized Batch file icon to start all desired host sessions simultaneously.

2.5.3 Customize a WorkStation Batch File

A WorkStation Batch file starts several host sessions at once. It is a convenient way to start 3270 and/or 5250 WorkStation sessions under the following circumstances:

- You need more than one session to be started automatically at once.
- You use more than one WorkStation profile.
- The order in which the sessions are started is important, because you have, at least, one profile that uses a specific LU/LT number.

To customize a Batch file, double-click on the **Multiple Sessions** icon. The Batch program starts and shows you the Create/Modify Batch File panel as below.

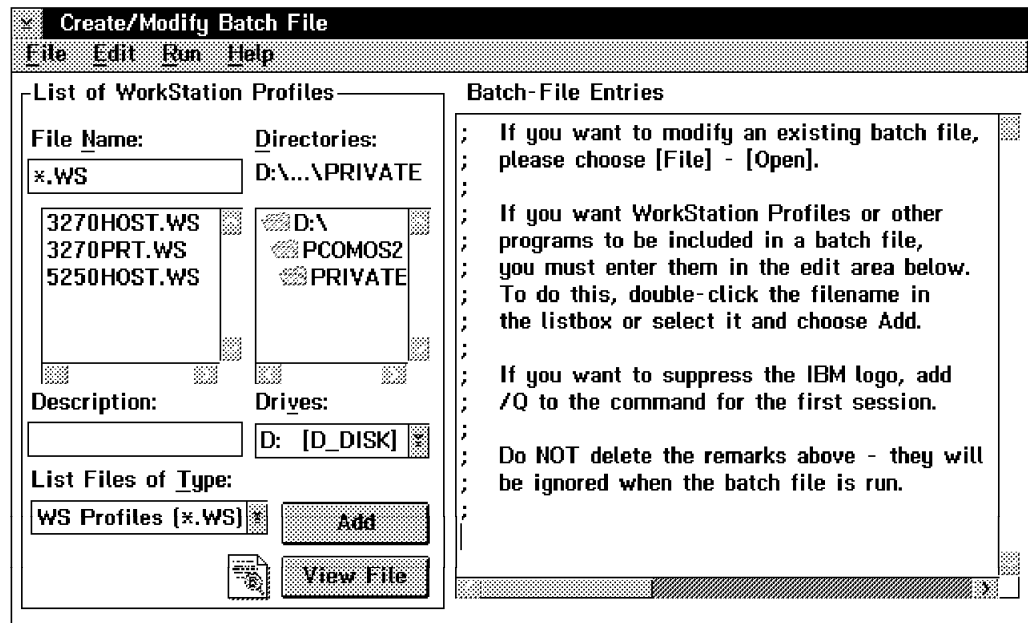


Figure 14. Create/Modify Batch File Panel

The Create/Modify Batch File program (PCSBAT.EXE) provides an improved interface for creating the batch files to allow you to start multiple sessions and applications from a single icon.

In our example, we have three WorkStation profiles called 3270HOST.WS, 5250HOST.WS and 3270PRT.WS (.WS is the default extension for all WorkStation profiles). The 3270PRT.WS WorkStation profile is (must be) LU/LT number dependent for the LU number 03. It has to be the second WorkStation that we start.

First we select the 3270HOST.WS WorkStation profile, that will be a display session for LU number 02. Click on the **Add** button. A configuration line will be added on the right side in the Batch-File Entries box. Now we use the 3270PRT.WS profile for the LU number 03. Click on **Add** again. For the next three sessions, we use the 3270HOST.WS profile; these will have the LU numbers 04, 05 and 06. And for the last two sessions, we want to connect to an AS/400, therefore we use the 5250HOST.WS profile.

Note, there are four methods of including profiles or programs in a batch file; you can use whichever is convenient:

1. Drag-and-drop the file name into the edit area (PCOMM for OS/2)
2. Double-click the file name
3. Click on the file name to highlight it then click on the **Add** button
4. Type the complete command in the edit area

Note: The Workstation-ID field must be blank of the 5250HOST.WS profile so that it can be started twice. If not, it can be used just one at a time, as a dependent WorkStation session.

If you want to see (or edit) a WorkStation profile before you add it, choose the profile and click on **View File** or the icon below the list (it has a blue magnifying glass in it).

If you want to include other programs in the batch file, change the file type and source, then add the programs to the Batch-File Entries box. For example, look for the ZIPPRINT.EXE in your Personal Communications directory.

Some other useful tips to control a Personal Communications WorkStation are as follows:

- The Personal Communications logo is controlled by adding the parameter /Q to the first PCSWS line in the Batch-File Entries box, as follows:
`D:\PCOMOS2\PCSWS.EXE D:\PCOMOS2\PRIVATE\3270HOST.WS /Q`
- If you want a WorkStation session to start as an icon, not as a session window, add the parameter /I to the command that starts it, as follows:
`D:\PCOMOS2\PCSWS.EXE D:\PCOMOS2\PRIVATE\3270PRT.WS /I`
- To start a session with a specific short session ID, insert the parameter /S=a (where a is the short session ID) after PCSWS.EXE in the batch file, as follows:
`D:\PCOMOS2\PCSWS.EXE /S=a D:\PCOMOS2\PRIVATE\3270HOST.WS`
- If you have added ZipPrint without a parameter, it will be enabled for the first 3270 WorkStation session by default. Add the parameter /abc (where abc are the short session IDs) after ZIPPRINT.EXE to enable it for specific short session IDs a, b and c, as follows:
`D:\PCOMOS2\ZIPPRINT.EXE /abc`

The batch files may be shown sequentially in your Batch-File Entries box (see Figure 15) to run four 3270 WorkStation profiles for display sessions, one WorkStation profile for a 3270 printers session and two 5250 WorkStation profiles for display sessions from an AS/400.

```
D:\PCOMOS2\ZIPPRINT.EXE /abc
D:\PCOMOS2\PCSWS.EXE D:\PCOMOS2\PRIVATE\3270HOST.WS /Q
D:\PCOMOS2\PCSWS.EXE /S=p D:\PCOMOS2\PRIVATE\3270PRT.WS /I
D:\PCOMOS2\PCSWS.EXE D:\PCOMOS2\PRIVATE\3270HOST.WS
D:\PCOMOS2\PCSWS.EXE D:\PCOMOS2\PRIVATE\3270HOST.WS /I
D:\PCOMOS2\PCSWS.EXE D:\PCOMOS2\PRIVATE\3270HOST.WS /I
D:\PCOMOS2\PCSWS.EXE /S=e D:\PCOMOS2\PRIVATE\5250HOST.WS
D:\PCOMOS2\PCSWS.EXE /S=f D:\PCOMOS2\PRIVATE\5250HOST.WS /I
```

Figure 15. Create/Modify Batch File Sample

The following will happen when you start that example;

- ZipPrint is enabled for 3270 session a, b and c (not for d and p).
- You get four 3270 WorkStation sessions, two of them will be started as icons.
- The 3270 printer session will be assigned to short session ID p.
- You get two 5250 WorkStation sessions that always have the short session IDs e and f. Session f will be started as an icon.

Important

To have a logical link to a S/390 and to an AS/400 host system, it is required to set the Link Station Count parameter to a minimum of two. To do that,

1. Select **Configure Link** from Customize Communication panel
 - See Customize Communication - 3270 panel in Figure 3 on page 18
 - See Customize Communication - 5250 panel in Figure 5 on page 19
2. Click on **Advanced...** in the IEEE 802.2 Link Parameter panel
3. Set Link Station Count parameter bigger than 1

To save this WorkStation Batch File, select **File** on the menu bar and choose **Save as...** from the pull-down menu.

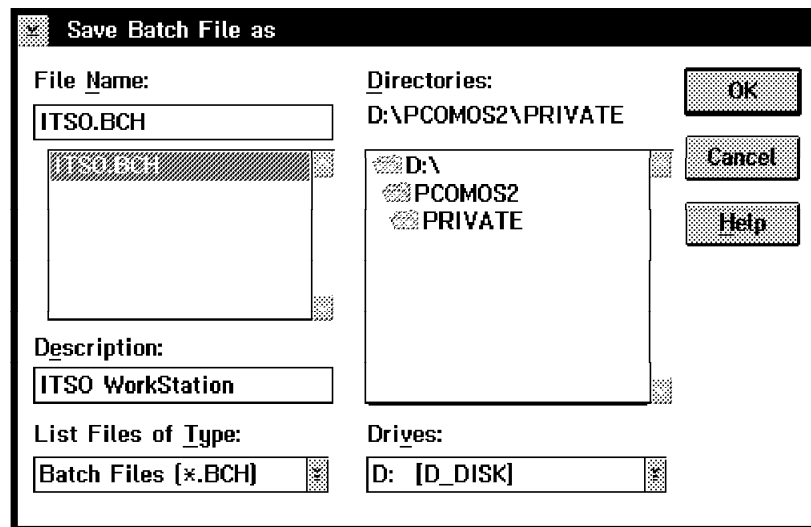


Figure 16. Save WorkStation Batch File Panel

The Save Batch file as panel opens and lets you enter the name and description for this new Workstation Batch file, then click on **OK** to save it. The name extension for a WorkStation Batch file is .BCH.

When you clicked the **OK** button a message panel asks whether you want to add the new Batch File icon to the OS/2 Desktop or Windows Program Manager.

Choose **Yes** (Figure 17 on page 28) and it will be added on the OS/2 desktop, where you can move it wherever you want. You will receive an information message telling you where the WorkStation Batch file icon will be.



Figure 17. Add WorkStation Batch File Icon to OS/2 Desktop Message

PCOMM for Windows lets you select a program group for this WorkStation Batch file icon.

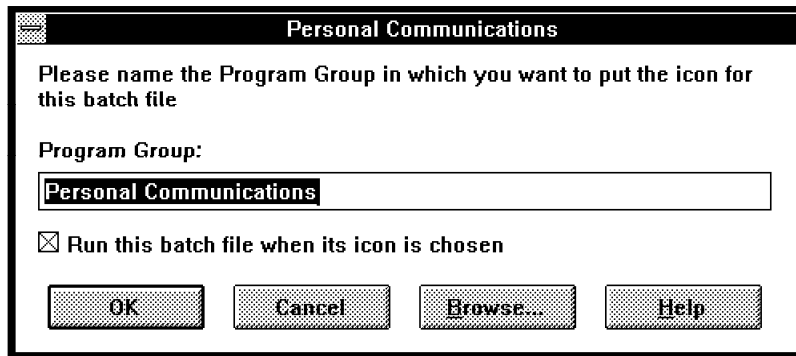


Figure 18. Program Group for the WorkStation Batch File Icon Panel

Choose the default program group, type in a new name, or select an existing one by clicking on the **Browse** button. After clicking on **OK** an information message appears, which tells you where the icon for your WorkStation Batch file will be.

Note the X in the check box of this panel to Run this batch file when its icon is chosen. It starts the sessions specified in the PCSBAT batch file. If you remove this X, the PCSBAT.EXE opens its own panel as shown in Figure 14 on page 25.

You can create as many batch files as you like. You can edit them and mix WorkStation profiles to match your needs. You can also include other applications, in the Batch file, which need to communicate with the WorkStation via DDE, HLLAPI or whatever you want.

2.5.4 How to Start PCOMM Automatically

To start a PCOMM for OS/2 WorkStations automatically when OS/2 starts, follow these steps:

1. Open the Startup folder of OS/2.
2. Either move or copy the WorkStation profile or Batch file icon into the Startup folder. Pressing the Ctrl and Shift keys when moving the icon creates a shadow of the original icon in the Startup folder.

To start a PCOMM for Windows WorkStations automatically when Microsoft Windows 3.1 starts, follow these steps:

1. Double-click on the AutoStart program group icon.
2. Either move or copy the Workstation profile or Batch file icon into the AutoStart program group.

Part 2. Coax Connection

This second part of this book describes Coax connections, performed with the Personal Communications family of products in a Coax environment.

Chapter 3. Coaxial Connections

A PCOMM V4.1 workstation equipped with a 3270 emulation adapter supports the following types of attachment via coax cable:

1. Control Unit Terminal (CUT)

PCOMM V4.1 configured for a CUT attachment can connect to the following machines:

- 3174/3274
- 3814
- 5209
- 4331 DPA, 4361 DPA/WSA
- 9370 WSS
- 9221 WSS
- 470X

This type of attachment is discussed in 3.1, "Control Unit Terminal Mode" on page 32.

2. Distributed Function Terminal (DFT)

PCOMM V4.1 configured for DFT attachment can connect to the following machines:

- 3174/3274
- 4361 WSA
- 9221

This type of attachment is discussed in 3.2, "Distributed Function Terminal Mode" on page 36.

3. LAN via 3174 Peer Communication

This is only supported by the IBM 3174 Establishment Controller.

This type of attachment is discussed in 3.4, "LAN Attachment via 3174 Peer Communication" on page 42.

As far as VTAM is concerned, there is no difference between a CUT and a DFT terminal. The two modes of operation (CUT and DFT) have to do with the involvement of the control unit to which the workstation is attached to, how you change from one session to another (if the coax port you are attached to is configured for MLT), and how PCOMM V4.1 presents the session to you.

Note: Multiple Logical Terminal: The 3174 supports up to five logical terminals (sessions) per coaxial port for both CUT and DFT modes. The 3274 can support up to five sessions per coaxial port in DFT mode or up to two sessions in CUT mode, if the proper microcode level is installed on the machine (DFT support and Dual Logic for CUT).

For a CUT terminal, all functions are performed by the control unit. For a DFT terminal, the functions are performed by the terminal itself. For both the CUT and the DFT scenarios, the connection diagram can be represented by Figure 19 on page 32, where a 3174 is used as a terminal controller. Other controllers might be used instead.

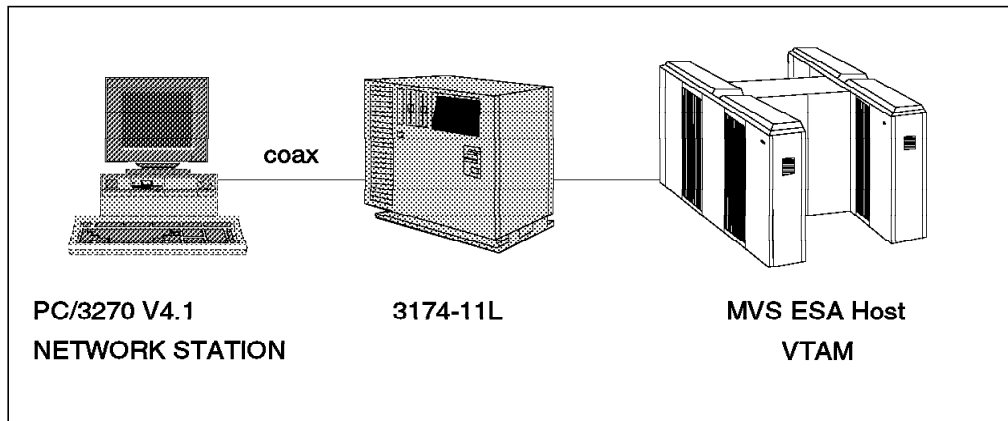


Figure 19. CUT/DFT Connection to a Channel-Attached 3174-11L Establishment Controller

If you are making a CUT connection, continue here. If you are establishing a DFT connection, proceed to 3.2, “Distributed Function Terminal Mode” on page 36.

3.1 Control Unit Terminal Mode

For the CUT connection, a PC or PS/2 without Micro Channel requires the IBM PC 3278/79 Emulation Adapter. A Micro Channel PS/2 requires the IBM 3270 Connection adapter.

You can have up to five sessions (depending on the control unit type and how MLT was customized) with a single 3270 Connection Adapter/A (MC systems) or with the Advanced 3278/79 Emulation Adapter for PCOMM V4.1 for DOS Entry-Level Mode, Windows 3.1, or OS/2 environments. Only one adapter is supported with CUT connection in DOS (Entry-Level Mode).

In Windows 3.1 and OS/2, you get only a single session window (WorkStation) for a CUT attachment, but you can use all logical terminals (sessions) by pressing the Ctrl and Page Up keys.

CUT support is standard with 3174 Establishment Controllers and 3274 Control Units. (The term *control units* is used to refer to both the 3174 and 3274 generically.)

In Figure 19, a PCOMM V4.1 workstation has a single IBM 3270 Connection adapter, connected by a coax cable to a port on a 3174-11L Establishment Controller. The 3174-11L is channel-attached to an S/370 host. The PCOMM V4.1 workstation will have five sessions to the S/370 host.

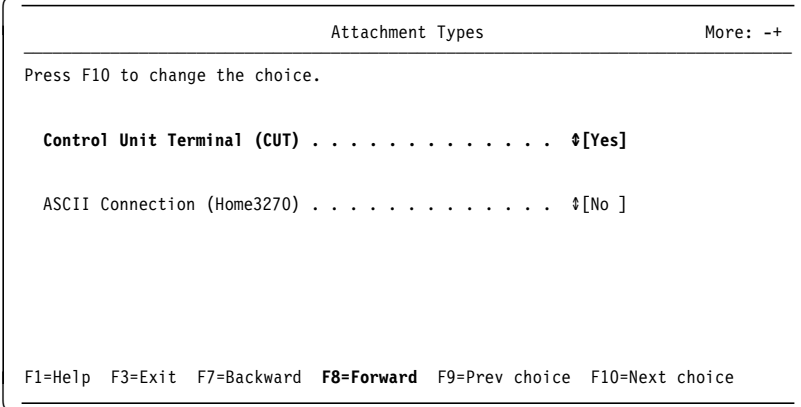
For this example, we need to do the following:

- Configure the PCOMM V4.1 workstation to connect to the 3174-11L coax port in CUT mode.
- Customize the 3174-11L to assign five logical-terminal addresses (sessions) to the coaxial port the PCOMM V4.1 workstation is attached to, and define the corresponding LUs in VTAM. This means the existing VTAM major node may need to be changed if the LUs corresponding to the PCOMM V4.1 workstation CUT sessions were not previously coded.

3.1.1 Configuring PCOMM V4.1 for a CUT Attachment

DOS Configuration

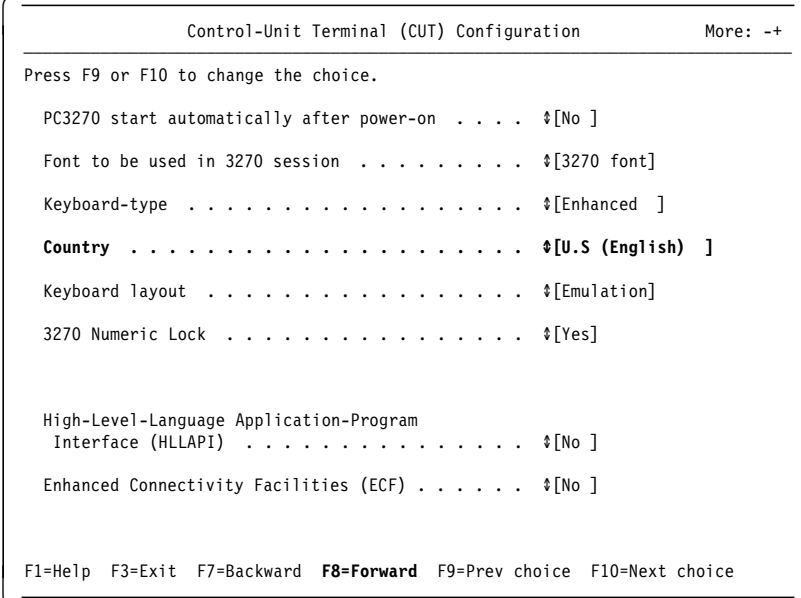
For the CUT attachment, you use the PCOMM V4.1 for DOS (Entry-Level Mode) diskette if you aren't running under Windows 3.1 or OS/2. Refer to Chapter 2, "Installation and Customization" on page 11 for further detailed information about the installation. In this chapter, we show only the relevant CUT attachment panels or windows.



The screenshot shows a window titled "Attachment Types" with a "More: -+" button in the top right corner. Below the title bar, it says "Press F10 to change the choice." There are two menu items: "Control Unit Terminal (CUT) ⚡[Yes]" and "ASCII Connection (Home3270) ⚡[No]". At the bottom, a status bar lists function key shortcuts: "F1=Help F3=Exit F7=Backward **F8=Forward** F9=Prev choice F10=Next choice".

Figure 20. Attachment Types Panel - CUT Attachment to 3174-11L - for DOS (Entry-Level Mode)

Select **Yes** for Control Unit Terminal (CUT) if your workstation is attached by a coax cable and you want to work in CUT mode. Select **No** for an ASCII connection. Pressing F8 now will take you to the Control-Unit Terminal (CUT) Configuration panel.



The screenshot shows a window titled "Control-Unit Terminal (CUT) Configuration" with a "More: -+" button in the top right corner. Below the title bar, it says "Press F9 or F10 to change the choice." There are several menu items: "PC3270 start automatically after power-on ⚡[No]", "Font to be used in 3270 session ⚡[3270 font]", "Keyboard-type ⚡[Enhanced]", "**Country** ⚡[U.S (English)]", "Keyboard layout ⚡[Emulation]", "3270 Numeric Lock ⚡[Yes]", "High-Level-Language Application-Program Interface (HLLAPI) ⚡[No]", and "Enhanced Connectivity Facilities (ECF) ⚡[No]". At the bottom, a status bar lists function key shortcuts: "F1=Help F3=Exit F7=Backward **F8=Forward** F9=Prev choice F10=Next choice".

Figure 21. CUT Configuration Panel - CUT Attachment to 3174-11L - for DOS (Entry-Level Mode)

On the CUT Configuration panel you select start options, the font to use for the display and the appropriate option for your country configuration. Note that the selected country *must* match your answer to the 3174 customization question #121 (see the 3174 Establishment Controller Planning Guide, GA27-3918 to know how this question must be answered).

The Host-Connected keyboard can be customized in the Keyboard Type field. If you want to select Host Connected in this field for France, Italy or United Kingdom, the Country field *must* be set to *France #189*, *Italy #142* or *United Kingdom #166* respectively.

Windows and OS/2 Configuration

The following section pertains to Microsoft Windows as well as OS/2. The way the configuration is done is the same in both environments and the VTAM definitions are used for both as well.

For the CUT customization under Windows 3.1 and OS/2, click on **Communication** in the menu bar of your workstation window (host session) and then, click on **Configure** in the displayed pull-down menu to get the window shown in Figure 22.

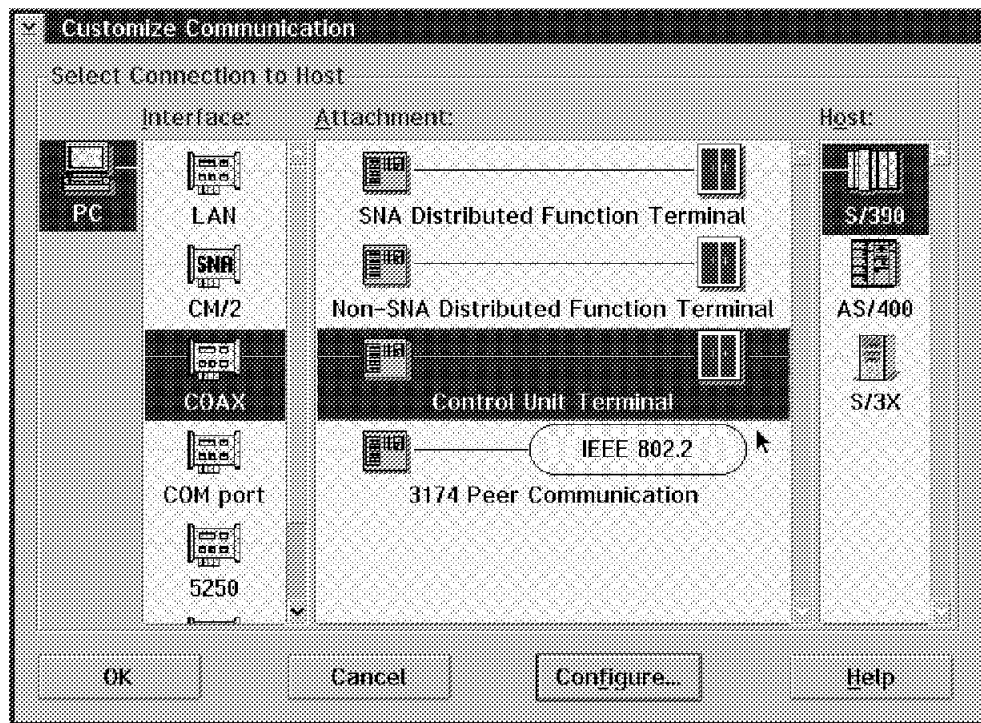


Figure 22. Customize Communication-CUT Attachment to 3174-11L

The Customize Communication window is quite different and much simpler for Windows 3.1 or for OS/2 than in the DOS(Entry-Level Mode) environment. Choose **COAX** under Interface and **Control Unit Terminal** under Attachment as shown in Figure 22, then click on **Configure...** to get the Customize Communication-3270 Host window (see Figure 23 on page 35).

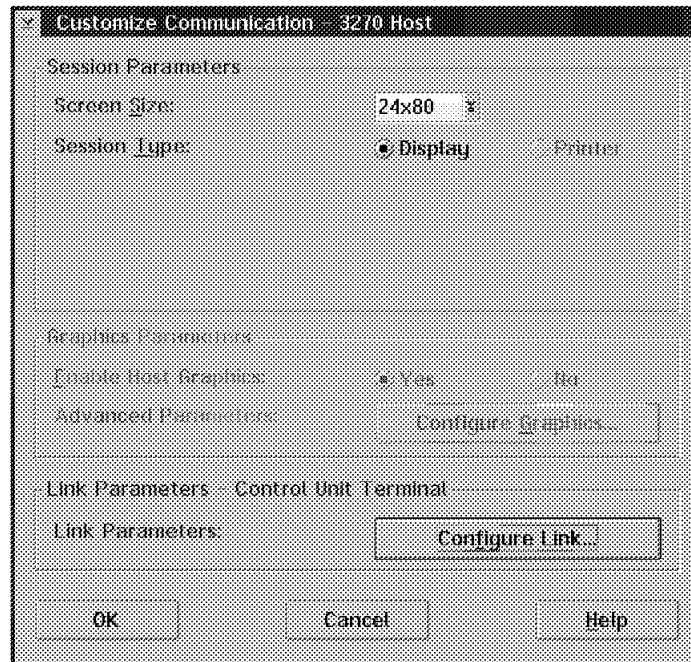


Figure 23. Customize Communication - 3270 Host Panel

Click on **Configure Link...** in the Link Parameters box to get the Control Unit Terminal panel shown in Figure 24.

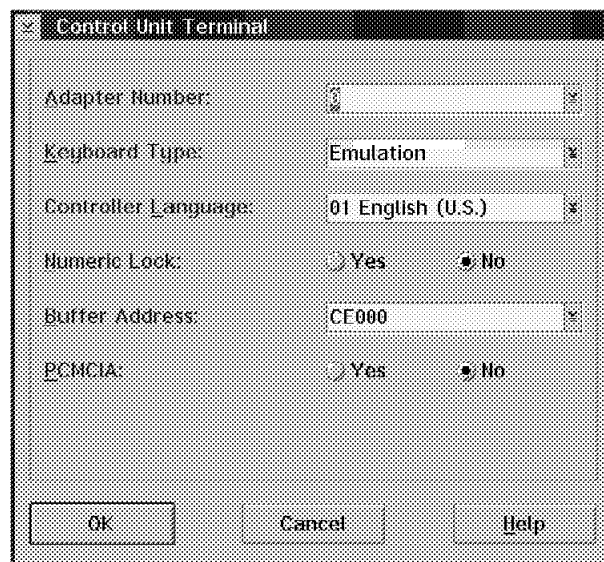


Figure 24. Control Unit Terminal Panel

In the window shown in Figure 24, you can select the adapter number you are using for the CUT connected session(s) (0 is the first 3270 adapter). Only the 3278/3279 Emulation mode is supported for the keyboard type. Only U.S. English is supported for the controller language. Attached controller language is shown in the control unit's customization question #121.

The PCOMM V4.1 workstation may be seen by the host as a group of LUs belonging to a 3174 or 3274 control unit. This group can have up to five LUs (sessions or logic terminals), depending on the MLT support and customization of the 3174/3274 control unit.

In this example of a channel-attached control unit, the PU and the LU(s) are defined in a VTAM local SNA major node definition, as shown in Figure 32 on page 42. If the 3174 or 3274 were remotely attached via a leased line to a 37xx Communication Controller, the PU and LU(s) would be defined in the corresponding NCP.

The PCOMM V4.1 workstation is able to run up to five sessions in CUT mode emulating a 3178, 3179, 3278 Model 2, or 3279 Model S2A. These sessions have to be correlated to the LUs defined in the VTAM local SNA major node definition for the 3174. Mapping the workstation sessions to the VTAM LU is performed when customizing the port on the 3174 to which the workstation is attached. See Figure 31 on page 41 for details.

3.2 Distributed Function Terminal Mode

For a DFT connection, a PC or PS/2 without Micro Channel requires the IBM PC 3278/79 Emulation Adapter. A Micro Channel PS/2 requires the IBM 3270 Connection adapter. The latest version of the 3270 Connection adapter allows up to four adapters to be configured in a single PS/2.

Up to five host sessions are available on a single 3270 Connection Adapter/A (MC systems). With the Advanced 3278/79 Emulation Adapter, a maximum of eight sessions are available on a PCOMM V4.1 workstation in DOS (Full-Function mode) or 20 sessions in Windows 3.1 and OS/2.

In Windows 3.1 and OS/2, you get a host window (WorkStation) for each session through the DFT attachment. To jump between sessions, press the Alt+Page Up keys.

DFT support is standard with 3174 Establishment Controllers. It is an optional feature available on most 3274 Control Units. (The term *control units* is used to refer to both the 3174 and 3274 generically).

PCOMM V4.1 supports DFT connection to both SNA and non-SNA control units, either locally attached (channel-attached) or remotely attached to a host, using BSC or SDLC protocols.

In Figure 19 on page 32, a PCOMM V4.1 workstation has a single IBM 3270 Connection adapter, connected by a coax cable to a port on a 3174-11L Establishment Controller. The 3174-11L is channel-attached to an S/370 host. The PCOMM V4.1 workstation will have five sessions, the maximum number that is available through a single port in DFT mode, to the S/370 host.

For this example, we need to do the following:

- Configure the PCOMM V4.1 workstation coaxial connection for DFT mode.
- Customize the 3174-11L to assign five logical terminals (sessions) to the port the PCOMM V4.1 workstation is attached to.
- Alter the existing local SNA major node in VTAM (if necessary) to provide LUs corresponding to the logical terminals defined in the 3174 customization.

3.2.1 Configuring PCOMM V4.1 for DFT Connection

DOS configuration

Step through the installation (install program) or configuration (CONFIG program) until you get to the Attachment Types panel shown in Figure 25.

```
Attachment Types                                     More: -+
-----
Enter the number of sessions you want to use.

Total number of sessions for:

  Distributed Function Terminal (DFT) . . . . . [5]
  LAN via 802.2 protocol . . . . . [0]
  LAN via NETBIOS . . . . . [0]
  LAN via TCP/IP (Telnet 3270 Attachment) . . . . . [0]
  LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment) . . . . [0]
  3174 Peer Communication . . . . . [0]
  Synchronous Data Link Control (SDLC) . . . . . [0]
  Asynchronous Data Link Control (ASYNCH) . . . . . [0]
  SNA over Async . . . . . [0]
  Hayes Autosync . . . . . [0]
  CCITT X.25 Network (X.25) . . . . . [0]

F1=Help F3=Exit F7=Backward F8=Forward
```

Figure 25. Attachment Types - DFT Attachment to 3174-11L for DOS (Full-Function Mode)

Having selected our number of sessions, pressing F8 takes us to the Advanced Options for DFT Attachment panel on PCOMM V4.1 for DOS (Full-Function Mode).

```
Advanced Options for DFT Attachment                     More: -+
-----
Press F9 or F10 to change the choice.

  Total number of DFT sessions . . . . . five
  Adapter number . . . . . 0
  Number of sessions for this adapter . . . 5
  Protocol . . . . . SNA
  Adapter buffer address . . . . . CE00
  Use 3270 Credit Card Adapter . . . . . No

F1=Help F3=Exit F7=Backward F8=Forward F9=Prev choice F10=Next choice
```

Figure 26. Advanced Options for DFT Attachment for DOS (Full-Function Mode)

There is actually little configuration required for a DFT attachment. If there is more than one adapter, the number of sessions for each adapter *must* be entered. The protocol can be changed here to non-SNA if the link between the control unit and the host is BSC or if a non-SNA local terminal is required.

Windows and OS/2 Configuration

The following section pertains to Microsoft Windows 3.1 as well as OS/2. The way the configuration is done is the same in both environments and the VTAM definitions are used for both as well.

Let's look at the DFT customization under Windows 3.1 and OS/2. To get the window shown in Figure 27, click on **Communication** in the menu bar of your workstation window (host session) and then, click on **Configure** in the displayed pull-down menu.

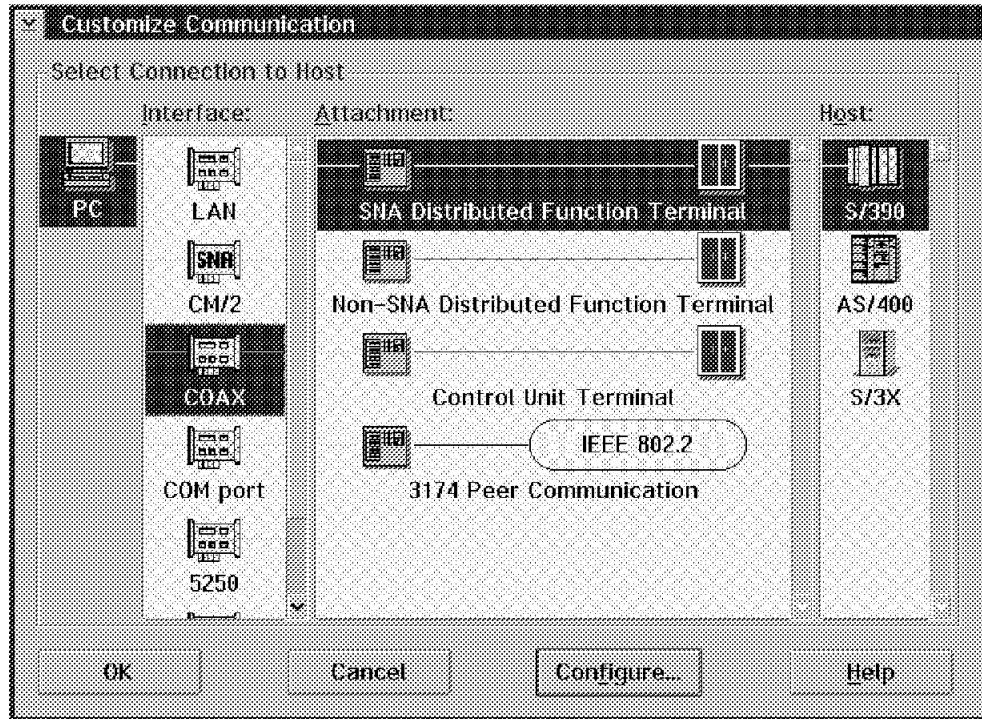


Figure 27. DFT Attachment to 3174-11L

To configure the DFT attachment in Windows 3.1 and OS/2, do the following:

1. Choose **COAX** under Interface in Figure 27.
2. Select **SNA Distributed Function Terminal** or **Non-SNA Distributed Function Terminal** under Attachment.
3. Select **S/390** under Host.
4. Click on **Configure...**, which takes us to the Customize Configuration-3270 Host window shown in Figure 28 on page 39.

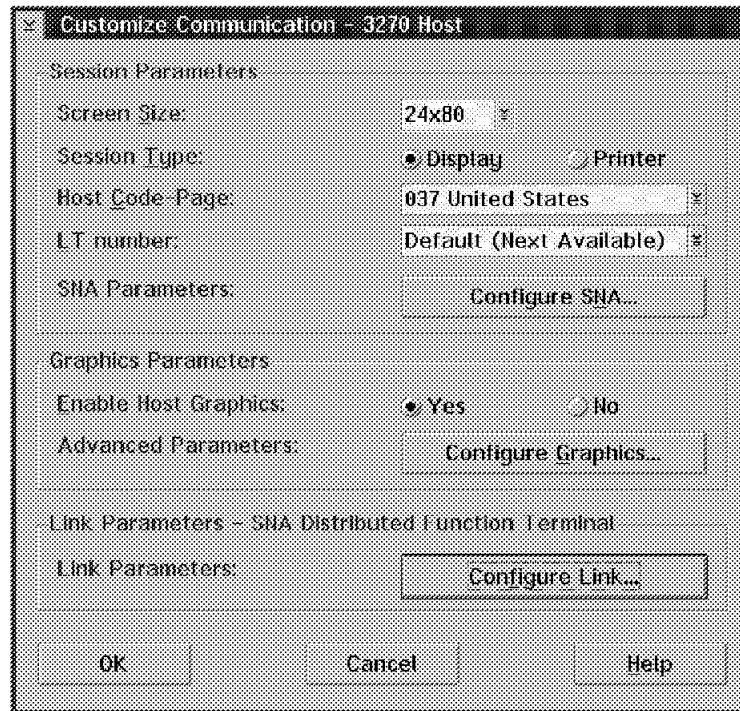


Figure 28. Customize Configuration -3270 Host window - DFT attachment

5. Click on **Configure Link...** in the Link Parameters box to get the SNA Distributed Function Terminal window shown in Figure 29.

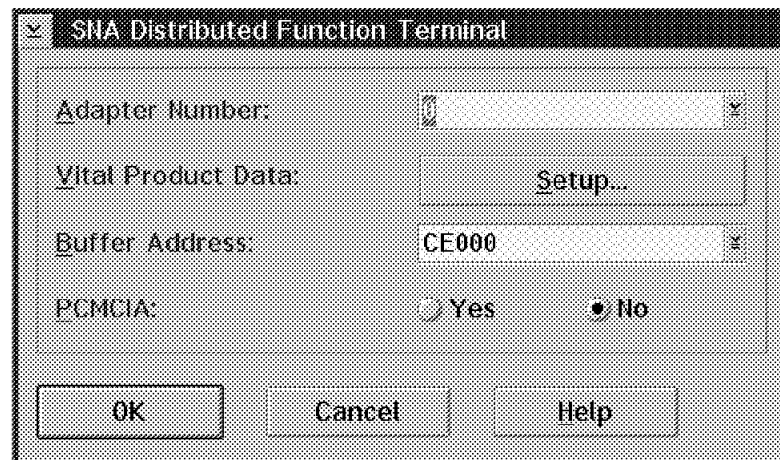


Figure 29. DFT Link Parameters - SNA/Non-SNA DFT Attachment

On the window shown in Figure 29, you can select the adapter number you are using (0 is the first 3270 adapter). If you want to enter the Vital Product Data click on **Setup....** to get the Vital Product Data window shown in Figure 30 on page 40.

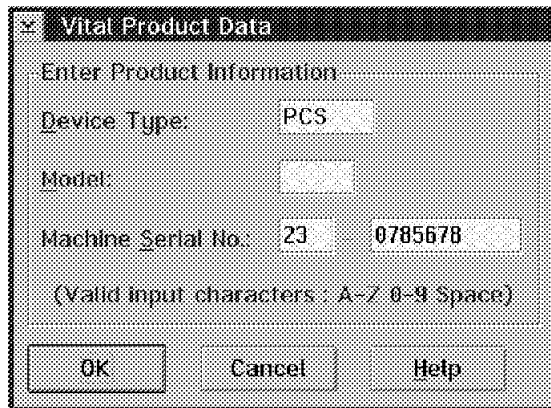


Figure 30. DFT Link Parameters Window - Vital Product Data

The PCOMM V4.1 sessions are seen by the host by a number of LUs belonging to the 3274 or 3174 control unit (PU). In this example of a channel-attached control unit, the PU and LUs are defined in a VTAM local SNA major node, as shown in Figure 32 on page 42. If the 3174/3274 were remotely connected via a leased line to a 37xx Communication Controller, the PU and LUs would be defined in the corresponding NCP.

The five sessions defined in the workstation for DFT attachment have to be correlated to the LUs defined in the VTAM local SNA major node definition for the 3174. Mapping the workstation sessions to the VTAM LUs is performed when customizing the port on the 3174 to which the workstation is attached.

3.2.2 Special Considerations for DFT Connection

Pay special attention to the DFT configuration when using a DFT attachment under Microsoft Windows 3.1 standard mode.

When you open a DOS box while making a connection to the host via a DFT attachment under Windows in standard mode, the connection between the workstation and the control unit may be disconnected with Machine Check 207.

The DFT protocol handlers (PCSCNDFT.DLL for non-SNA, PCSCSDFT.DLL for SNA) are implemented as protected mode Windows applications. Therefore, when the DOS box is opened while running Windows in standard mode, all modules residing in protected mode are swapped out. The DFT protocol handlers are also swapped out. When any outbound data comes to the workstation while opening the DOS box, no one analyzes it and the workstation cannot respond to the control unit in time. The control unit detects the device time out and the interface is disconnected with Machine Check 207.

Note: Do not open the DOS box while running Windows in standard mode. If your machine is a 386 or 486 CPU, run Windows in enhanced mode.

Additionally, if you have a 3174 with Configuration Support B or higher, you can set the following parameters.

- Set 3174 customization of Q126 digit 2 = 1 (changes COAX timeout from 50 to 100 microseconds).
- Set 3174 customization of Q125 digit 4 = 1 (command chaining off).

For more information please refer to the *3174 Establishment Controller Planning Guide*, GA27-3918.

When PCOMM V4.1 is customized for DFT communications attachment, the following features and capabilities of the IBM 3274 or IBM 3174 Control Units are not supported:

- Attachment to port 0 of the 3274
- Database operations
- 3270 Diagnostic Reset Dump
- Patch facility

The following features and capabilities of the IBM 3278 and IBM 3279 Display Stations and the IBM 3287 Printer are not supported:

- Subsystem Local Copy

This function is emulated and directed to the printer that is directly attached or redirected at the workstation.

3.3 Customizing the 3174-11L (CUT/DFT)

_____ 117: Port Assignment _____

Host addresses							Host addresses						
Port	IS	1	2	3	4	5	Port	IS	1	2	3	4	5
26-00	2	002	018	_____	_____	_____	26-01	2	003	019	_____	_____	_____
26-02	2	004	020	031	032	033	26-03	2	005	021	_____	_____	_____
26-04	2	006	022	_____	_____	_____	26-05	2	007	023	_____	_____	_____
26-06	2	008	024	_____	_____	_____	26-07	2	009	025	_____	_____	_____
26-08	2	010	026	_____	_____	_____	26-09	2	011	027	_____	_____	_____
26-10	2	012	028	_____	_____	_____	26-11	2	013	029	_____	_____	_____
26-12	2	014	030	_____	_____	_____	26-13	2	015	_____	_____	_____	_____
26-14	2	016	_____	_____	_____	_____	26-15	2	017	_____	_____	_____	_____
26-16	0	_____	_____	_____	_____	_____	26-17	0	_____	_____	_____	_____	_____
26-18	0	_____	_____	_____	_____	_____	26-19	0	_____	_____	_____	_____	_____
26-20	0	_____	_____	_____	_____	_____	26-21	0	_____	_____	_____	_____	_____
26-22	0	_____	_____	_____	_____	_____	26-23	0	_____	_____	_____	_____	_____
26-24	0	_____	_____	_____	_____	_____	26-25	0	_____	_____	_____	_____	_____
26-26	0	_____	_____	_____	_____	_____	26-27	0	_____	_____	_____	_____	_____
26-28	0	_____	_____	_____	_____	_____	26-29	0	_____	_____	_____	_____	_____
26-30	0	_____	_____	_____	_____	_____	26-31	0	_____	_____	_____	_____	_____

Select Test; press ENTER ==>

PF: 3=Quit 7=Back 8=Fwd 12=Test Menu

Figure 31. 3174 Configuration Panel - Question 117

When customizing the 3174, question 117 is where you assign the LUs defined in the VTAM definition to ports on the 3174. In our example, the PCOMM V4.1 workstation is attached to physical port 26-02. We assigned five host addresses to port 26-02, using the LOCADDRs to map the five VTAM LUs to the five DFT (or CUT) sessions on the workstation.

3.3.1 VTAM Definitions for 3174-11L (CUT/DFT)

```
*****
*          LOCAL 3174-11L DEFINITIONS FOR TYPE 2.0          *
*****
RAIQ40Z VBUILD TYPE=LOCAL
RAIP40  PU      CUADDR=E40, ISTATUS=ACTIVE, PUTYPE=2, MAXBFRU=10,
              MODETAB=AMODETAB, DLOGMOD=M2SDLCQ, USSTAB=US327X,
              VPACING=0, XID=YES, DYNLU=YES
RAIT400 LU      LOCADDR=2
RAIT401 LU      LOCADDR=3, MODETAB=MTJS328X, DLOGMOD=SCS3262
RAIT402 LU      LOCADDR=4, LOGAPPL=RAIAN
RAIT403 LU      LOCADDR=5
RAIT404 LU      LOCADDR=6
RAIT405 LU      LOCADDR=7
RAIT406 LU      LOCADDR=8
RAIT407 LU      LOCADDR=9
RAIT408 LU      LOCADDR=10
              :
RAIT418 LU      LOCADDR=20
              :
RAIT429 LU      LOCADDR=31
RAIT430 LU      LOCADDR=32
RAIT431 LU      LOCADDR=33
```

Figure 32. VTAM Local SNA Definition of 3174 Controller

The five LUs highlighted in this definition will be used for the five DFT (or CUT) sessions defined in the workstation. Note the LOCADDR (local address) parameter for each LU. These addresses will be used when customizing the 3174.

3.4 LAN Attachment via 3174 Peer Communication

When using 3174 Peer Communications the physical medium is coax and the physical adapter is a 3270 type adapter, but the LLC layer of the DLC is IEEE 802.2. For this reason, we will cover the IEEE 802.2 protocol in Chapter 4, "Local Area Network Connections" on page 63.

An overview of the 3174 Peer Communication feature and the customization for PCOMM V4.1 connected via 3174 Peer Communication (LAN via coax) is discussed in this chapter.

3.4.1 Overview

The 3174 Peer Communication Licensed Internal Code feature, together with the Configuration Support-C base microcode, allows DOS and OS/2 intelligent workstations, attached to the 3174 by existing 3270 coax wiring and emulation adapters, to communicate with each other and with other token-ring attached workstations as if they (the coax-attached workstations) were peer devices on a local area network (LAN). This capability provides a migration path for users evolving from an exclusively host-interactive computing environment to one that also includes local area networking.

This feature should not be confused with the 3174 Advanced Peer-to-Peer Networking (APPN) Licensed Internal Code feature. The Peer Communication feature does not provide any APPN functions. It does, however, provide a bridging function to allow coax-attached nodes to be linked to an APPN network.

There are two ways to use the Peer Communication feature:

- In a 3174 with Configuration Support-C and the Peer Communication feature, but without a LAN adapter.

This configuration allows coax-attached workstations to the same 3174 to communicate with each other as peer devices, similar to the peer devices on a LAN. Because there is no LAN Adapter, the peer workstations cannot access the host(s) attached to the 3174, unless they are reconfigured and restarted as CUT or DFT workstations.

Because of this limitation, the Peer Communication feature is not likely to be used in this manner.

- In a 3174 with Configuration Support-C, the Peer Communication feature, and the 16/4 Mbps Token-Ring Adapter.

The significant difference with this configuration is the addition of the 16/4 Mbps Token-Ring Adapter, which provides the bridge function in the 3174. When this bridge function is enabled through customization, the coax attached workstations can communicate with other workstations and hosts as if they (the coax-attached workstations) were on the token-ring LAN attached to the 3174 via the 16/4 Mbps Token-Ring Adapter. The result is that the coax-attached workstations can now communicate, for example, with:

- Other peer workstations attached to the same 3174
- Other peer workstations on the token-ring LAN attached to the 3174
- Other peer workstations attached to other 3174s that are similarly configured and accessible through the 3174 token-ring LAN
- Hosts, such as S/370, S/390, and AS/400, on or accessible through the 3174 token-ring LAN
- Hosts accessible through the 3174 primary or secondary links (note that APPN functions via the CCA are not currently supported).

Note: A 3174 with Configuration Support-C Release 4 or later, the Peer Communication feature, and the Ethernet Adapter supports only 3174-Peer segment. This is also similar to *not* having a LAN adapter in the 3174, since coax-to-Ethernet bridging (3174-Peer bridge) for Peer Communication is not supported. Therefore, intelligent workstations that are coax attached to the 3174 and using Peer Communication cannot participate as ENs in an APPN network, as a DSPU to a gateway host, and cannot communicate over the Ethernet Network.

The Peer Communication feature provides three significant functions:

- The 3174-Peer function allows coax-attached workstations to behave as if they were connected to an “internal ring” within the 3174. The internal ring differs from a real token-ring in that no token flows. The workstations are referred to as *3174-Peer devices* and the internal ring as the *3174-Peer segment*.

- The bridge function, which allows the internal ring to be bridged to the real token-ring attached by the 3174 16/4 Mbps Token-Ring Adapter. This internal bridge is referred to as the *3174-Peer bridge*.
- The LAN Manager support allows the 3174-Peer devices, 3174-Peer segment and 3174-Peer bridge to be managed from a token-ring attached LAN Network Manager V1.1 or later station.

Peer Communication Considerations

Communicating Outside the 3174: A 16/4 Mbps Token-Ring Adapter must be installed in the 3174 to allow the 3174-Peer devices to communicate with other hosts and workstations attached outside of the 3174. Without the 16/4 Mbps Token-Ring Adapter, no bridging function is performed and no outside communication is possible.

Performance: The 3174-Peer segment within the 3174 has a speed of approximately 0.8 Mbps, regardless of the speed of the external token-ring LAN. We, therefore, recommend that servers, for example, should not be located at a coax-attached workstation. In some situations with a high volume of broadcast frames, it is possible that the 3174 may discard some of the frames, causing application time-outs to occur. Tuning of retry counts and time-out values may alleviate this condition.

Peer Communication, CUT, and DFT: Peer Communication, CUT, and DFT are three distinct device protocols. When coax-connected to a 3174, the connection between the 3174 and the device can only be in one of the three modes (Peer Communication, CUT or DFT). While the device can terminate one mode and start operating in another mode, it cannot be in two modes at the same time. With CUT and DFT modes, the device communicates with 3270 hosts as an LU (or several LUs) through the PU 2.0 in the 3174. With Peer Communication, the device communicates with 3270 hosts as a PU 2.0 in its own right, with its own LU(s), and is able to access other hosts or gateways via the token-ring LAN attached to the 3174.

3.4.2 3174-Peer Function

The Peer Communication feature works in conjunction with 3174-Peer device drivers for DOS and OS/2 workstations. These device drivers, generically known as LAN-Over-Coax device drivers, perform functions similar to those provided by the LAN Support Program device drivers used in token-ring networks. For DOS workstations, the LAN-Over-Coax device drivers are provided by the 3174 Peer Communications NDIS driver for DOS that replaces the 3174 Workstation Peer Communication Support Program (WPCSP) PRPQ P85114. See 3.6, "DOS Support" on page 47 for further information. For OS/2 workstations, the LAN-Over-Coax device drivers are provided by OS/2 Extended Services.

Together, the Peer Communication feature and the LAN-Over-Coax device drivers allow coax-attached workstations to behave as if they were connected to an "internal ring" within the 3174. The internal ring differs from a real token-ring in that no token flows. The workstations are referred to as *3174-Peer devices* and the internal ring as the *3174-Peer segment*. The 3174-Peer devices can then communicate with other 3174-Peer devices attached to the same 3174, or to other workstations that are attached to the 3174 by an external token-ring network.

Figure 33 shows an example of the physical components in a Peer Communication configuration.

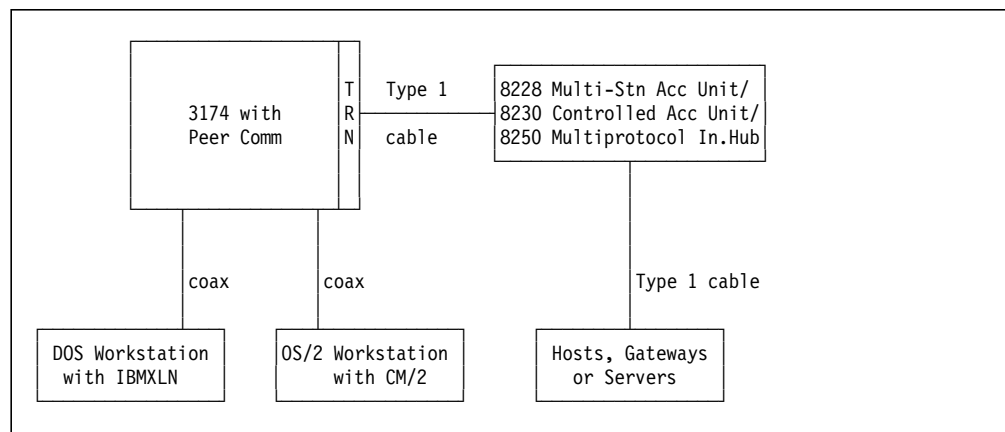


Figure 33. 3174 Peer Communication Function: Physical Configuration

Figure 34 shows the same configuration from a logical point of view. The Peer Communication feature simulates an internal ring segment bridged through the 3174 16/4 Mbps Token-Ring Adapter to a real external token-ring segment.

Note: For explanation purposes in this document, we have used the term *internal ring segment* or *internal ring* because it makes it easier to visualize how one coax-attached workstation is connected to another coax-attached workstation. No token actually flows on this internal ring. The official term used is *3174-Peer segment*.

We also used the term *external* or *real* token-ring segment to refer to the token-ring network attached to the 3174 using the 8228 Multi-Station Access Unit, the 8230 Controlled Access Unit, or the 8250 Multiprotocol Intelligent Hub.

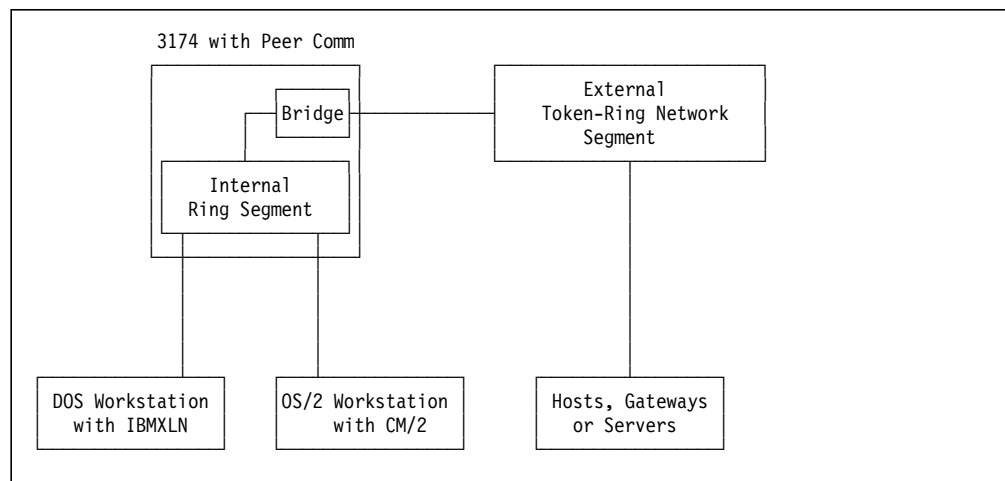


Figure 34. Peer Communication: Logical View

Figure 35 shows a slightly different configuration. Here we have an OS/2 workstation with CM/2 communicating with a host connected to the 3174. The hashes show the path the data takes to and from the host. If there were no access unit or hub attached to the 3174 16/4 Mbps Token-Ring Adapter, the data would still travel through the adapter, the adapter cable, the data connector at the end of the cable, and wrap back into the 3174 (a patch is required – TR 824501 3174 Peer Communication Wrap Mode).

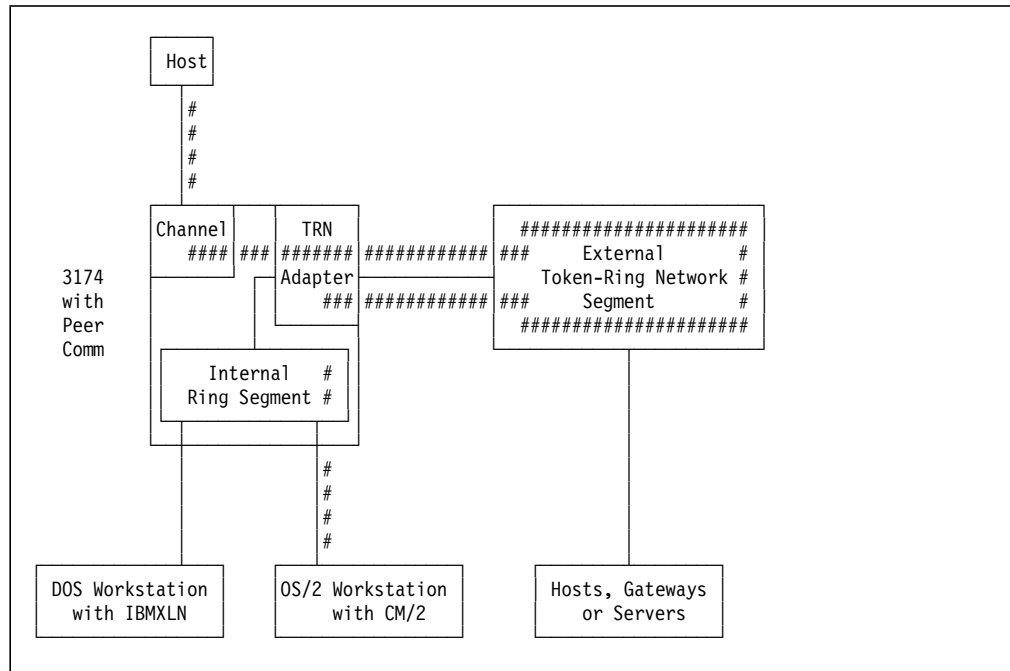


Figure 35. Peer Communication: Path for 3270 Host Communication

3.5 Hardware and Software Requirements

Each participating IWS must be equipped with:

- An IBM 3270 Connection Card or an IBM 3278/3279 Emulation Adapter (8K versions only).
- Other 3270 emulation adapters that are *fully compatible* may work, but have not been tested. No support is offered nor warranty implied for such adapters.
- Only one (1) 3270 Adapter is supported in a workstation using the 3174 Peer Communications NDIS driver.
- The appropriate DOS or OS/2 Peer Communication device drivers.

The 3174 Establishment Controller must have installed:

- 3174 LIC Configuration Support-C up to, and including, version 4.
 - Optional feature #8010 (Peer Communication) should be ordered for 3174 models 01L, 01R, 02R, 03R, 11L, 11R, 12L, 12R, 13R, 21L, 21R, 21H 22L, 22R or 23R.
 - Optional feature #8060 (Peer Communication) should be ordered for 3174 models 51R, 53R, 61R, 62R, or 63R.

- 3174 LIC Configuration Support-C5 (Peer Communication function is pre-merged).
- RPQ 8Q0718 is required for 3174 LIC Configuration Support B Release+4.

3.5.1 Peer Workstation Requirements

The 3174 Peer Communication LIC feature originally only worked in conjunction with the 3174 Workstation Peer Communication Support Program (WPCSP) RPQ P85114 installed in the coax-attached DOS workstations. WPCSP provided a set of device drivers for the coax-attached workstations. These device drivers perform functions similar to those provided by the LAN Support Program device drivers used in token-ring networks.

Together, these two products allowed coax-attached workstations to form a LAN. These LAN workstations can then communicate with other workstations attached to the same 3174, or to other workstations that are attached to the 3174 by an external token-ring network.

IBM provides a 3174 NDIS MAC drivers at no charge for DOS and OS/2 workstations. These drivers allow customers to use their coax-connected intelligent workstations (with 3270 emulator cards) to access LAN applications that run on the NDIS interface. The 3174 Peer Communications NDIS Drivers are NDIS V2.01 Compliant MAC drivers.

3.6 DOS Support

In a DOS environment you are provided with device drivers for the non-NDIS and NDIS interface. We will focus on the NDIS device drivers, since the non-NDIS device drivers provided with the 3174 Workstation Peer Communications Support Program (3174-WPCSP) RPQ P85114 are covered under the heading 3.6.3, "3174 Workstation Peer Communication Support Program (WPCSP)" on page 49.

The 3174 Peer Communications NDIS Driver for DOS replaces the 3174 Workstation Peer Communication Support Program (3174-WPCSP) RPQ P85114. The NDIS driver may be used with applications such as TCP/IP for DOS V2.1, which requires NDIS compliant drivers.

The 3174 Peer Communications NDIS Driver may also be used in conjunction with LAN Support Program V1.33. When used with LSP V1.33, the 3174 Peer Communications NDIS Driver may be used with LAN applications which require an IEEE 802.2 LLC interface, or a NETBIOS interface. The following are examples of applications that will function with this driver and LSP V1.33:

- IBM's DOS LAN Requester
- Novell's NetWare (using LANSUP.COM)
- Personal Communications/3270 V2.0 or later (PC/3270)
- TCP/IP for DOS V1.2
- NS/DOS
- AS/400 PC Support

10.2 Kbytes of memory is required for the 3174 Peer Communications NDIS Driver. Additional memory is required for DOS, LAN Support Program, other device drivers and application programs.

IBM PC DOS V3.3 or later is the required level of operating system.

3.6.1 Configuring NDIS for DOS

When using the IBMXLN.DOS file with a LAN Support Program, the DXMAID utility should be used for installation. The IBMXLN.NIF file is also required for this installation. The user should answer 'Yes' for the adapter options diskette question, and supply the path to the IBMXLN.* files.

Also, if a locally administered address (LAA) is assigned when using IBMXLN.DOS, the LAA should be on the device driver line and not on the 802.2 line in the PROTOCOL.INI file.

Note: The IBMXLN.NIF file is an IBM format NIF file and is not readable by non-IBM applications.

In a DOS environment, IBM LAN Support Program Version 1.33 level of support is required. In the example shown in Figure 36 and Figure 37 on page 49, we have used both the NDIS protocol drivers provided with IBM TCP/IP for DOS and Windows Version 2.1 and IBM LSP V1.33.

The 3174 Peer NDIS driver (IBMXLN.DOS) is not provided with IBM TCP/IP for DOS and Windows V2.1 or IBM LSP V1.33. It has been placed in the D:\TCPDOS21\BIN\IBMXLN.DOS subdirectory for this example (see Figure 36).

```
REM*-----*
REM* IBMXLN NDIS DEVICE DRIVER SUPPORT      *
REM*-----*
DEVICE=C:\DOS52\SETVER.EXE
DEVICE=C:\WIN31\HIMEM.SYS
REM DOS=HIGH
FILES=30
BUFFERS=40
DEVICE=C:\WIN31\SMARTDRV.EXE /DOUBLE_BUFFER
STACKS=9,256
REM DEVICE = C:\DOS52\ANSI.SYS
DEVICE = D:\TCPDOS21\BIN\PROTMAN.DOS /I D:\TCPDOS21\ETC
DEVICE = D:\TCPDOS21\BIN\IBMXLN.DOS
DEVICE = D:\TCPDOS21\BIN\DOSTCP.SYS
DEVICE=\LSP133\DXMA0MOD.SYS 001
DEVICE=\LSP133\DXME0MOD.SYS
DEVICE=\LSP133\DXMT0MOD.SYS 0=N ES=2 EST=3
DEVICE = C:\DOS52\ANSI.SYS
```

Figure 36. Sample CONFIG.SYS

```

; ----- Protocol Manager Definition -----
{PROTMAN_MOD}
    DriverName = PROTMAN$
; ----- Protocol Driver Definition -----
; IBM TCP/IP V2.1 for DOS
;
{TCPIP_V21}
    DriverName = DOSNDIS$
;
; ---- Bindings Statement ----
;
    Bindings = IBMXLN,,,
;
; ----- IBM LAN Support Program V1.33 -----
{DXMEO_MOD}
    DriverName = DXMEO$
    Bindings = IBMXLN
{DXMTO_MOD}
    DriverName = DXMTO$
    Bindings = IBMXLN
;
; ----- IBM 3174 Peer Support -----
{IBMXLN}
; IBM 3174 PEER SUPPORT
; IBMXLN.DOS
    DriverName = IBMXLN$
    Maxtransmits = 6
    NETADDRESS = "400031744992"
;**** END OF FILE ****

```

Figure 37. Sample PROTOCOL.INI

3.6.2 Packaging

The 3174 Peer Communications NDIS device drivers for DOS consists of the following files:

- IBMXLN.DOS - The 3174 Peer Communications NDIS Driver
- IBMXLN.NIF - The Network Information File

3.6.3 3174 Workstation Peer Communication Support Program (WPCSP)

The 3174 Workstation Peer Communication Support Program (WPCSP) provides NetBIOS and IEEE 802.2 software interfaces for DOS workstations coax attached to a 3174, similar to the interfaces provided by the LAN Support Program for workstations attached to a token-ring network. These interfaces enable coax-attached workstations to communicate with one another as peers as if they were on a token-ring network. If a real token-ring network is attached to the 3174, these workstations can also communicate with the workstations on the real token-ring network including the ability to access file/print servers.

WPCSP provides the LAN-Over-Coax device drivers for the DOS environment and is available either as a PRPQ P85114, or as a diskette included with the Networking Services/DOS package. WPCSP works in conjunction with either of the following:

- 3174 Peer Communication RPQ 8Q0718 for Configuration Support-B
- Peer Communication LIC feature for Configuration Support-C

The workstations can be connected to the 3174 using IBM 3270 Connection Adapters or 3278/3279 Emulation Adapters.

WPCSP DXMINFO.DOC File

DXMINFO.DOC is a file included on the WPCSP diskette and provides additional information to the User's Guide. DXMINFO.DOC information can be used to set-up and tailor WPCSP to meet the user's unique environment. The information includes the following:

- IBM adapter information
- Coding of parameters for the supplied device drivers
- Setup/customization information for certain network applications
- Recommendations for heavy traffic and/or large numbers of sessions

The DXMINFO.DOC file also describes the WPCSP limitations and compatibility. Some important limitations are highlighted below:

- Only a single 3270 adapter is supported.
- The 3270 adapter cannot coexist (be active) with another LAN adapter.
- The IBM 3270 Emulation Program Entry Level V1.0 program is not compatible with Peer Communication and is not supported.
- Because the LAN segment created by Peer Communication is a different type of LAN than the token-ring LAN, the MAC layer function is different. Any LAN application that interfaces directly to the token-ring MAC layer (IEEE 802.5) will not work.
- For host file transfer to an SNA Host, the session control (SC) BIND command must have the Read Partition-Query reply byte set to B'1' at the host. Refer to the *3174 Functional Description* manual in the section on SNA protocol for more information.

WPCSP Installation

WPCSP is provided on one PC diskette. It provides four device drivers which must be included in the CONFIG.SYS file. These are:

- DXMA0MOD.SYS, which is an interrupt arbitrator.
- DXMA1MOD.SYS, which is the software interface to the adapter hardware.
- DXML1MOD.SYS, which provides the IEEE 802.2 interface. A user-assigned address can be specified as a parameter of this device driver. This address then becomes the ring address of the 3270 Connection Adapter or 3278/3279 Emulation Adapter.
- DXMT0MOD.SYS, which provides NetBIOS interface. Extra SAPs may be specified for this device driver as required.

Once WPCSP is installed in the C:\WPCSP directory, edit the CONFIG.SYS file to appear as shown in Figure 38 on page 51.

```
DEVICE=C:\WPCSP\DXMAOMOD.SYS
DEVICE=C:\WPCSP\DXMA1MOD.SYS
DEVICE=C:\WPCSP\DXML1MOD.SYS 400030019119 1
DEVICE=C:\WPCSP\DXMTOMOD.SYS ES=3 EST=3 2
BREAK=ON
BUFFERS=20
FILES=40
DEVICE=C:\PCS\EIMPCS.SYS 3
DEVICE=C:\PCS\ECYDDX.SYS 3
```

Figure 38. Peer Communication: Example CONFIG.SYS File

1 This is the user-assigned address by which the 3270 Connection Adapter or 3278/79 Emulation Adapter will be recognized. The format of the address is the same as a token-ring network address and is treated as such. The DXML1MOD.SYS address will override the address specified in question 660 on the 3174-Peer Definition panel during 3174 customization.

Note: You should ensure that the DXML1MOD.SYS address does not fall within the range of the address given by question #660.

2 Add ES= and EST= parameters to expand the number of SAPS and link stations to match the number of sessions required with the host. The NetBIOS interface will open the adapter at load time using these parameters:

- ES=3 indicates three extra SAPs requested by the NetBIOS driver
- EST=3 indicates three extra link stations requested by the NetBIOS driver

3 These are the two device drivers used by PC Support/400 for shared folders use. They are automatically added to the CONFIG.SYS file by the DOS installation procedure of PC Support/400. They will not be present if you are not using PC Support/400.

3.7 OS/2 Support

The 3174 Peer Communications NDIS Driver for OS/2 is currently provided as part of most IBM OS/2 communications software products. The 3174 Peer Communications NDIS Driver for OS/2 is currently provided as part of the following OS/2 communications software packages:

- Extended Edition V1.3
- Extended Services V1.0
- Network Transport Services for OS/2
- TCP/IP for OS/2 V1.2.1

IBM OS/2 Version 1.3 or later is required.

3.7.1 Configuring NDIS for OS/2

For OS/2, Peer Communications NDIS drivers were first made in the LAN Adapter and Protocol Support (LAPS) provided by IBM OS/2. Before you start configuring a session for 3174 Peer communications, check that your MPTS is setup correctly like in Figure 39 on page 52.

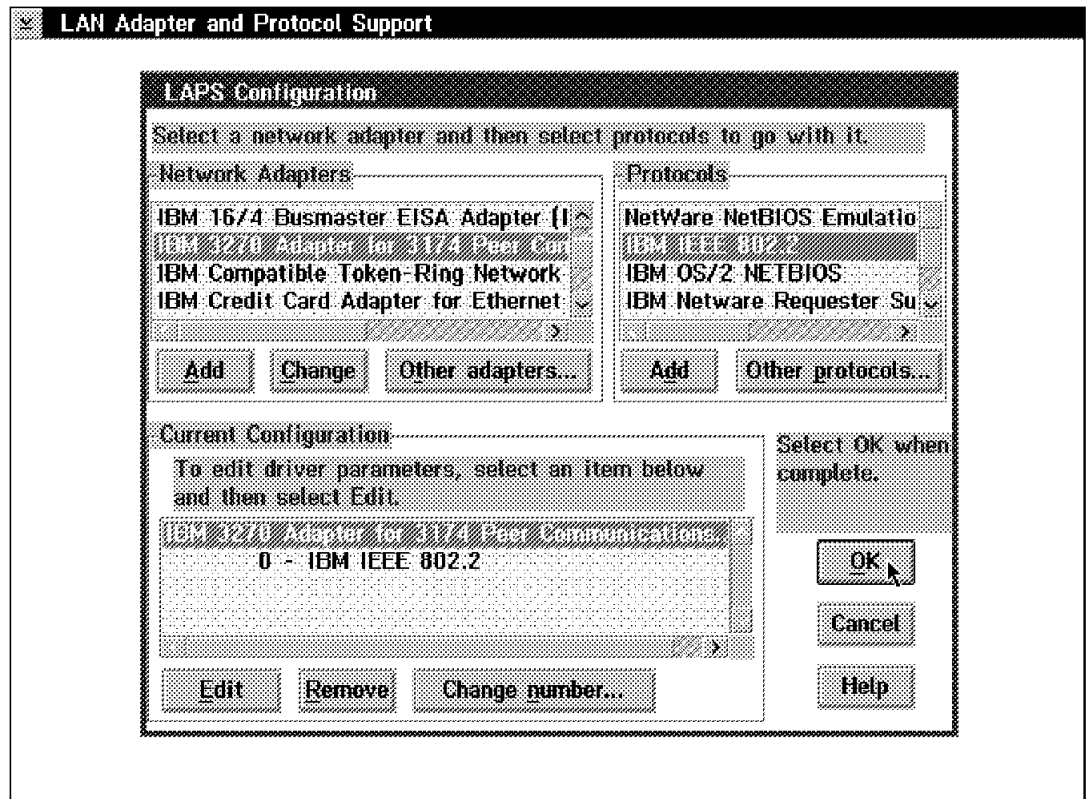


Figure 39. LAPS configuration - 3174 PEER connection

We select **Edit**, which will present us with the Parameters for 3270 Adapter for 3174 Peer Communications panel. On the Network adapter address field of this panel we can enter a locally administered address (LAA). This will override the port-assigned addressing defined in the 3174 customization (Q.660) in the 3174-Peer definition panel (see Figure 48 on page 58).

Configuring MPTS will update your CONFIG.SYS file with the following lines.

```

DEVICE=C:\IBMC\PROTOCOL\LANPDD.OS2
CALL=C:\IBMC\PROTOCOL\NETBIND.EXE
RUN=C:\IBMC\LANMSGEX.EXE
SET ETC=C:\MPTN\ETC
DEVICE=C:\MPTN\PROTOCOL\SOCKETS.SYS
DEVICE=C:\MPTN\PROTOCOL\AFOS2.SYS
RUN=C:\MPTN\BIN\CNTRL.EXE
DEVICE=C:\IBMC\PROTOCOL\LANDD.OS2
DEVICE=C:\IBMC\PROTOCOL\LANDLLDD.OS2
DEVICE=C:\IBMC\MACS\IBMXLN.OS2
RUN=C:\IBMC\PROTOCOL\LANDLL.EXE

```

Figure 40. Statements added to the CONFIG.SYS file

You can see that Peer Communication uses the same PROTOCOL as the LAN attached scenario although the physical medium is coax. The first line in the above figure is unique for Peer Communication (which appears at a different place in the CONFIG.SYS file).

3.7.2 Packaging

The 3174 Peer Communications NDIS device drivers for OS/2 consists of the following files:

- IBMXLN.OS2 - The 3174 Peer Communications NDIS Driver
- IBMXLN.NIF - The Network Information File

3.8 Configuring PCOMM V4.1 via 3174 Peer Communication

This section shows example configurations for a Workstation with Personal Communications/3270 V4.1, coax attached to a 3174 with Peer Communication enabled.

3.8.1 DOS Configuration

The Workstation is configured as a 3174-Peer device (see its CONFIG.SYS file in Figure 38 on page 51) to access an S/370 host using the 3174 as the gateway. Only relevant panels are shown.

```
Attachment Types                                     More: -+
-----
Enter the number of sessions you want to use.

Total number of sessions for:

Distributed Function Terminal (DFT) . . . . . [0]

LAN via 802.2 protocol . . . . . [0]
LAN via NETBIOS . . . . . [0]
LAN via TCP/IP (Telnet 3270 Attachment) . . . . . [0]
LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment) . . . . [0]
3174 Peer Communication . . . . . [3] 1

Synchronous Data Link Control (SDLC) . . . . . [0]

Asynchronous Data Link Control (ASYNCH) . . . . . [0]
SNA over Async . . . . . [0]
Hayes Autosync . . . . . [0]

CCITT X.25 Network (X.25) . . . . . [0]

F1=Help F3=Exit F7=Backward F8=Forward
```

Figure 41. Attachment Types Panel - LAN Attachment via 3174 Peer Communication - for DOS (Full-Function Mode)

1 We want to establish three sessions with the S/390 host using 3174 Peer Communication.

Advanced Options for 3174 Peer Communication		More: -+

Enter the required information.		
Total number of LAN sessions	2	
Link name	lan1	
Destination address	[400031740001]	2
Number of sessions for this gateway . .	[2]	
Physical Unit ID	[40001]	
Adapter number	0	
Remote SAP/Local SAP	[04]/[04]	
Block ID	[061]	
PIU size	[0256]	
F1=Help F3=Exit F7=Backward F8=Forward		

Figure 42. Advanced Options for 3174 Peer Communication Panel - for DOS (Full-Function Mode)

2 Is the token-ring address of the 3174-11L to which the workstation is connected and which will be used as the gateway to the S/370 host.

With Peer Communication, the Workstation is a PU 2.0 in its own right and is defined, in this example, to VTAM as a DSPU with three LUs in a local SNA major node.

Note: There are some special considerations for LAN IEEE 802.2 connection and workstations. Please refer to 4.1, "General Considerations" on page 63.

3.8.2 Windows and OS/2 Configuration

The following section pertains to Microsoft Windows as well as OS/2. The configuration is done in the same way in both environments, and the VTAM definitions are used the same in both environments. A separate section for Windows will not be included.

From your Personal Communication folder double-click on **Start/Configure Session**. Wait until you have the Welcome window and click on **OK**. You will then be presented with the Customize Communication panel, where you choose the type of communication you require. You can also get the panel shown in Figure 43 on page 55 by clicking on **Communication** in the menu bar of your workstation window (host session), and then click on **Configure** in the pull-down menu.

For this configuration you will choose the following:

- **COAX** for Interface
- **IEEE 802.2 (3174 PEER Communication)** for Attachment
- **S/390** for Host

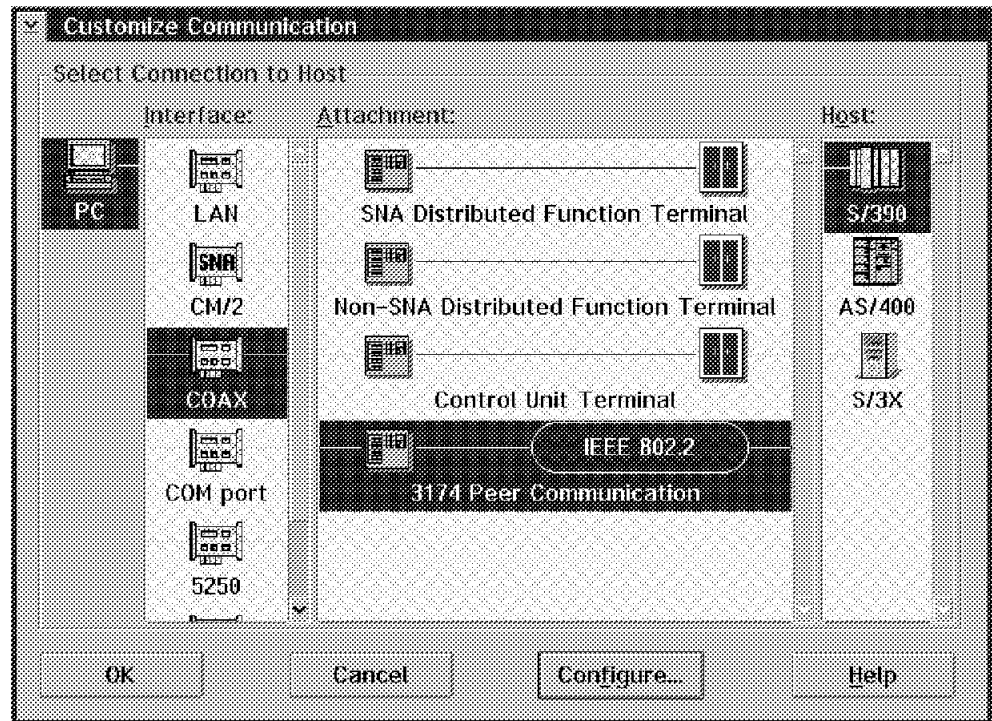


Figure 43. Customize Communication - 3270 Host - 3174 Peer

Complete your choice and click on **Configure** to continue. You will see the Customize Communication - 3270 Host panel, where you can make changes to your Session Parameters and Graphic Parameter.

For an explanation of this panel, see Figure 166 on page 156 and also the description of the parameters. Click on **Configure Link...** in the Link Parameters section to continue. IEEE 802.2 panel appears, where you must insert information that will allow you to make this connection possible.

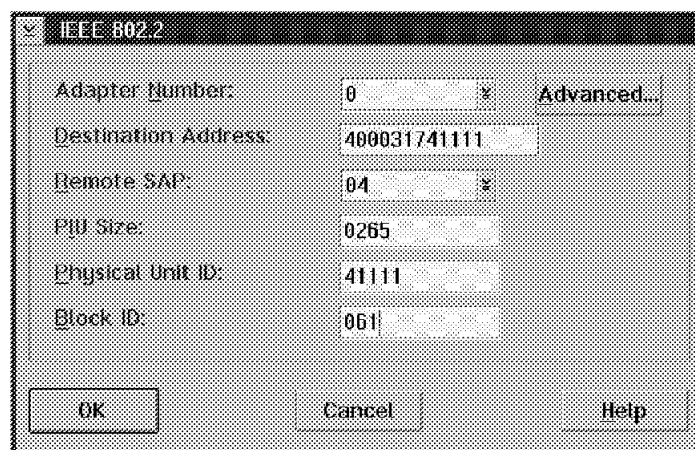


Figure 44. IEEE 802.2 parameters

You can get the information you need from your network administrator. For an explanation of all the fields see, 6.1.1, "IEEE 802.2 to an S/390 Host (3270)" on page 153.

After completing all fields, click on **Advance** if you want to change anything in your Advance window. See Figure 168 on page 157 for the Advance window and related notes for an explanation for each field. Click on **OK** to complete your configuration and continue by clicking on **OK** on each open window until your session is automatically started.

This completes PCOMM Version 4.1 under OS/2.

Save your configuration and/or create an icon by following the procedure in "Save Configuration and Create Icons" on page 158.

Note: The procedures to configure sessions under OS/2 can also be used when you configure under Windows 3.1.

3.8.3 Customizing the 3174 for Peer Communication

Configuring for 3174 Peer Communication depends very much on how the 3174 is customized. Let us consider two examples, as shown in Figure 45 and Figure 46 on page 57.

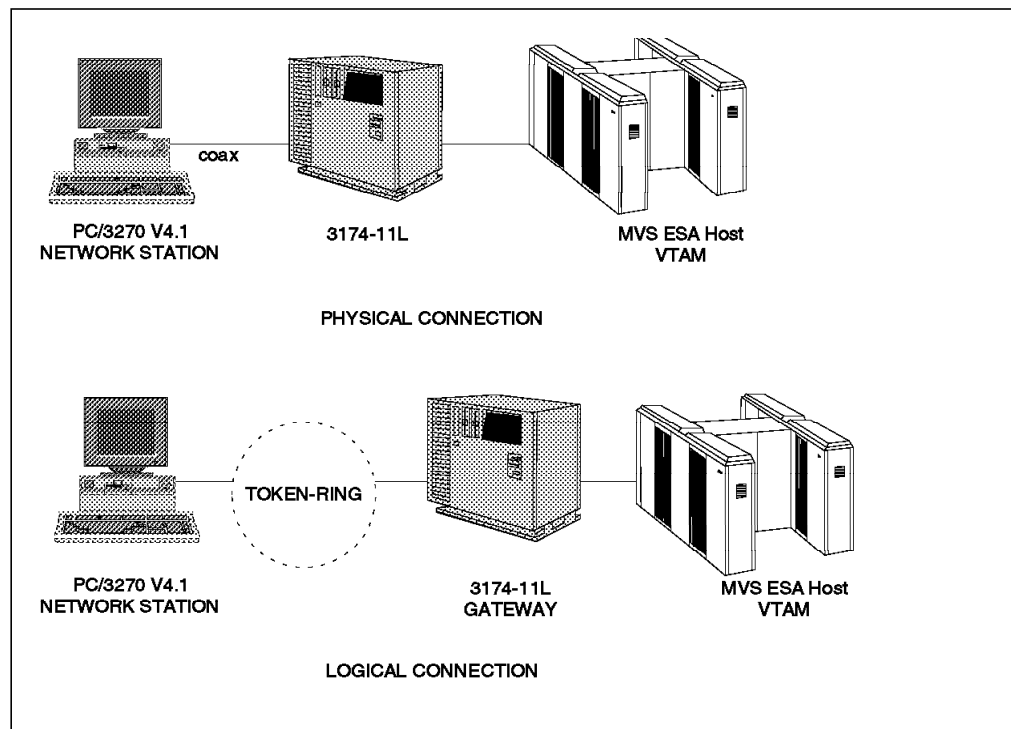


Figure 45. 3174 Peer Communication - Example 1

In Example 1, the PCOMM V4.1 workstation acts as being a PU on a token-ring with the 3174 as the gateway to the host. In this case, the destination address is the 3174 token-ring address assigned at customization (Question #900). The PUID and Block ID are not used, since the task of mapping the downstream PU token-ring address to a subchannel address is done by the 3174. The PU is defined in a VTAM local major node definition. In fact, in all respects the definitions at both the host and the workstation are as if the workstation were physically attached by a token-ring to the 3174, as described in 5.2, "Network Station LAN Attachment to 3174-11L Multi-Host Gateway" on page 85.

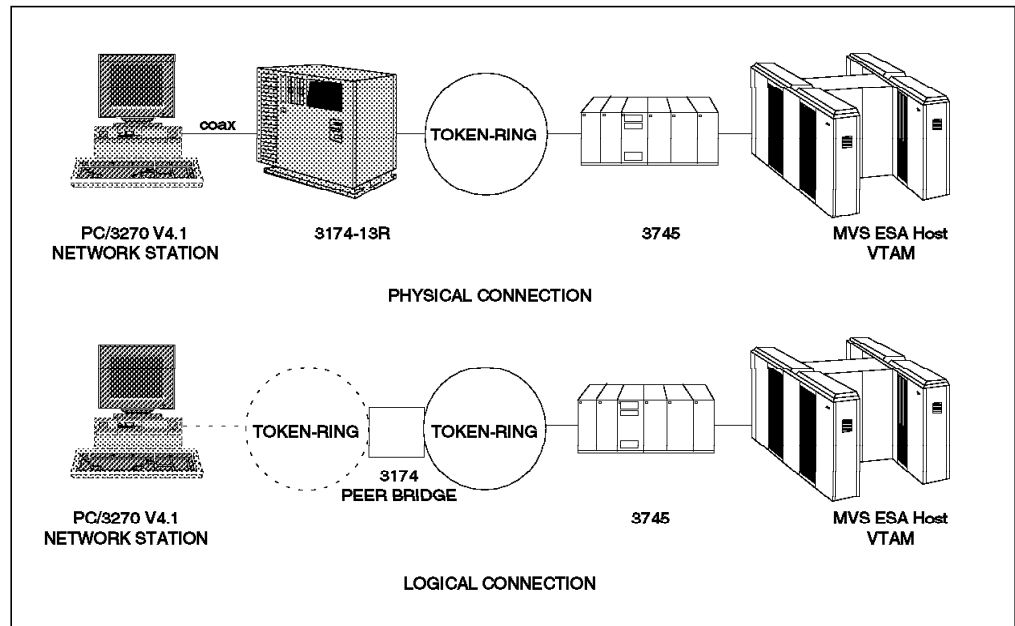


Figure 46. 3174 Peer Communication - Example 2

In Example 2, the PCOMM V4.1 workstation is considered to be a PU on a token-ring with the 37xx Communication Controller as the gateway to the host. The 3174 is seen simply as a bridge between the logical token-ring and the external physical token-ring. The host sees the workstation as being a PU 2.0 attached to the NTRI of the 37xx controller. The destination address is now the NTRI address of the 37xx. PUID and Block ID *must* now match IDNUM and IDBLK in a VTAM switched major node definition. In all respects, the definitions at both the host and the workstation are as if the workstation were token-ring attached to a 37xx gateway, as described in 5.3, “Network Station LAN Attachment to 37xx Communications Controller Gateway” on page 97.

Other scenarios are possible depending on the type of gateway through which the PCOMM V4.1 workstation makes its connection with the host. Essentially, once the 3174 has been correctly set up to support a peer connection, the coax-attached PCOMM V4.1 workstation may be considered to be a token-ring workstation communicating to the host via a gateway. For information on PCOMM V4.1 and host parameters, please refer to the relevant chapter for your type of gateway.

Note: PCOMM V4.1’s 3174 Peer Communication cannot be installed concurrently with any other connection type.

We now briefly describe the 3174 customization for Peer Communication and also show some of the 3174 Online Test displays that could be helpful in a peer environment.

The 3174 customization questions that are specifically involved with peer support and the responses given for our test environment are shown in Figure 47 on page 58 and in Figure 48 on page 58.

```

_____ 3174-Peer and Bridges Options _____

650 - Y 1 Define 3174 Peer Support Y,N

656 - 0 Multiport Bridging 0 = None
                                1 = Source Route Bridging

Select Test; press ENTER ==>

PF: 3=Quit 4=Default 8=Fwd

```

Figure 47. 3174 Peer Customization Questions

```

_____ 3174-Peer Definition _____

3174-Peer Options

651 - Y 2 3174 Peer Bridge Support Y,N

3174-Peer Station Parameters

660 - 4000 3001 91 PN 3174-Peer Port Address Range (0000 00 - FFFF FF)
661 - 05 Percentage of Discard Threshold (00 - 99)

Select Test; press ENTER ==>

PF: 3=Quit 4=Default 7=Back 8=Fwd

```

Figure 48. 3174 Peer Definition Panel

The following is a brief description of the responses given:

- **1** 650=Y enables peer support; that is, it allows the internal logical ring to function.
- **2** 651=Y enables the internal logical bridge function to allow coax-attached workstations to communicate with external token-ring devices.
- 660= is the range of addresses given to coax-attached workstations on the internal logical ring. Although you need only specify one number, it is a range of addresses that the 3174 can assign to the peer workstations. In this example, the address range is from 400030019100 to 400030019163.
- 661=05 specifies the percentage of discarded frames allowed before the ring is considered to be congested.

Note that, in question #660, we have entered the LAA address for the peer device to be 4000300191PN. As mentioned earlier in this chapter, PN is the 3174 port to which the peer device is physically connected. In this example, it was port 19 and meant that our peer device's full LAA would be 400030019119.

To achieve port-independent addressing, remember that you can override the 3174-assigned address by specifying an LAA on the DEVICE=DXML1MOD.SYS statement; we recommend that you use this method.

Notes:

1. We can specify only the six digits after 4000 in Question 660. The 3174 will determine the port number that the device is connected to and will append the port number to form the complete 12-digit LAA.
2. The *3174 Planning Guide* implies that LAA digits 11 and 12 are the port number in hexadecimal. This appears to be incorrect since, when we ran the 3174 Online Test, the decimal value was displayed.

One of the 3174 Online Test options available allows us to look at the address assignments. Refer to the information shown in Figure 49.

940: Ring Address Assignment							
S	Ring Address	SAP	T	S	Ring Address	SAP	T
40	4000 3174 0001	04					
41	4000 3174 0002	04	1	42	4000 3174 0003	04	1
43	4000 3001 0036	04	0	44	4000 1002 0001	04	0
45	4000 3001 9119	04	0	46	4000 3001 0034	04	0

Select Test; press ENTER ==>

PF: 3=Quit 7=Back 8=Fwd 12=Test Menu

Figure 49. The 3174 Panel Showing Ring Address Assignments

Notice that the LAA of the peer workstation has been assigned to host subchannel address 45. Another option which can be useful to determine correct operation and customization is the Status Summary panel shown in Figure 50.

BKBCP204 Status Summary - HG 26																															
Port	00	02	04	06	08	10	12	14	16	18	20	22	24	26	28	30															
Address	01	03	05	07	09	11	13	15	17	19	21	23	25	27	29	31															
Attach	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Status	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Terminal	v	c	?	?	v	v	?	?	?	?	?	?	?	?	?	?	g	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Cable	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cable Max	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

d = direct	1 = on	v = video display	.	= 0 errors
x = unconfigured	0 = off	p = printer	:	= 1-5 errors
m = multiplexer-8	- = off(error)	c = combination	/	= 6-15 errors
M = multiplexer-32	? = unknown	i = DFT device	*	= > 15 errors
	g = 3174-Peer	e = DFTE device		

To go directly to other tests, enter: /Test,Option
Select Test; press ENTER ==>

PF: 3=Quit 5=Refresh 8=Fwd 12=Test Menu

Figure 50. The 3174 Panel Showing Status Summary

In addition to showing the status of the devices attached to the 3174 controller ports, this display can be useful for determining any intermittent device errors, that may occur because of a cable malfunction or a cable being removed in error. You will notice that, in the above display, zero cable errors have been logged.

Part 3. LAN Connections

This third part of this book describes the LAN connections that can be done using Personal Communications family of products in a local area network environment.

- Chapter 4, "Local Area Network Connections"
- Chapter 5, "Personal Communications for DOS and Windows 3.1"
- Chapter 6, "Personal Communications for OS/2"
- Chapter 7, "Configuring PC400 V4.1 for a Twinax Connection"
- Chapter 8, "The PCOMM V4.1 Gateway"

Chapter 4. Local Area Network Connections

When we speak of LAN (local area network) connections and PCOMM V4.1, we are considering the medium access control (MAC) type of IEEE 802.5, IEEE 802.3, DIX V2, and 3174 Peer Communications. The MAC types are the Logical Link Control (LLC) type of IEEE 802.2 and the communications protocols of NetBIOS, TCP/IP, IPX/SPX, FDDI and ISDN.

4.1 General Considerations

This section discusses the general considerations you need to bear in mind when configuring PCOMM V4.1 for connection over a LAN.

Before we get into the details of configuring PCOMM V4.1 for a LAN connection, we should be aware of the three major areas that can cause problems when trying to get PCOMM V4.1 to communicate in a LAN environment:

- Appropriate LAN adapter enabler
- Addressing
- Frame sizes

4.1.1 LAN Adapter Enablers

Personal Communications is unable to interface with a LAN adapter directly. There *must* be some type of LAN enabler software installed to handle the required calls needed to make Personal Communications operational on a LAN. The LAN enabler required by Personal Communications is based on the protocol required, the Data Link Control type and operating system. The LAN enablers we discuss in general are:

- IBM LAN Support Program
- MPTS LAN Adapter and Protocol Support

These LAN enablers are used when Personal Communications is communicating to or as a SNA gateway. PCOMM V4.1 provides the user with non-SNA connections over the LAN, namely TCP/IP and IPX/SPX. Refer to 5.12, "Configuring for Telnet3270 (TCP/IP)" on page 136 and 5.11, "PCOMM V4.1 LAN via NetWare for SAA Gateway" on page 128 when using these connections.

4.1.2 IBM LAN Support Program Version 1.2 and 1.3

In a LAN environment, PCOMM V4.1 uses IEEE 802.2 and/or NetBIOS protocols to communicate over a token-ring to a SNA gateway, or the IEEE 802.2 protocol to communicate over an Ethernet or FDDI network to a SNA gateway. In a DOS or Microsoft Windows V3.1 environment, IEEE 802.2 and NetBIOS protocols are implemented via device drivers that are provided by the IBM LAN Support Program (LSP):

- LSP V1.2 is required if you are connecting via token-ring, PC network or Ethernet network.
- LSP V1.3 is required if you are using the NDIS MAC driver for connecting via an Ethernet or FDDI network.

- LSP V1.33 or later is required if you are using the NDIS MAC driver for connecting via 3270 adapter using 3174 Peer Communications, or IEEE 802.2 over token-ring.

Note: The network driver interface specification (NDIS) is a medium access control (MAC) interface for LAN adapter drivers, jointly developed by Microsoft Corporation and 3COM Corporation.

The following device drivers are provided by the LAN Support Program and, where appropriate, should be added to the CONFIG.SYS file in a DEVICE= statement:

DXMA0MOD.SYS

This driver is the interrupt arbitrator, and is always necessary.

DXMCxMOD.SYS

This driver provides the IEEE 802.2 interface for token-ring adapters not complying with NDIS.

DXMGxMOD.SYS

This driver provides the IEEE 802.2 interface for the PC Network adapter IEEE. It is not NDIS-compliant.

DXME0MOD.SYS

This protocol driver provides the IEEE 802.2 interface for the network adapters complying with NDIS.

DXMT0MOD.SYS

This protocol driver provides the NetBIOS interface and requires the DXME0MOD.SYS or DXMC0MOD.SYS driver.

DXMJ0MOD.SYS

This protocol driver provides the NetBIOS interface for a network adapter complying with NDIS. This driver can not be used if IEEE 802.2 interface is required for NDIS network adapters, that is, it can not be used together with the DXME0MOD.SYS driver.

Further details on the LAN Support Program drivers and their parameters may be found in the *IBM LAN Support Program User's Guide*. Another useful source of reference is the DXMINFO file on the LAN Support Program diskette.

DXMAID is the utility that is used to install and configure all versions of the IBM Local Area Network Support Program (LSP). We have supplied the pertinent LAN Support Program Version 1.33 installation panels for an NDIS token-ring adapter installation with only the IEEE 802.2. This was done to show the ability to specify parameters, such as the number of SAP and link stations, without installing the DXMT0MOD.SYS device driver. This can save memory when the NetBIOS interface is not required and Personal Communications is sharing the adapter with another application.

```

LAN Support Program Installation Aid

Press Tab to select Adapter or Protocol Window. Use up and down arrow keys
to move cursor; press Space bar to select or to clear selection.

Current Configuration
-----Primary Adapter Window-----+
| IBMTOK_MOD                          |
+-----+
-----Protocol Window-----+
| IBM DOS NETBIOS (DXMTOMOD.SYS)      |
| IBM DOS IEEE 802.2 Protocol for NDIS (DXME0MOD.SYS) |
+-----+

-----Selections for Adapter Window-----+
|                                     More --+
| [ ] IBMFDI_MOD                      |
| [ ] IBMXLN_MOD                      |
| [ ] PCMNIC_MOD                      |
| [X] IBMTOK_MOD                      |
+-----+

Enter=Other adapter  F1=Help  F3=Exit  F4=Install
F5=View/Change parameters  F9=Restart installation

```

Figure 51. IBM LAN Support Program Installation - Adapter Selection

In Figure 51, we have selected **IBMTOK_MOD** as the adapter that we will be using. IBMTOK_MOD provides the NDIS interface for IBM token-ring adapters.

```

LAN Support Program Installation Aid

Press Tab to select Adapter or Protocol Window. Use up and down arrow keys
to move cursor; press Space bar to select or to clear selection.

Current Configuration
-----Primary Adapter Window-----+
| IBMTOK_MOD                          |
+-----+
-----Protocol Window-----+
| IBM DOS IEEE 802.2 Protocol for NDIS (DXME0MOD.SYS) |
+-----+

-----Selections for Protocol Window-----+
|                                     More --+
| X IBM DOS IEEE 802.2 Protocol for NDIS (DXME0MOD.SYS) |
| [ ] IBM DOS NETBIOS (DXMTOMOD.SYS) |
+-----+

Enter=Other adapter  F1=Help  F3=Exit  F4=Install
F5=View/Change parameters  F9=Restart installation

```

Figure 52. IBM LAN Support Program Installation - Protocol Selection

Since we have determined that we will be sharing this adapter with other IEEE 802.2 applications, we have selected **IBM DOS IEEE 802.2 Protocol for NDIS (DXME0MOD.SYS)**, in the Selections for Protocol Window box (see Figure 52). Notice that the NetBIOS interface is not selected.

```

          LAN Support Program Installation Aid
          Edit Parameters
    Make any changes to the parameters; then, press F4. Press Esc to return
    without saving changes.

+-----IBM DOS IEEE 802.2 Protocol for NDIS (DXMEOMOD.SYS)-----+
|                                                                    |
| Use Original Ethernet Adapter Type Value          NO              |
| Locally administered address                     400000004001    |
| Work space                                         8              |
| Type of frame to transmit                         0              |
| Minimum SAP                                       2              |
| Minimum Link Stations                            2              |
|                                                                    |
+-----+
| Esc=Cancel  F1=Help  F4=Save  F7=Page Up  F8=Page Down |
+-----+

```

Figure 53. IBM LAN Support Program Installation - IEEE 802.2 Parameters

We have set the Minimum SAP and Minimum Link Stations to 2. Prior to LSP Version 1.33, we had to specify these values on the DXMTOMOD.SYS device driver to assure that enough resources were available for PCOMM V4.1 when the adapter was opened by another application.

See A.1, “LAN Support Program Considerations” on page 261 for special considerations when using earlier versions of the IBM LAN Support Program.

Configuring LAN Support Program V1.3 for an Ethernet Network

Configuring the LAN Support Program for an Ethernet network is more complex than for a token-ring. In addition to the Ethernet-specific device drivers required in the CONFIG.SYS of the workstation, the NETBIND command *must* be included in the AUTOEXEC.BAT file. The NETBIND.EXE file can be found in the LAN Support Program V1.3 diskette. Figure 54 shows an example of a CONFIG.SYS file for a PCOMM V4.1 Ethernet workstation under DOS 5.0.

```

DEVICE=C:\DOS50\HIMEM.SYS
DOS=HIGH
DEVICE=C:\DOS50\ANSI.SYS
DEVICE=C:\DOS50\SMARTDRV.SYS 512 128
DEVICE=C:\LSP\PROTMAN.DOS /I:C:\LSP
DEVICE=C:\LSP\xx.DOS (xx = NDIS MAC driver for the Ethernet adapter)
DEVICE=C:\LSP\DXMAOMOD.SYS
DEVICE=C:\LSP\DXMEOMOD.SYS 400000004001
DEVICE=C:\LSP\DXMTOMOD.SYS 0=N ES=1 EST=1
SHELL=C:\DOS\COMMAND.COM /P /E:2000
COUNTRY=001,437,C:\DOS50\COUNTRY.SYS
LASTDRIVE=E
BUFFERS=10
FILES=32
FCBS=16,8

```

Figure 54. Sample CONFIG.SYS File for Ethernet Connection

Notes:

1. The NDIS MAC driver xx.DOS in the DEVICE=C:\LSP\xx.DOS statement should be changed to one of the following NDIS drivers:
 - MACETH.DOS for IBM PS/2 Adapter/A for Ethernet Networks
 - ELNKII.DOS for 3COM Etherlink II (Model 3C503)
 - ELNKM.C.DOS for 3COM Etherlink/MC (Model 3C523)
 - SMCMA.C.DOS for Western Digital EtherCard PLUS or EtherCard PLUS/A adapters and SMC EtherCard PLUS Elite 16 Combo or EtherCard PLUS Elite/A adapters.
 - UBNEI.DOS Ungerman-Bass NIUpc/EOTP or NIUps adapters.

These NDIS drivers are not supplied with LSP. You *must* get them from the IBM Option diskette or from the manufacturer of the Ethernet adapter.

2. The LAA is added to the DXME0MOD.SYS statement.
3. The DXMT0MOD.SYS device driver is not actually required unless another application requiring the NetBIOS interface is to share the adapter. In this case, the ES (extra SAPs) and EST (extra stations) parameters *must* be used to ensure that the adapter is opened with sufficient resources for both applications.
4. The O=N parameter (OPEN ON LOAD=NO) *must* be used, because the NETBIND in AUTOEXEC.BAT *must* be executed before the adapter is opened. O=N prevents the NetBIOS driver from opening the adapter; opening the adapter will be done by the application, in this case PCOMM V4.1.
5. The maximum PIU size allowed for PCOMM V4.1 on an Ethernet network is 1490 (RU size 1481 on the OS/2 gateway). If it is higher than this, the message MACH682 appears in the operator information area and the connection to the gateway will fail.
6. If you are connecting to an OS/2 gateway directly on the Ethernet network (that is, not via an 8209 LAN Bridge), you *must* ensure that the OS/2 gateway is configured to support the same protocol as you have configured here. The default for the LSP is 802.3 protocol. This means that in OS/2 Communications Manager, LAN Adapter and Protocol Support the IBM IEEE 802.2 protocol *must* define that Ethernet adapter to support the 802.3 protocol (rather than Ethernet DIX V2.0).

The default for this field is Ethernet DIX V2.0 in OS/2 EE V1.3. So you have to change one or the other to match. For IBM ES V1.0, the 802.3 protocol support is the default. The value **I** should be in the Type of Ethernet driver support field.

If you want to use the Ethernet DIX V2.0 support on the OS/2 gateway, you must change the LSP DXME0MOD.SYS device driver. Read the DXMINFO file on the LSP V1.2x diskette or Chapter 5 of the LAN Support Program Version 1.3 User's Guide for instructions.

Updating PROTOCOL.INI for the IBM Ethernet Adapter

LAN Support Program V1.3 includes full support for the Network Device Interface Specification (NDIS) Medium Access Control (MAC) drivers for the IBM PS/2 Adapter/A for Ethernet Networks. The PROTOCOL.INI file is installed by LSP V1.3 in the \LSP directory by default. You *must* add the highlighted statements in the CONFIG.SYS file shown in Figure 54 on page 66. The /I:C:\LSP parameter tells the PROTMAN.DOS program where the PROTOCOL.INI file and the NDIS MAC drivers are stored (the default directory for PROTMAN.DOS is \LANMAN).

Figure 55 shows you the PROTOCOL.INI file included in LSP V1.3. The important parts for the IBM PS/2 Adapter/A for Ethernet Networks are highlighted. We recommend that the PROTOCOL.INI file from LSP V1.3 be used and not the one that may have shipped with the adapter card.

Note: LAN Support Program V1.2x also supports this adapter, but was announced before the adapter. So we recommend you update it to Version 1.25 in order to use Ethernet network support.

```
[PROTMAN_MOD]
    DriverName = PROTMAN$
    .....

[DXMEO_MOD]
    DriverName = DXMEO$
    Bindings = MACETH_MOD
    .....

[MACETH_MOD]
    DriverName = MACETH$
    IRQ = 3
    RAMADDRESS = 0Xc800
    IOBASE = 0X200
    RECEIVEBUFFERS = 16
    RECEIVECHAINS = 16
    MAXREQUESTS = 10
    MAXTRANSMITS = 10
    RECEIVEBUFSIZE = 256
    .....
```

Figure 55. PROTOCOL.INI File of LAN Support Program Version 1.3

Description of the PROTOCOL.INI File

[PROTMAN_MOD]

The Protocol Manager Definition specifies the PROTMAN.DOS program: DriverName = PROTMAN\$

[DXMEO_MOD]

The NDIS Protocol Definition specifies the IBM NDIS protocol driver and the binding statement for the IBM Ethernet Adapter.

- The IBM NDIS protocol driver name is: DriverName = DXMEO\$
- The binding statement in our example is: Bindings = MACETH_MOD

The Ethernet network modules listed below are valid choices for the Bindings = field.

- MACETH_MOD for IBM PS/2 Adapter for Ethernet Networks
- MACETH2_MOD for IBM PS/2 Adapter for Ethernet Networks (second IBM adapter in one machine)
- ELNKMC_MOD for 3COM Micro Channel Adapters
- ELNKMC2_MOD for 3COM Micro Channel Adapters (second 3COM adapter in one machine)
- ELNKII_MOD for 3COM PC I/O Bus Adapters
- ELNKII2_MOD for 3COM PC I/O Bus Adapters (second 3COM adapter in one machine)
- UBNEI_MOD for Ungerman-Bass NIUpc/EOTP PC I/O Bus Adapters or NIUps Micro Channel Adapters
- UBNEI2_MOD for Ungerman-Bass NIUpc/EOTP PC I/O Bus Adapters or NIUps Micro Channel Adapters (second Ungerman-Bass adapter in one machine)

Bindings examples:

- Bind a 3COM Micro Channel Adapter as the primary adapter:
Bindings = ELNKMC_MOD
- Bind two IBM PS/2 Ethernet Adapters, one as the primary adapter and one as the secondary adapter:
Bindings = MACETH_MOD,MACETH2_MOD
- Bind an Ungerman-Bass Adapter as the primary adapter and a 3COM Micro Channel Adapter as the secondary adapter:
Bindings = UBNEI_MOD,ELNKMC2_MOD

Note: Remember to enter the proper NDIS MAC driver(s) in the CONFIG.SYS file for the Ethernet adapter(s) being used. The NDIS driver(s) are loaded immediately after PROTMAN.DOS in CONFIG.SYS. The name of the NDIS MAC driver(s) to load are associated with the DriverName = parameter(s) in the PROTOCOL.INI file.

4.1.3 IBM MPTS LAN Adapter and Protocol Support

If you are going to install the PCOMM V4.1 in an OS/2 environment, you may use the IBM Multiprotocol Transport Services (hereafter called MPTS) to drive your network adapter(s).

The LAN Adapter and Protocol Support is NDIS (network driver interface specifications) compliant. NDIS was jointly developed by Microsoft Corporation and 3COM, as a medium access control (MAC) interface for LAN adapters drivers (network adapter drivers) and protocol drivers, and became an industry standard, providing a common, open interface that enables network adapters and LAN software from different manufacturers to communicate with each other.

A network adapter driver provides the communication between a network adapter and a protocol, using NDIS as the interface. Network adapter drivers handle the basic transmission and reception of packets on the network. LAPS supports IBM and OEM network adapter drivers that comply with NDIS, up to NDIS Version 2.01. LAPS supplies network adapter drivers and also supports the installation and configuration of other IBM and OEM network adapter drivers.

A protocol driver provides the communication between an application and a network adapter drive, using NDIS as the interface. Protocol drivers provide a high level of communications between the data link layer and the application layer. LAPS provides the IBM OS/2 NetBIOS, IBM IEEE 802.2, and IBM NetWare Requester Support protocol drivers. The IBM NetWare Requester Support protocol driver enables an NDIS-compliant network adapter driver to communicate with a protocol stack that complies with the Novell Open Data Link Interface (ODI) specification.

Before you start configuring a session for a LAN attachment via IEEE 802.2 protocol, check that your MPTS is set up correctly. If MPTS is already installed and you want to configure or reconfigure your LAN connection, just enter MPTS from the IBMCOM directory. If you have migrated the MPTS.EXE program, you can also invoke it from the MPTS.EXE icon.



Figure 56. Multi-Protocol Transport Services

On the Multi-Protocol Transport Services panel, click **Configure**. The Configure panel window is opened.

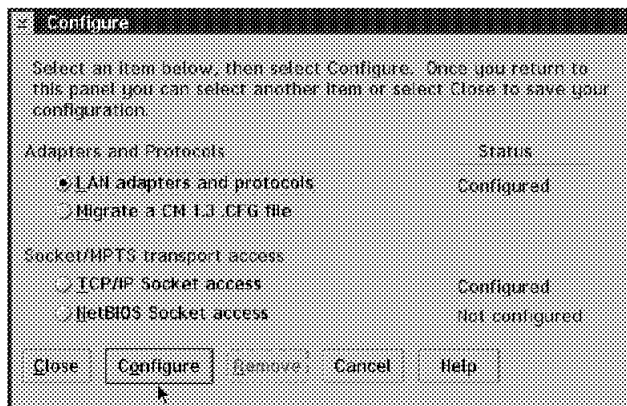


Figure 57. MPTS LAN Adapter and Protocol Support - Configure Workstation

Select the LAN adapters and protocols button. Click on **Configure** and you will see Figure 58 on page 71.

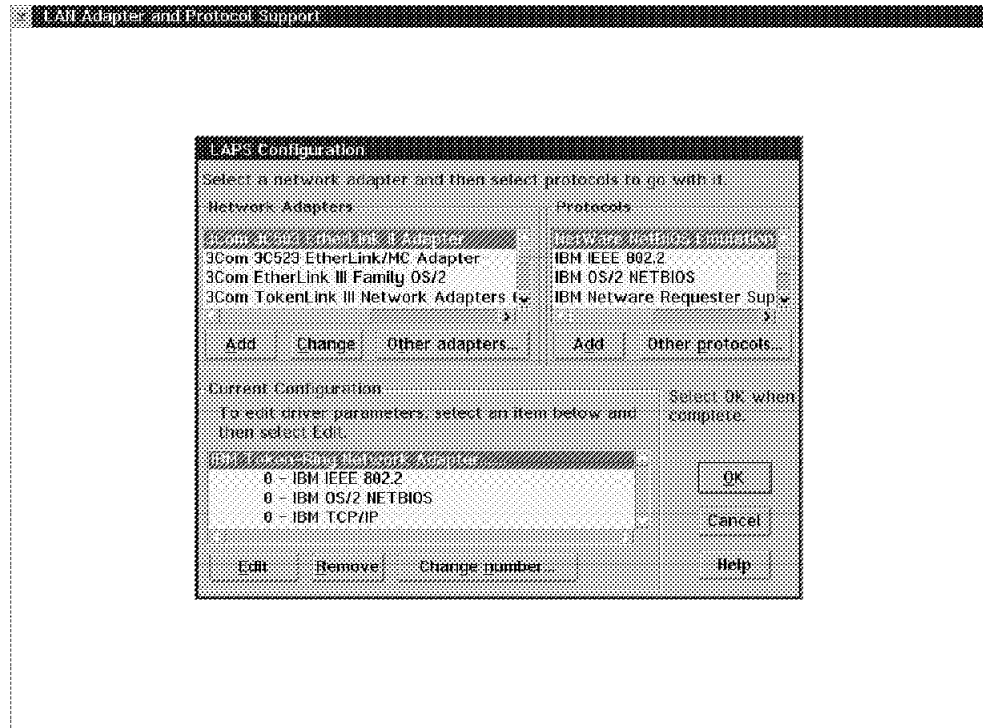


Figure 58. LAPS Configuration

You have three boxes within the LAPS Configuration window:

- Network Adapters

Use this box to select the required network adapter(s). Notice you have network adapters for token-ring, Ethernet, PC Network, 3174 Peer Communications and others. For each network, you *must* select at least one protocol from the Protocols box.

- Protocols

The protocol you choose here will be installed under the current selected network adapter within the Current Configuration box. To choose a protocol, you *must* have chosen a network adapter before.

- Current Configuration

This box shows your actual configuration. You can change parameters for the network adapter(s) or protocol(s) that you chose by clicking on **Edit**. You will need to edit the parameters if you intend to use locally administered addresses (LAA) for instance.

See Figure 59 on page 72 for an example of statements created in the OS/2 CONFIG.SYS file by the LAPS install program for an IBM Token-Ring Network adapter with IEEE 802.2 protocol. No network adapter or protocol parameters were changed.

```

LIBPATH=D:\IBMC\DLL;.;D:\OS2\DLL;D:\OS2\MDOS;D:\;D:\OS2\APPS\DLL;
...
SET DPATH=D:\IBMC\;D:\OS2;D:\OS2\SYSTEM;D:\OS2\MDOS\WINOS2;
D:\OS2\INSTALL;D:\;D:\OS2\BITMAP;D:\OS2\MDOS;D:\OS2\APPS;
DEVICE=D:\IBMC\PROTOCOL\LANPDD.OS2
DEVICE=D:\IBMC\PROTOCOL\LANVDD.OS2
DEVICE=D:\IBMC\LANMSGDD.OS2 /I:D:\IBMC\
DEVICE=D:\IBMC\PROTMAN.OS2 /I:D:\IBMC\
...
RUN=D:\IBMC\PROTOCOL\NETBIND.EXE
RUN=D:\IBMC\LANMSGEX.EXE
DEVICE=D:\IBMC\PROTOCOL\LANDD.OS2
DEVICE=D:\IBMC\PROTOCOL\LANDLLDD.OS2
DEVICE=D:\IBMC\MACS\IBMTOK.OS2
RUN=D:\IBMC\PROTOCOL\LANDLL.EXE

```

Figure 59. OS/2 CONFIG.SYS - MPTS LAPS Statements

You *must* ensure the following are in OS/2 CONFIG.SYS (assure C:\IBMC\ is where you installed MPTS LAPS):

```

DEVICE=C:\IBMC\PROTOCOL\LANPDD.OS2
DEVICE=C:\IBMC\PROTOCOL\LANVDD.OS2

```

These provide the Virtual 802.2 LAN support for PC/3270.

4.1.4 Matching Addresses and Physical Unit IDs

First, let us look at the workstation itself. There are two ways to identify a workstation: by using a locally administered or universally administered address for its LAN adapter, or by using a physical unit identifier.

Locally Administered or Universal Address

The locally administered address (LAA) is a 12-byte field in the format of 4000nnnnnnnn. This is specified in the CONFIG.SYS on the DXMC0MOD.SYS statement (token-ring), DXME0MOD.SYS statement (LSP 1.3 and NDIS), or NETADDRESS statement in PROTOCOL.INI (LCP 1.33 and NDIS). Generally, this address *must* be unique for every station on the LAN. If you are connecting via a token-ring to a 3174 or OS/2 Communication Manager gateway, the 3174 and OS/2 CM *must* be customized to accept this address.

You could use the universally administered address (UAA) instead of the LAA if you wish. These addresses are in the format 10005Annnnnn for IBM-manufactured adapters, and are also referred to as the "burned in" address. The UAA number is unique for every adapter and can be obtained by using the reference diskette.

Note: When connecting via a token-ring to a 3174, there are several reasons why you should use an LAA versus the UAA:

- Should an adapter fail and need to be replaced, the 3174 configuration need not be changed to work with the replacement adapter.
- For LAN administration purposes, using an internally recognized numbering scheme makes it easier to identify a workstation.
- You can predefine workstations in the 3174 configuration without having to have the UAA available.

Physical Unit ID

The Physical Unit ID (PUID) is also known as the IDNUM, Node ID, or XID in other systems and components. The actual SNA term is Exchange ID (XID), and consists of a combination of the Block ID (also known as IDBLK) and the PUID (also known as IDNUM). For PCOMM V4.1, the default Block ID is X'061' and the default PUID is X'00000'. Both the Block ID and the PUID can be changed to suit your host definitions using the Advanced Options for LAN Attachment via 802.2 Protocol panel. Generally, the PUID *must* be unique on each LAN. This PUID is used to connect to a 37xx (NCP), PCOMM V4.1 gateway or 9370.

The AS/400 connection uses both the LAA/UAA and the PUID to define the workstation.

Personal Communications customized as a gateway uses the PUID to identify a workstation. Optionally the workstation LAA/UAA can be used with the PUID, as an extra security check for connection to the gateway.

Gateway Definition of Workstation Address/PUID

Next, let us look at the gateway definition. This book covers several different types of gateways: 3174, 37xx, AS/400, PCOMM V4.1, CM/2 1.1x and Communication Server. The following points should be noted about these products:

- PCOMM V4.1 and Communications Manager/2 1.1x may be configured for use as network stations.
- PCOMM V4.1, OS/2 Communication Manager, Communications Server, 3174 and the AS/400 may be configured as either token-ring or Ethernet gateways.
- PCOMM V4.1, Communication Manager/2 1.1x, and Communications Server may be configured as FDDI gateways.
- The rest of the products may be configured as either token-ring or PC network gateways.
- If your PCOMM V4.1 workstation is on an Ethernet network, you may use an 8209 LAN Bridge to allow the PCOMM V4.1 workstation to access a gateway on a token-ring network.

The following highlights the matching of addresses required for successful connections to the various gateways:

- In the 3174 gateway customization, Question #940 is where you specify each of the workstations' LAAs. The address specified in the workstation *must* match the address customized in the 3174.

Each workstation with an address in the 3174 is treated as a downstream PU (DSPU). Each DSPU *must* also be defined to the VTAM host as a PU with one or more LUs.

- The 37xx/NCP gateway definition defines the 37xx's token-ring adapter and a maximum number of workstations that may connect through the token-ring adapter. You do not define individual workstations in the NCP definition. You do, however, have to define PUs and LUs to VTAM in a switched major node definition to represent the workstations. The VTAM switched major node definition is where you specify the IDBLK and IDNUM that matches your workstation's block ID and PUID.

- In the AS/400 gateway customization, Create Controller (Remote WS) remote adapter address is where you define each of the workstation's LAA/UAA. Also, Create Controller (Remote WS) exchange identifier *must* match the block ID (default 061) and the PUID configured for the PCOMM V4.1 workstation. The LAA/UAA and the exchange ID *must* match.
- The OS/2 Communications Manager gateway configuration, in the SNA gateway workstation LU profile is where you specify the LAA for each downstream workstation. This address *must* match the configured workstation that is connected to the OS/2 gateway.
- In the PCOMM V4.1 gateway, each network profile may be defined with a unique PUID. The PUID defined in the network station *must* match the PUID defined in the gateway to obtain the correct sessions from the gateway.

If the Default Network Station is customized, the link to the gateway is dynamic in that the network station does not have to be identified to the Personal Communications gateway customization. As long as the network station knows the address of the Personal Communications it can achieve a connection and session if there are enough resources (LUs and link stations) available at the Personal Communications gateway.

Gateway Address in the Workstation

Finally, you *must* specify a gateway's address as a destination address in the workstation. The destination address is the address of the token-ring, PC Network or Ethernet adapter in the 3174, 37xx, 9370, AS/400, or PS/2 gateway. It is the address of the device that will be the destination of your connection request.

The destination gateway address is specified as follows:

- For the 3174, it is the address of the 3174 token-ring adapter entered in customization Question 900.
- For the 37xx, it is the address of the 37xx token-ring adapter specified in the NCP's LOCADD= parameter on the LINE macro.

Notes:

1. The correct spelling is LOCADD and not LOCADDR.
 2. The format of LOCADD is 4000xyyyyyyy, where *x* *must* be a number from 0 to 7 and *y* *must* be a number from 0 to 9. This is an NTRI requirement. The LOCADD address has a more restrictive range than other token-ring MAC addresses.
- For the 9370, it is the address of the 9370 token-ring adapter specified in the MACADDR= parameter on the PORT macro.
 - For the AS/400, it is the address specified in the Local adapter address field when you create the token-ring or Ethernet line description.
 - For a CM/2 gateway, it will be either the LAA or UAA of the token-ring, PC Network or Ethernet adapter in the gateway. (The use of an LAA in the gateway machine is recommended.)

Remember that the destination address *must* be correctly specified. Otherwise your connection request will fail or will not go to the intended destination.

Table 5 provides a summary of where you specify the names and addresses for LAN connections.

Value	PC/3270 Workstation	VTAM/NCP	3174	AS/400
Workstation LAA/UAA	Adapter properties, Network address (1)	Not Used	Q 940	CRTCTLRWS remote adapter address
XID/Physical Unit ID	Configure Node panel (2)	PU IDBLK=05D, IDNUM=	Not Used	CRTCTLRWS Exchange identifier
Destination Address	Configure Connection panel (2)	NCP LINE LOCADD=	Q 900	CRTLINTRN Local adapter address

Table 5. Matching Addresses/Names

4.1.5 Matching RU and PIU Sizes

Matching data transmission frame sizes is one problem that may cause users a lot of frustration. One symptom may be that you can log on, and do a lot of things, but sometimes certain functions will cause you to be logged off. Another symptom is just the lack of connecting at all. Once you have checked your addresses and names, and are sure that they are correct, then look at the request unit (RU) or path information unit (PIU) sizes to make sure they match.

If you are using an OS/2 gateway, it will refer to the RU size, but other products refer to the PIU size. The PIU is the RU plus a 9-byte header, so it will always be 9 bytes larger. For example, an RU of 512 bytes is a PIU of 521 bytes. The RU size in OS/2 is configured in the token-ring network data link control (DLC) adapter profile.

Sometimes the maximum RU/PIU size will be negotiated, but other times it is not. If you have problems with connections, or problems that you cannot explain such as being logged off, make sure that the sizes match exactly. Start by using the smallest RU/PIU size to get things working, then increase as required for performance. Table 6 matches PIU and RU sizes with their configuration parameters across several products.

RU Size	PC/3270 802.2 Protocol	OS/2 CM GW SNA Feature, DLC	VTAM/NCP PU MAXDATA	3174 Q941	AS/400 CRTCTLRWS
256 bytes	PIU Size= 265	Maximum RU=256	265	F=0	Max frame size=265
512 bytes	PIU Size=521	Maximum RU=512	521	F=1	Max frame size=521
1024 bytes	PIU Size=1033	Maximum RU=1024	1033	F=2	Max frame size=1033

Table 6. Matching PIU and RU Sizes

Chapter 5. Personal Communications for DOS and Windows 3.1

In this chapter the workstation operating system will be DOS and Windows 3.1, not OS/2. OS/2 will be covered separately in Chapter 6, "Personal Communications for OS/2" on page 153. There will be duplication between the two sections because the configuration panels in Windows and OS/2 are similar.

5.1 LAN IEEE 802.2 Connection via a Token-Ring Gateway

This section will discuss, in more detail, the configuring of PCOMM V4.1 workstations communicating via IEEE 802.2 protocol to different types of token-ring gateways:

- 3174 with its token-ring gateway feature
- 37xx with a token-ring adapter
- 9370 with a token-ring adapter
- CM/2 1.1x or Communications Server gateway
- PCOMM V4.1 gateway
- AS/400 with a token-ring adapter

The connectivity to any of these gateways is fairly transparent to the workstation. The major differences are:

- The 37xx/NCP and 9370 connections require that you use a Physical Unit ID and Block ID.
- The PCOMM V4.1 gateway, the OS/2 Communication Manager gateway, the AS/400 gateway and the 3174 gateway are the only products that will support direct connection via Ethernet adapters.

The other products will require an IBM 8209 LAN Bridge, configured to support token-ring-to-Ethernet network bridging.

- The PCOMM V4.1, CM/2 1.1x and Communications Server 4.0 gateways may or may not require you to use an LAA or a PUID. This is controlled by the particular gateway setup.
- The AS/400 connection requires that you use a Physical Unit ID (and Block ID by default).

It is a good idea to set up both the LAA and the PUID when you are setting up a workstation. This will make it easier to change the destination gateway with a minimum of effort. Not setting these two parameters up correctly is usually the problem with connectivity. These parameters will be covered again in more detail in the scenarios contained in this chapter.

When configuring either for DOS (Full-Function Mode) or Windows 3.1, the configuration parameters required in the DOS (Full-Function mode) Advanced Options for LAN Attachment via 802.2 Protocol panel or in the Windows 3.1 LAN via IEEE 802.2 window will be the same.

5.1.1 Configuring LAN Attachment via IEEE 802.2 Protocol (DOS FF Mode)

You may configure a LAN connection when you are first installing PCOMM V4.1, or when you are reconfiguring using the CONFIG.EXE configuration program. Whichever way you are using, you will arrive at the Attachment Types panel.

Figure 60 shows a workstation being configured for two sessions via 802.2 LAN connection to the host. Note that the 802.2 connection can be a token-ring, a PC Network, Ethernet or an FDDI connection, depending on which adapter you have in your workstation and how you have configured the LAN Support Program previously. The 802.2 connection is transparent to PCOMM V4.1.

Attachment Types		More: -+
Enter the number of sessions you want to use.		
Total number of sessions for:		
Distributed Function Terminal (DFT)		[0]
LAN via 802.2 protocol		[2]
LAN via NETBIOS		[0]
LAN via TCP/IP (Telnet 3270 Attachment)		[0]
LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment)		[0]
3174 Peer Communication		[0]
Synchronous Data Link Control (SDLC)		[0]
Asynchronous Data Link Control (ASYNCH)		[0]
SNA-over-Async		[0]
Hayes AutoSync		[0]
CCITT X.25 Network (X.25)		[0]
F1=Help F3=Exit F7=Backward F8=Forward		

Figure 60. Attachment Types Panel - LAN via 802.2 Protocol - for DOS (Full-Function Mode)

Advanced Options for LAN Attachment via 802.2 Protocol		More: -+
Enter the required information.		
Total number of LAN sessions	2	
Link name	lan1	
Destination address	[400000822010]	
Number of sessions for this gateway	[2]	
Physical Unit ID	[00000]	
Adapter number	[0]	
Remote SAP/Local SAP	[04]/[04]	
Block ID	[061]	
PIU size	[0265]	
F1=Help F3=Exit F7=Backward F8=Forward		

Figure 61. Advanced Options for LAN Attachment via 802.2 Protocol Panel - for DOS (Full-Function Mode)

The Advanced Options for LAN Attachment via 802.2 Protocol panel has many options that will affect connectivity. Note that **Advanced** has been previously selected for Link options, and gives the capability of communicating through more than one gateway to multiple hosts if required. Selection of the correct parameters for this panel is covered in 5.1.3, "Parameters for LAN Attachment via IEEE 802.2 Protocol" on page 81.

5.1.2 Configuring LAN Attachment via IEEE 802.2 Protocol (Windows 3.1)

You may configure a LAN connection when you are first installing PCOMM V4.1 under Windows, or reconfigure an existing one. Click on **Communication** on the menu bar of your WorkStation session and select **Configure...**

The Customize Communication window is opened to begin the LAN configuration.

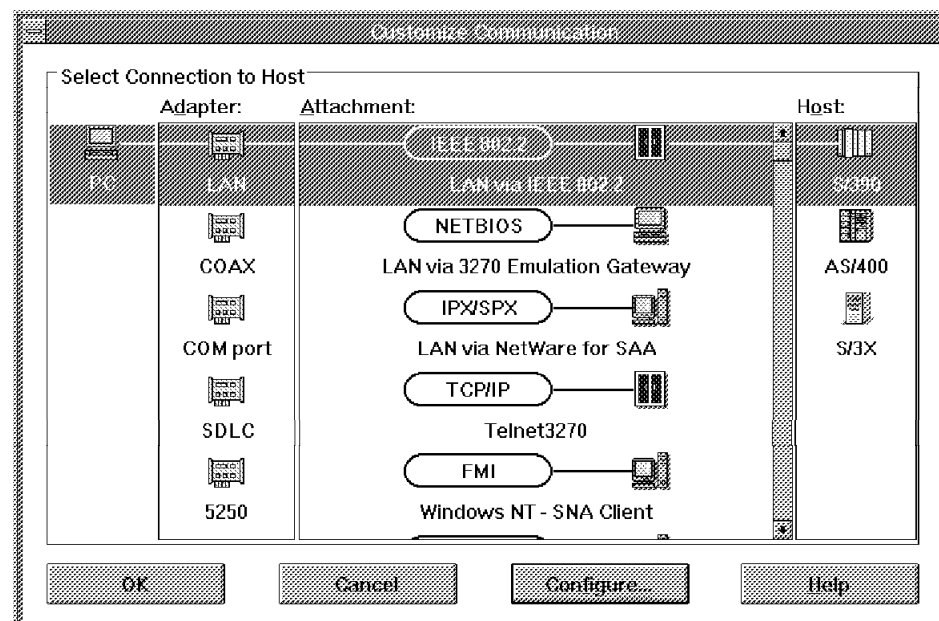


Figure 62. Customize Communication Window - LAN via IEEE 802.2 Attachment - Windows 3.1

Figure 62 shows a Workstation session being configured via a 802.2 LAN connection to the host. Note that the 802.2 connection can be a token-ring, a PC Network, Ethernet or an FDDI connection, depending on how you have configured the LAN Support Program previously. The 802.2 connection is transparent to PCOMM V4.1.

Once you have selected **LAN** under the Adapter, **LAN via IEEE 802.2** under the Attachment, and **S/390** under the Host, click on the **Configure...** button (Figure 62) to go to the Customize Communication-3270 Host window shown in Figure 63 on page 80. For the Session Parameters see 2.5, "Customize PCOMM for OS/2 and for Windows" on page 15.

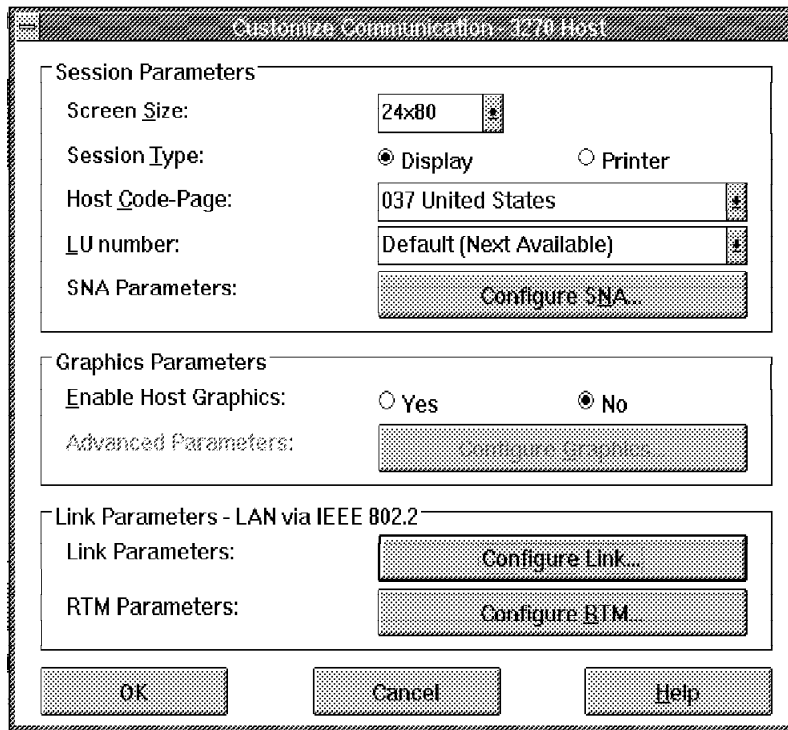


Figure 63. Customize Configuration - 3270 Host Window

Click on the **Configure Link...** button in the Link Parameters box as in Figure 63 to go to the IEEE 802.2 link parameter window:

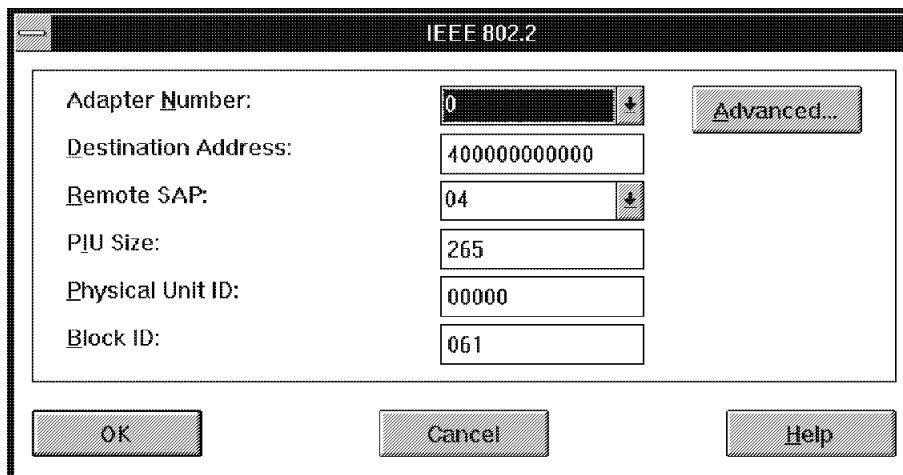


Figure 64. IEEE 802.2 Link Parameters Window - Windows 3.1

The window in Figure 64 allows you to select the link parameter for this session, to a LAN connected Workstation session. This panel is also where you specify the destination address and SAP of the gateway, and the Block ID and Physical Unit ID (PUID) if required. For the advanced link option click on the **Advanced...** button. A new window will appear with the parameter for the local SAP, receive buffer size, receive buffer count and link station count. See Figure 65 on page 82 for more information..

Note: PCOMM V4.1 for Windows 3.1 does not have a parameter for the number of sessions. If you need more than one, you can simply start the same session again by clicking on your **WorkStation** session icon. If you need to run different sessions on your workstation, PCOMM V4.1 for Windows 3.1 allows you to customize each WorkStation session separately. This is used if you have a printer session or if you want to communicate with different gateways or host systems or if there are some other reasons to customize separate sessions.

5.1.3 Parameters for LAN Attachment via IEEE 802.2 Protocol

- Destination Address

The destination address is the address of the gateway and *must* match the address specified in one of the following:

- For a 3174 gateway: Question #900 (the 3174 LAN address)
- For a 37xx gateway: LOCADD= parameter on the NCP LINE definition (the 37xx NTRI address)
- For a 9370 gateway: MACADDR= parameter on the PORT definition (the 9370 LAN address)
- For a PCOMM V4.1 gateway: the 4000nnnnnnnn address specified on the DXMC0MOD.SYS device driver in the CONFIG.SYS file (PCOMM V4.1 gateway locally administered address)
- For an OS/2 Communication Manager gateway: the Specify Adapter Address in the IEEE 802.2 Profile of the Advanced Configuration, LAN Feature Profile
- For an AS/400 gateway: the local adapter address in the token-ring line description (the AS/400 LAN address).

- PUID and Block ID

The PUID is also known by other names in the other systems: NODE ID, Exchange ID, XID and IDNUM are some of them. The Block ID is also part of the identification. Technically, the Exchange ID or XID is a combination of the Block ID and PUID. The XID is used to communicate with the host systems for a connection defined as if it were switched to the host.

For 37xx/NCP and 9370 connections, the PUID and Block ID *must* be specified in an active VTAM switched major node definition. The PUID *must* match an IDNUM= statement in the VTAM definition. The Block ID *must* match IDBLK= for the same PU.

PCOMM V4.1 is assigned a Block ID of 061. However, you can change this if you wish. This is especially useful if you are migrating from some other emulator, or testing an OS/2 CM definition. For example, a 3174 has a Block ID of 017 and OS/2 CM has a Block ID of 05D. You could enter these Block ID values here to use host definitions that already exist.

The PUID and Block ID are not used at all by PCOMM V4.1 when connecting to 3174 and OS/2 CM gateways. The PUID is optional for a PCOMM V4.1 gateway as it depends on how the network station profiles at the gateway are defined (see Chapter 8, “The PCOMM V4.1 Gateway” on page 191 for more information). It is a good idea to always enter something predefined in this field, so that you know what it is.

For AS/400 connections the PUID and Block ID combined should match the Exchange Identifier that is entered on the Create Ctl Desc (Remote WS) panel.

- PIU Size

This size defines the number of bytes in the Path Information Unit (PIU) which is used for the link level communication. It is important that the PIU size be configured to fit into your network plan. If it is not correct, you will not get a connection, or you will be logged off. The PIU size 0265 is provided as the default and has an acceptable range to 2042 that must match one of these:

- For a 3174 gateway: Question #941, F value (defines the frame size).
- For a 37xx or 9370 gateway: Both can accept a large value.
- For a PCOMM V4.1 gateway: It is a good idea to match the PIU size configured in the network station profile for this particular station (although if the two values differ, the smaller of the two will actually be used).
- For an OS/2 Communication Manager gateway: the RU size will be specified in the Advanced Configuration, SNA Profiles and DLC Profile; The value here *must* be 9 bytes less than the PIU size in PCOMM V4.1.
- For an AS/400 gateway: It should match the value you enter for the maximum frame size in the Create Ctl Desc panel.

- Remote SAP/Local SAP Addresses

Generally the remote SAP and local SAP should match. The most used Service Access Point (SAP) default for SNA connections is X'04'. There are some circumstances in which this could be different, but they are most uncommon.

The following defines remote and local SAPs:

- The remote SAP is a remote service access point where applications communicate. The remote SAP is defined in the gateway or control unit and should match the value for each link to the host.
- The local SAP is a local service access point for the workstation. This value should match the SAP number which is configured in the gateway device.

Contact your host systems personnel for assistance if X'04' doesn't match your communication. The PCOMM V4.1 for Windows 3.1 link parameters IEEE 802.2 window has an **Advanced...** customize communication button.

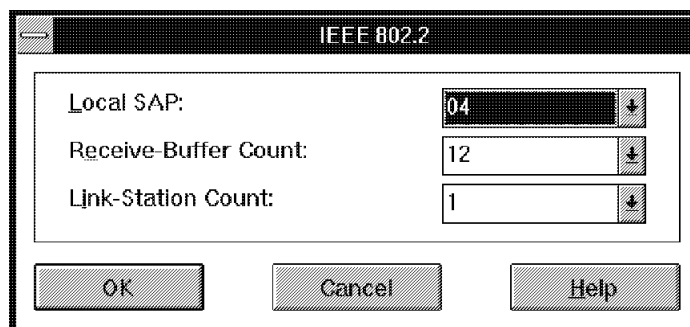


Figure 65. IEEE 802.2 Advanced Link Parameters Window - Windows 3.1

- Receive-Buffer Count

Receive-Buffer Count is the number of the receive buffers for the local SAP that will be allocated in the conventional memory. The default value is 12.

- Link-Station Count

Link-Station Count is the maximum number of gateways that will be used with the same network adapter and SAP number. The default value is 1. If the workstation connects to several gateways by using the same adapter and SAP number, you will need to increase this number to equal the number of different gateways.

The sections that follow provide examples of various connectivity scenarios and the required PCOMM V4.1 configuration parameters, including addresses, PUIDs and Block IDs.

CONFIG.SYS File for Token-Ring LAN IEEE 802.2 Workstations

In each of the scenarios, the PCOMM V4.1 workstation obviously requires a token-ring adapter, and must also have the IBM LAN Support Program Version 1.2/1.3 or later installed.

- The NetBIOS device driver DXMT0MOD.SYS is not required unless another application running on the same workstation needs it.

If the NetBIOS driver is not present, PCOMM V4.1 will open the token-ring adapter when it is first loaded, with sufficient resources for its configuration.

If you do have the NetBIOS device driver in your CONFIG.SYS, then this driver will open the adapter on boot-up. In this case you *must* ensure that the adapter is opened with sufficient resources for PCOMM V4.1 and for any other application that needs to use it. Add ES (Extra SAPs) and EST (Extra link STations) parameters for this purpose. For example:

```
DEVICE=DXMT0MOD.SYS 0=Y ST=2 S=12 C=14 N=8 ES=1 EST=1
```

PCOMM V4.1 will only use the NetBIOS interface when configured as a network station communicating to the host via a PC 3270 Emulation V3.0 gateway.

- Note that an LAA has been specified for the adapter in the DXMC0MOD.SYS statement. If this address is not specified, the universal adapter address will be used. Using an LAA is not always essential, but it makes configuration and management of the LAN easier.

Special Considerations for LAN IEEE 802.2 Connection

This section describes LAN configurations that require special attention.

- LAN connection to a PCOMM V4.1 gateway with SDDL U function:

PCOMM V4.1 supports the Self-Defining Dependent Logical Units (SDDL U) function. SDDL U provides the ability to dynamically create dependent LUs on predefined PUs and to reconfigure dependent LUs without interruption to any other user on the network.

If you select the SDDL U option in a gateway configuration, all the downstream network stations *must* have SDDL U capability. This means that many other emulation programs cannot be used as network stations.

Note: One possible way to work around the SDDL U restriction is to code for both static and dynamic LUs under the Personal Communications Gateway PU VTAM. Then you use Specific Network Station Profile at Personal Communications gateway to map the static LUs to those devices that do not support SDDL U.

- LAN communication and using the task swapper function:

The installation of the task swapper function provided with PCOMM V4.1 for DOS (Full-Function Mode) to support the DOS 5.0 Task Swapper (DOSSWAP) or the PCSSWAP to swap PCOMM V4.1 out from memory, requires a data-link-control memory-management program. PCOMM V4.1 will add the following line to your CONFIG.SYS file at installation or reconfiguration time to keep the LAN communication link, if selected.

```
DEVICE=C:\LSP\DXMCOMOD.SYS
DEVICE=C:\PC3270\PCS802.SYS
DEVICE=C:\LSP\DXMTOMOD.SYS ES=1 EST=1
DEVICE=C:\PC3270\PCSNETB.SYS
```

- If VSLAND.386 is added in SYSTEM.INI (Windows 3.1):

VSLAND.386 is added only when the following conditions are satisfied:

- Windows is running in enhanced mode.
- IBM PC LAN support program is installed on your system and IEEE 802.2 interface (or 3174 Peer Communication) is available.

This virtual device allows you to make a connection to the host via the IEEE 802.2 in Microsoft Windows V3.1 enhanced mode environment.

```
[386Enh]
:
VPol1HeapSize=XX
device=C:\PCSWIN\Vpol1D.386
device=C:\PCSWIN\Vs1anD.386
```

- If PCSSLAN.EXE is added in PCSTSR.BAT (Windows 3.1):

PCSSLAN.EXE is added only when the following conditions are satisfied:

- Microsoft Windows V3.1 is running in standard mode.
- IBM PC LAN support program is installed on your system and the IEEE 802.2 interface (or 3174 Peer Communication) is available.

This DOS TSR program allows you to make a connection to the host via IEEE 802.2 interface (or 3174 Peer Communication) in Microsoft Windows V3.1 standard mode environment. The configuration procedure will add the following lines to the PCSTSR.BAT file. Use PCSWIN.BAT to start Microsoft Windows V3.1 instead of WIN.

```
C:\PCSWIN\PCSPOLL.EXE /B=XX
C:\PCSWIN\PCSSLAN.EXE
```

Note: PCSTSR.BAT is not created when the Microsoft Windows V3.1 is running in enhanced mode.

- Communication Link Errors under Token-Ring LAN IEEE 802.2 protocol.

If you lose the communication link to the host when PCOMM V4.1 is used under the LAN IEEE 802.2 protocol (especially with an Ethernet adapter card), check the mode of operation by clicking on **Help** on the Program Manager window and choose the **About Program Manager...** option in the pull-down menu.

If Microsoft Windows V3.1 is running in standard mode, you have to start Windows with the PCSWIN batch file, which calls the PCSTSR.BAT. The installation program creates the PCSWIN.BAT and PCSTSR.BAT automatically.

5.2 Network Station LAN Attachment to 3174-11L Multi-Host Gateway

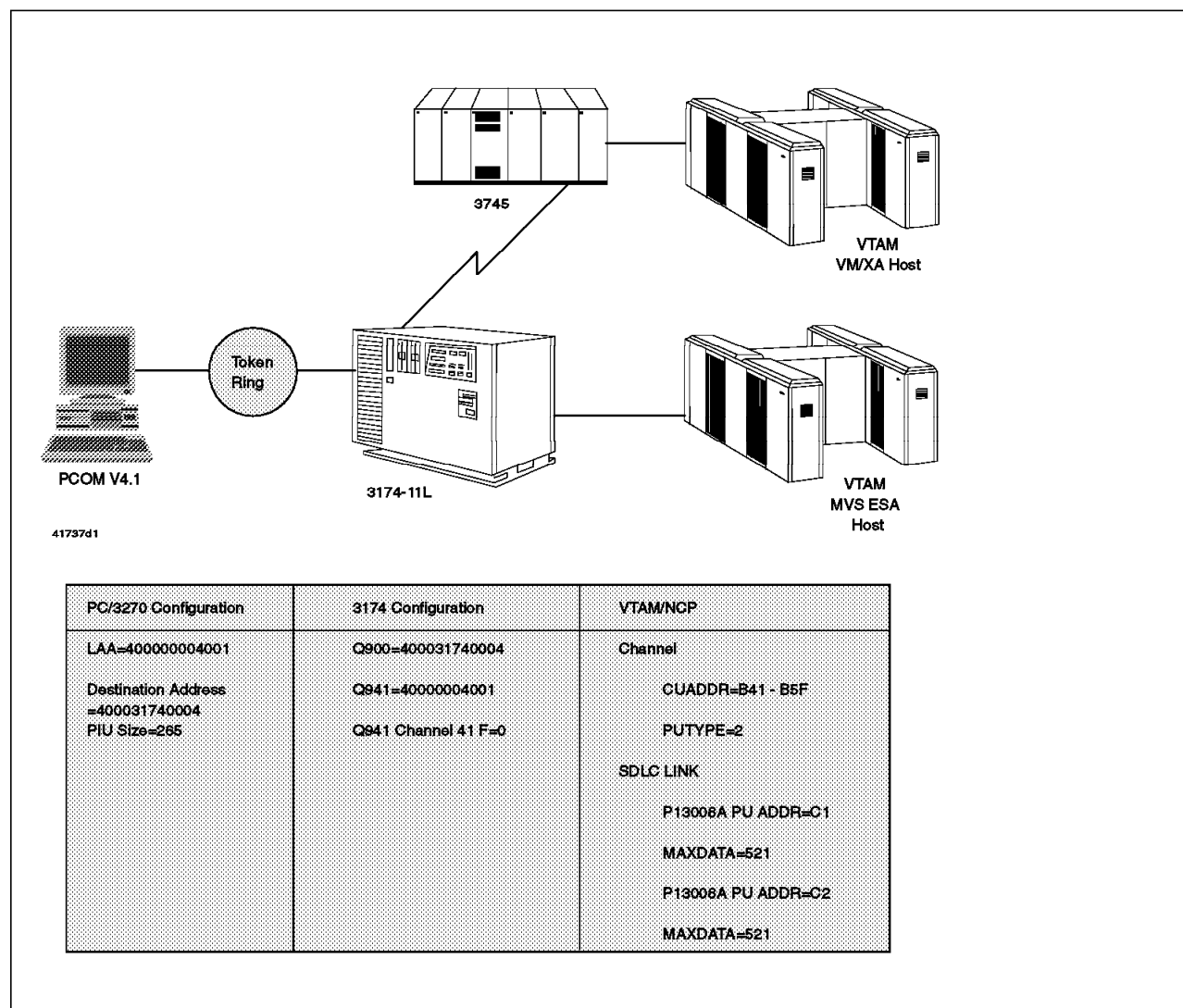


Figure 66. Token-Ring Attachment to a Channel-Attached 3174-11L Establishment Controller

In this connectivity scenario, a PCOMM V4.1 workstation is connected via a token-ring to a 3174-11L Establishment Controller acting as a gateway. The primary link from 3174 is a channel to a MVS/ESA host. The secondary link from the 3174 is via a Concurrent Communications Adapter (CCA) configured for link to a VM host via a 3745 communications controller. The PCOMM V4.1 workstation will have two sessions to the S/390 hosts; one to MVS/ESA and another to VM.

To re-create this example, we need to do the following:

- Configure the PCOMM V4.1 workstation to access the 3174-11L gateway for connection to both host systems.
- Customize the 3174-11L gateway to allow the PCOMM V4.1 workstation to attach as a downstream PU (DSPU).

- Define the 3174-11L as a channel-attached SNA major node in VTAM.
- Define the 3174-11L CCA Line Definition in NCP.
- Define the PCOMM V4.1 workstation as a DSPU with two LUs in VTAM.

5.2.1 Configuring PCOMM V4.1 for Token-Ring Attachment

In this section we discuss only those parameters that directly relate to configuring this particular connectivity. For more information regarding the configuration process please see the following sections:

- 5.1.1, "Configuring LAN Attachment via IEEE 802.2 Protocol (DOS FF Mode)" on page 78.
- 5.1.2, "Configuring LAN Attachment via IEEE 802.2 Protocol (Windows 3.1)" on page 79.

First Connection via Channel

On these panels, we configure the PCOMM V4.1 workstation as follows:

- Specify the destination address (400031740004) of the 3174-11L gateway.
- Specify the number of sessions (1) destined for the gateway.
- Use SAP (04) for the 3174-11L (channel to a MVS/ESA host) and Personal Communications.
- Use the default PIU size (265 bytes) for the workstation.

```

Advanced Options for LAN Attachment via 802.2 Protocol  More: -+
-----
Enter the required information.

Total number of LAN sessions . . . . . 2
Link name . . . . . lan1
Destination address . . . . . [400031740004]
Number of sessions for this gateway . . [1]
Physical Unit ID . . . . . [04001]
Adapter number . . . . . [0]
Remote SAP/Local SAP . . . . . [04]/[04]
Block ID . . . . . [061]
PIU size . . . . . [0265]

F1=Help F3=Exit F7=Backward F8=Forward

```

Figure 67. Adv. Opt. for LAN Attachment via 802.2 - 3174 GW - for DOS (Full-Function Mode)

Figure 68. LAN via IEEE 802.2 Link Parameters Window - 3174 GW to MVS Windows 3.1

Save this configuration by selecting **OK** until you get back to your host session.

In this configuration, when the link is through the 3174 channel adapter, the PUID and Block ID are not really necessary. We have specified them here to allow for possible future connection to a gateway that requires a unique XID for connection. The only parameters that *must* match are the destination address and the PIU size. The 3174 does the task of mapping PUs to downstream token-ring addresses.

Second Connection via the CCA

On the Configure LAN panel we configure the PCOMM V4.1 workstation as follows:

- Specify the destination address (400031740004) of the 3174-11L gateway.
- Specify the number of sessions (1) destined for the gateway.
- Use the Remote SAP (08) for the 3174-11L gateway to VM.
- Use the Local SAP (08) for Personal Communications.
- Use the default PIU size (265 bytes) for the workstation.

Figure 69. Adv. Opt. for LAN Attachment via 802.2 - 3174 GW - for DOS (Full-Function Mode)

For PCOMM V4.1 for Windows 3.1, select the same parameters as for the second gateway connection for DOS (Full-Function Mode).

Figure 70. LAN IEEE 802.2 Link Parameters Window - 3174 LAN GW to VM Windows 3.1

Selecting the **Advance** option is required to have concurrent access to the second host system (VM) through a single token-ring adapter in the 3174 and the workstation running Personal Communications. This is because you are using a single adapter address to access multiple PU instances in the 3174 multi-host gateway. The panel that appears when you select the Advance option on the IEEE 802.2 panel of PCOMM V4.1 for Windows 3.1 customization appears as Figure 71.

Figure 71. IEEE 802.2 Window - 3174 LAN Gateway - Windows 3.1

The CCA represents a separate PU but there is only one adapter address configured, so a SAP other than 04 is required. To match what is specified in 3174 Question #940, we code a SAP of **08**. To get a second session to this host, you can just start the appropriate new customized WorkStation icon twice.

Note: There are some special considerations for LAN IEEE 802.2 connections and workstations. Please refer to 4.1, "General Considerations" on page 63.

5.2.2 Customizing the 3174-11L Gateway

Next, we customize the 3174-11L as a gateway for the PCOMM V4.1 workstation. The 3174-11L has Configuration Support-C Release 5 microcode installed.

```

_____ Model / Attach _____

Online Test Password   098 -

Product Assistance Data
099 - 3174 11L ITS0 CARY - LOCAL GW with CCA

3174 Model             100 - 11L

Host Attachment        101 - M  (1-BSC           6-SDLC, X.21 Switched
                                2-SDLC           7-Token-Ring
                                3-X.25          8-Ethernet
                                4-Non-SNA Channel 9-Frame Relay
                                5-SNA Channel   M-Multi-host)

LAN adapter type       102 - 1  (0-none
                                1-Token-Ring
                                2-Ethernet)

NSO selection          103 - 0000000000000000

Select Test; press ENTER ==>

PF: 3=Quit 8=Fwd 12=Test Menu
```

Figure 72. 3174 Model Definition Panel

Questions #98 through #101 specify the 3174 model and host attachment type, and some descriptive information. In this example, we have a 3174-11L that is channel-attached to a S/390 running MVS/ESA and SDLC attached to a S/390 running VM. This requires multi-host support (Question #101 - M). If you have a 3174-x1R (that is, a remotely attached model) as a gateway, the customization is similar as far as the token-ring connections are concerned.

```

_____ Multi-Host Definition _____

Select a Host ID and press ENTER

Host ID  Adapter  Host  Hardware  Include  Host Descriptor
   ID    Type    Attach Group   in IML
 1A      1        5       51        1  LOCAL_HOST_LINK_____
 2A      1        2       51        1  CCA_HOST_LINK_____
 2B      -        -       -         -  _____
 -       -       -       -         -  _____
 -       -       -       -         -  _____
 -       -       -       -         -  _____
 -       -       -       -         -  _____
 -       -       -       -         -  _____
 -       -       -       -         -  _____
 -       -       -       -         -  _____
 -       -       -       -         -  _____
```

Figure 73. 3174 Configuration Panel - Multi-Host Definition

The Host ID for each connection *must* be selected and configured. We will do the primary Host ID of 1A first.

Local (SNA)				
1A = LOCAL HOST LINK				
104 - 40	105 - 5F	108 - 23H1812	110 - 3	116 - S2
121 - 01	123 - 0	125 - 01001100	126 - 01000000	127 - 5 1
132 - 0 0 0 0	136 - 1 1 0 1	137 - 0 0 0 0	138 - 0	
141 - A	150 - 1 0	165 - 0	166 - A	168 - 0
173 - 00000101	175 - 123456	179 - 0 0 0		
213 - 1	215 - 00000	220 - 0		
222 - 1	223 - 10	224 - 2	225 - 4	
	242 - 0			

PF: 3=Quit 4=Default 7=Back 8=Fwd

Figure 74. 3174 Configuration Panel - Questions #104 and #105 for Channel

The Local (SNA) and SDLC panels have most of the questions that define the 3174-11L and the host link. Of interest for token-ring networks are Questions #104 and #105:

- Question #104 is where you specify the 3174-11L address for host attachment. First we define the local channel attachment. The 3174-11L is attached to subchannel address B40; therefore, we enter 40 as our response to this question.

Note: Only the last two digits of the address are required in Question #104 and #105.

- Question #105 is where you specify, for a 3174 token-ring gateway, the upper limit address of DSPUs. A DSPU could be a 3174-x3R (that is, a token-ring attached model), an AS/400, an OS/2 EE workstation or a PCOMM V4.1 workstation. Each DSPU requires a subchannel address and also a VTAM PU statement.

We will use B5F as the upper limit address; therefore, we enter 5F in response to this question. The DSPUs will then have available addresses B41 through B5F.

In this example, the PCOMM V4.1 workstation will use address B41. Address B41 will later be related to the LAA of the PCOMM V4.1 workstation through Question #940.

- Entering a 1 for the first digit of Question #150 specifies the LAN gateway. (The second digit response specifies whether you wish to include ISDN gateway support.)

Common Network			
1A= LOCAL HOST LINK			
900 - 4000 3174 0004 04	905 - 0	908 - TSCLA	
912 - 00			
PF: 3=Quit 4=Default 7=Back 8=Fwd 9=RtnH			

Figure 75. 3174 Configuration Panel - Destination Address

On the Common Network panel, Question #900 defines the LAA of the 3174-11L. This is what you have configured in the PCOMM V4.1 workstation as the destination address. In our case this value is 400031740004 and SAP 04 is used for the local gateway (to MVS).

940: Ring Address Assignment							
1A=LOCAL HOST LINK							
				Entry 001 of 031			
S	Ring Address	SAP	T	S	Ring Address	SAP	T
40	4000 3174 0004	04		42	4000 0000 4002	04	0
41	4000 0000 4001	04	0	44	4000 0000 4004	04	0
43	4000 0000 4003	04	0	46	4000 0000 4006	04	0
45	4000 0000 4005	04	0	48	4000 0000 4008	04	0
47	4000 0000 4007	04	0	4A	4000 0000 400A	04	0
49	4000 0000 4009	04	0	4C	4000 0000 400C	04	0
4B	4000 0000 400B	04	0	4E	4000 0000 400E	04	0
4D	4000 0000 400D	04	0	50	4000 0000 4010	04	0
4F	4000 0000 400F	04	0	52	4000 0000 4012	04	0
51	4000 0000 4011	04	0	54	4000 0000 4014	04	0
53	4000 0000 4013	04	0	56	4000 0000 4016	04	0
55	4000 0000 4015	04	0	58	4000 0000 4018	04	0
57	4000 0000 4017	04	0	5A	4000 0000 401A	04	0
59	4000 0000 4019	04	0	5C	4000 0000 401C	04	0
5B	4000 0000 401B	04	0	5E	4000 0000 401E	04	0
5D	4000 0000 401D	04	0				
PF: 3=Quit 4=Default 7=Back 8=Fwd 9=RtnH 11=PageFwd							

Figure 76. 3174 Configuration Panels - Question 940 - Ring Address Assignment

Figure 76 shows the first panel to Question #940. The second panel of Q940 for the Local Host Link is not shown.

Question #940 is used to define the mapping of channel addresses to the LAA of the DSPUs, including our PCOMM V4.1 workstation.

In our example, we configured our PCOMM V4.1 station with an LAA of 400000004001. Therefore we specify 400000004001 as the Ring Address to match the subchannel address 41. (Since the 3174 is connected to channel B, the address becomes B41.)

The SAP for PCOMM V4.1 (SNA) is X'04' for the link to MVS via the 3174 gateway.

The T value on this panel specifies the type of DSPU device: 0 for workstation and 1 for 3174 Establishment Controllers.

```

_____ 941: Ring Transmission Definition _____
1A = LOCAL HOST LINK

Entry 001 of 031
S      Ring Address  SAP  F  W  S      Ring Address  SAP  F  W
40     4000 3174 0004  04
41     4000 0000 4001  04  0  7  42     4000 0000 4002  04  0  7
43     4000 0000 4003  04  0  7  44     4000 0000 4004  04  0  7
45     4000 0000 4005  04  0  7  46     4000 0000 4006  04  0  7
47     4000 0000 4007  04  0  7  48     4000 0000 4008  04  0  7
49     4000 0000 4009  04  0  7  4A     4000 0000 400A  04  0  7
4B     4000 0000 400B  04  0  7  4C     4000 0000 400C  04  0  7
4D     4000 0000 400D  04  0  7  4E     4000 0000 400E  04  0  7
4F     4000 0000 400F  04  0  7  50     4000 0000 4010  04  0  7
51     4000 0000 4011  04  0  7  52     4000 0000 4012  04  0  7
53     4000 0000 4013  04  0  7  54     4000 0000 4014  04  0  7
55     4000 0000 4015  04  0  7  56     4000 0000 4016  04  0  7
57     4000 0000 4017  04  0  7  58     4000 0000 4018  04  0  7
59     4000 0000 4019  04  0  7  5A     4000 0000 401A  04  0  7
5B     4000 0000 401B  04  0  7  5C     4000 0000 401C  04  0  7
5D     4000 0000 401D  04  0  7  5E     4000 0000 401E  04  0  7

PF: 3=Quit  4=Default  7=Back  8=Fwd  9=RtnH  11=PageFwd

```

Figure 77. 3174 Configuration Panels - Question 941 - Ring Transmission Definition

Figure 77 shows the first panel to Question #941. The second panel for Q941 for the local gateway is not shown.

Now for the SDLC link via the CCA, once again Q104 and Q105 define the link to the host (see Figure 78).

- Q104 *must* match the controller address in the NCP (the value of ADDR for the controller PU).
- Q105 is the upper limit for the DSPU connections.
- Q150 - 1 0 enables the token-ring gateway function.

```

_____ SDLC _____
2A = CCA HOST LINK

104 - C1      105 - C6      110 - 1      116 - S2 ____
                125 - 00*****0      127 - 0 0

                150 - 1 0      165 - 0
                179 - 0 0 0

213 - 1      215 - 00000      220 - 0

310 - 0      313 - 1      317 - 0      318 - 0      340 - 0

365 - 0      370 - 1

PF: 3=Quit  4=Default  7=Back  8=Fwd

```

Figure 78. 3174 Configuration Panel - Questions 104 and 105 for SDLC

Common Network					
2A= CCA HOST LINK					
900 - 4000 3174 0004 08	905 - 0	908 - TSCLAN			
912 - 00					
PF: 3=Quit 4=Default 7=Back 8=Fwd 9=RtnH					

Figure 79. 3174 Configuration Panel - Destination Address

Notice in Figure 79 that the LAA address for the 3174 local link to the MVS host and remote link to the VM host are the same. The distinguishing factor is the SAP. SAP 04 is used for the local gateway (to MVS) and SAP 08 is for the local gateway (to VM).

940: Ring Address Assignment							
2A=CCA HOST LINK							
				Entry 001 of 031			
S	Ring Address	SAP	T	S	Ring Address	SAP	T
C1	4000 3174 0004	08		C3	4000 0000 4002	08	0
C2	4000 0000 4001	08	0	C5	4000 0000 4004	08	0
C4	4000 0000 4003	08	0				
C6	4000 0000 4005	08	0				0
PF: 3=Quit 4=Default 7=Back 8=Fwd 9=RtnH 11=PageFwd							

Figure 80. 3174 Configuration Panels - Question 940 - Ring Address Assignment

The SAP for the PCOMM V4.1 workstation is 08 for the link to 3174 gateway PU that has a link to the remote VM host. The value of T is 0, which indicates that Personal Communications is a network station with a default PIU size of 265.

941: Ring Transmission Definition									
2A = CCA HOST LINK									
								40 /LOCL	
								Entry 001 of 031	
S	Ring Address	SAP	F	W	S	Ring Address	SAP	F	W
C1	4000 3174 0004	08			C3	4000 0000 4002	08	0	7
C2	4000 0000 4001	08	0	7	C5	4000 0000 4004	08	0	7
C4	4000 0000 4003	08	0	7					
C6	4000 0000 4005	08	0	7				0	7
PF: 3=Quit 4=Default 7=Back 8=Fwd 9=RtnH 11=PageFwd									

Figure 81. 3174 Configuration Panels - Question 941 - Ring Transmission Definition

Question #941 defines the I-frame size (F-field) and window size (W-field) of each DSPU.

The F value represents the I-frame size, or the PIU size, communicating to the gateway. The default for F is based on the type of DSPU entered on the Ring Address Assignment panel. Accepting the default values given by the 3174 customizing procedure for the gateway and the DSPU will give an operative environment. There is no need to change this. (F=0 will allow a maximum PIU of 265 bytes, to match the value used in our PCOMM V4.1 configuration.)

The W value is the transmit window size, which is the number of frames sent before waiting to receive an acknowledgment. The valid maximum window size is based on the value entered in the F-field.

Table 7 compares the current implementation of the algorithm yields between the F-field value, the required PIU size and the maximum window size.

I-Frame Value	PIU Size (I-Frame Size)	Max. Window Size
0	265	7
1	521	7
2	1033	4
3	2042	2

Table 7. I-Frame Value Compared with PIU Size and Maximum Window Size

5.2.3 VTAM Definitions for 3174-11L Local Gateway and PCOMM V4.1 Workstation

The 3174-11L, the PCOMM V4.1 workstation and other DSPUs are defined in a single local SNA major node (see Figure 82). This can be done in two VTAM node definitions: one for the 3174-11L and its coax terminals, and another for the DSPUs, including our PCOMM V4.1 workstation.

Each of these downstream stations has two LUs defined.

We will use a logmode (DLOGMOD) called DYNAMIC. This logmode allows the user to define the screen size at the workstation. VTAM and the host applications can dynamically adjust to the workstation's configured screen sizes.

```
*****
*
* LOCAL SNA MAJOR NODE FOR THE 3174-11L AT B40
*
*****

      VBUILD TYPE=LOCAL
PUB40  PU      CUADDR=B40,          3174-11L GATEWAY      X
          ISTATUS=ACTIVE,          X
          MAXBFRU=20,              X
          MODETAB=MT3270,          X
          DLOGMOD=T3279M2,         X
          PACING=0,                X
          PUTYPE=2,                X
          SECNET=NO,               X
          SSCPFM=USSSCS,           X
          USSTAB=USSNSCS,          X
          VPACING=0
LUB4002 LU      LOCADDR=2,DLOGMOD=T3279M2
LUB4003 LU      LOCADDR=3,DLOGMOD=T3279M2
:
LUB4064 LU      LOCADDR=64,DLOGMOD=T3279M2
LUB4065 LU      LOCADDR=65,DLOGMOD=T3279M2
*****
```

Figure 82 (Part 1 of 2). Local SNA Major Node Definition for 3174-11L

```

*****
*
* DOWNSTREAM PC/3270 WORKSTATIONS ON THE 3174-11L
*
*****
PUB41    PU    CUADDR=B41,          EXAMPLE PC ON 3174-11L GATEWAY X
            DLOGMOD=DYNAMIC,          X
            ISTATUS=ACTIVE,           X
            MAXBFRU=20,               X
            MODETAB=MT3270,           X
            PACING=0,                 X
            PUTYPE=2,                 X
            SSCPFM=USSSCS,            X
            USSTAB=USSNSCS,           X
            SECNET=YES,               X
            VPACING=0
LUB4102   LU    LOCADDR=2
LUB4103   LU    LOCADDR=3
*
PUB42     PU    CUADDR=B42,          OTHER PC ON 3174-11L GATEWAY X
            DLOGMOD=DYNAMIC,          X
            ISTATUS=ACTIVE,           X
            MAXBFRU=20,               X
            MODETAB=MT3270,           X
            PACING=0,                 X
            PUTYPE=2,                 X
            SSCPFM=USSSCS,            X
            USSTAB=USSNSCS,           X
            SECNET=YES,               X
            VPACING=0
LUB4202   LU    LOCADDR=2
LUB4203   LU    LOCADDR=3
:
:
:
PUB5F     PU    CUADDR=B5F,          OTHER PC ON 3174-11L GATEWAY X
            DLOGMOD=DYNAMIC,          X
            ISTATUS=ACTIVE,           X
            MAXBFRU=20,               X
            MODETAB=MT3270,           X
            PACING=0,                 X
            PUTYPE=2,                 X
            SSCPFM=USSSCS,            X
            USSTAB=USSNSCS,           X
            SECNET=YES,               X
            VPACING=0
LUB5F02   LU    LOCADDR=2
LUB5F03   LU    LOCADDR=3

```

Figure 82 (Part 2 of 2). Local SNA Major Node Definition for 3174-11L

5.2.4 NCP Definitions for 3174-11L CCA Gateway and PCOMM V4.1 Workstation

For completeness, the 3174 CCA gateway and workstation PUs and LUs definitions in the NCP are shown in Figure 83.

```

*****
*
* NCP Definitions for 3174-11L CCA AT C1
*
*****
L13008  LINE ADDRESS=(08,FULL),ANS=CONTINUE,CLOCKING=EXT,DUPLEX=(FULL),X
        ETRATIO=30,ISTATUS=ACTIVE,LPDATS=LPDA2,MAXPU=10,NPACOLL= X
        YES,PAUSE=.5,SERVLIM=10,SPEED=9600,SRT=(,64)
*-----*
*
*
P13008A  PU      ADDR=C1,DISCNT=(NO),MAXDATA=521,MAXOUT=7,PACING=0,      X
          PASSLIM=8,PUDR=YES,PUTYPE=2,RETRIES=(,4,5),                  X
          SSCPFM=USSSCS,USSTAB=USS327X,VPACING=0,GP3174=AE
T13008A0  LU      LOCADDR=2,DLOGMOD=T3279M2
T13008A1  LU      LOCADDR=3,DLOGMOD=T3279M2
:
T1300914  LU      LOCADDR=64,DLOGMOD=T3279M2
T1300915  LU      LOCADDR=65,DLOGMOD=T3279M2
*
*
*****
*
* DOWNSTREAM PC/3270 WORKSTATIONS ON THE 3174-11L CCA
*
*****
*
RADP08B  PU      ADDR=C2,DISCNT=(NO),MAXDATA=521,MAXOUT=7,PACING=0,      X
          PASSLIM=8,PUDR=YES,PUTYPE=2,RETRIES=(,4,5),                  X
          SSCPFM=USSSCS,USSTAB=USS327X,VPACING=0,GP3174=AE
T13008A0  LU      LOCADDR=2,DLOGMOD=T3279M2
T13008A1  LU      LOCADDR=3,DLOGMOD=T3279M2
:
T1300914  LU      LOCADDR=64,DLOGMOD=T3279M2
T1300915  LU      LOCADDR=65,DLOGMOD=T3279M2

```

Figure 83. NCP Definitions for 3174-11L CCA Gateway

5.3 Network Station LAN Attachment to 37xx Communications Controller Gateway

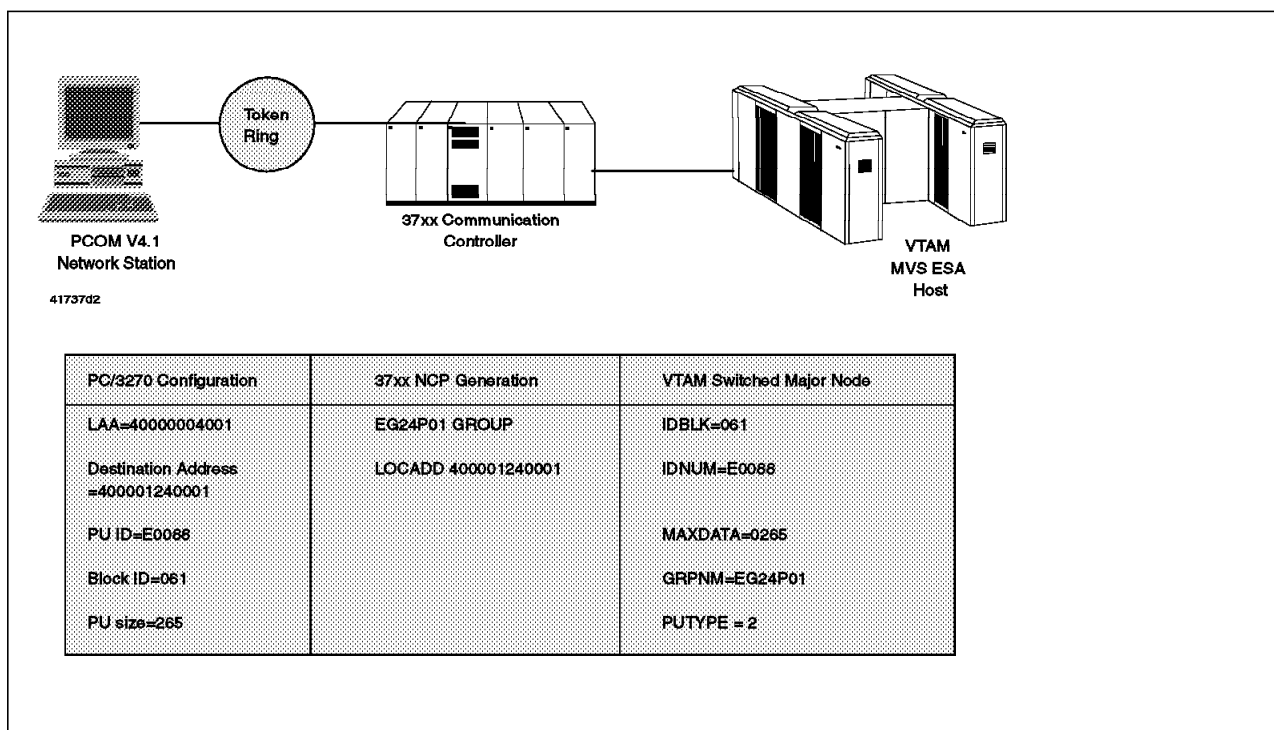


Figure 84. Token-Ring Attachment to 37xx Communication Controller

In this connectivity scenario, a PCOMM V4.1 workstation is connected via a token-ring to a 37xx Communication Controller acting as a gateway. The PCOMM V4.1 workstation will have two sessions to the S/390 host.

To re-create this example, we need to do the following:

- Configure the PCOMM V4.1 workstation to access the 37xx gateway.
- Define the 37xx token-ring adapter and attachment, known as NTRI (NCP Token-Ring Interconnection), in the NCP definition
- Define the PCOMM V4.1 workstation as a PU, with two LUs, in a switched major node in VTAM.

Note: Not all of the required configuration, customization or definition panels will be shown; only those that are significant to the example are included.

In this example, the 37xx (a 3745 Communication Controller) is channel-attached to the MVS host. Although the PCOMM V4.1 workstation is physically token-ring attached to the 37xx, VTAM treats this connection as a switched line. A VTAM switched major node definition is required to define a PU and associated LUs for the PCOMM V4.1 workstation.

5.3.1 Configuring PCOMM V4.1 for Token-Ring Attachment

In this section we discuss only those parameters that directly relate to configuring this particular connectivity. For more information regarding the configuration process please see the following sections:

- 5.1.1, "Configuring LAN Attachment via IEEE 802.2 Protocol (DOS FF Mode)" on page 78.
- 5.1.2, "Configuring LAN Attachment via IEEE 802.2 Protocol (Windows 3.1)" on page 79.

Advanced Options for LAN Attachment via 802.2 Protocol More: -+

Enter the required information.

Total number of LAN sessions 2

Link name lan1

Destination address [400001240001]

Number of sessions for this gateway . . [2]

Physical Unit ID [E0088]

Adapter number [0]

Remote SAP/Local SAP [04]/[04]

Block ID [061]

PIU size [0265]

F1=Help F3=Exit F7=Backward **F8=Forward**

Figure 85. Advanced Options for LAN Attachment via 802.2 Protocol - 37xx LAN Attachment - for DOS (Full-Function Mode)

IEEE 802.2

Adapter Number:	0	⬇
Destination Address:	400001240001	
Physical Unit ID:	E0088	
Remote SAP:	04	⬇
Block ID:	061	
PIU Size:	265	

Advanced...

OK Cancel Help

Figure 86. LAN via IEEE 802.2 Link Parameters Window - 37xx LAN Attachment - Windows 3.1

In this scenario it is essential that the destination address matches the NTRI address of the 37xx gateway, and that the PUID and Block ID match the IDNUM and IDBLK respectively in the VTAM switched major node definition. The PIU size should match the value of MAXDATA in the VTAM switched major node definition.

5.3.2 VTAM Definitions for PCOMM V4.1 Workstation

Each PCOMM V4.1 workstation that will connect through a 37xx gateway will require its PU and its LUs to be defined in a VTAM switched major node definition.

If the switched major node is not active when the PCOMM V4.1 workstation tries to connect, you will receive this message from VTAM:

```
IST690I CONNECTION REQUEST DENIED - INVALID STATION ID = 0200061E0088
```

The ID= in the above message comes from the PUID and Block ID (...061E0088 for our example) in your PCOMM V4.1 configuration. Thus, the message is very useful for determining if you are getting through NCP and into VTAM (deactivate the switched PU and see if you get the message). This message will also be given for a very common problem: incorrect IDBLK.

* VTAM SWITCHED MAJOR NODE FOR NTRI *				

E24SW	VBUILD	MAXGRP=5,	REQUIRED	X
		MAXNO=12,	REQUIRED	X
		TYPE=SWNET	REQUIRED	
E24PS88	PU	ADDR=06,	COULD BE ANYTHING (NOT USED)	X
		IDBLK=061,	PC/3270 WKSTN	X
		IDNUM=E0088,		X
		DISCNT=NO,		X
		MAXOUT=4,		X
		MAXDATA=0265,		X
		MAXPATH=2,		X
		PASSLIM=1,		X
		PUTYPE=2		
E24D8801	PATH	DIALNO=0204400000004001, TO 3270 PC EMULATOR		X
		GRPNM=EG24P01,	FROM TIC 2	X
		GID=1,		X
		PID=1		
E24L8802	LU	LOCADDR=2,	3270 TERMINAL MODEL 2	X
		VPACING=7,		X
		PACING=7,		X
		DLOGMOD=D4C32XX3,		X
		USSTAB=US327X		
E24L8803	LU	LOCADDR=3,	3270 TERMINAL MODEL 3	X
		LOGAPPL=RAPAN,		X
		VPACING=7,		X
		PACING=7,		X
		DLOGMOD=D4C32XX3,		X
		USSTAB=US327X		
		:		

Figure 87. VTAM Switched Major Node Definition for PCOMM V4.1 Workstation

Figure 87 shows the switched major node used to represent the PCOMM V4.1 workstation in VTAM. The maximum number of LUs is eight for a single PCOMM V4.1 workstation. We defined five LUs here, but only specified two sessions in the PCOMM V4.1 configuration. This will not hurt anything. It would allow the user to configure up to five sessions for the workstation at a later date if desired.

Note that the GRPNM parameter is highlighted. This is important if there are several token-ring adapters in the same 37xx, in which case it *must* match the appropriate GROUP parameter in the NCP definition. This ensures that both VTAM and the workstation are communicating through the same token-ring adapter.

5.3.3 NCP Definitions for 37xx Token-Ring Attachment

This is a partial NCP definition used to illustrate some of the important parameters that *must* match the PCOMM V4.1 workstation configuration. An OPTIONS macro has to be included. The NEWDEFN=YES has to be specified on this macro for NTRI.

```
*****
*      OPTIONS DEFINITION STATEMENT      *
*****
NCPOPT  OPTIONS NEWDEFN=(YES,ECHO),USERGEN=(FNMNDFGN)
:
```

Figure 88. NCP Definition - Options Definition Statement

The BUILD macro has to include some parameters concerning the token-ring attachment(s). The MXVLINE *must* be equal to the total number of logical lines specified in this NCP definition. Each workstation defined as a PU on the token-ring is considered to be on a logical switched line.

```
*****
* BUILD MACRO SPECIFICATIONS              *
*****
NCPBUILD BUILD VERSION=V4R3.1, # NCP V4 REL3      X
          MXRLINE=2,           # OF TICS ATTACHED  X
          MXVLINE=25,           X
          :
:
```

Figure 89. NCP Definition - Build Macro Specifications

The NUMTYP2 parameter in the LUDRPOOL macro has to be increased with the number of LUs that will be active concurrently on the NTRI.

```
*****
*      DYNAMIC RECONFIGURATION POOL SPACE      *
*****
DRPOOLLU LUDRPOOL NUMILU=32,      RESERVE 32 ILUS
          NUMTYP1=10,             RESERVE 10 LUS ON PU.T1 PUS
          NUMTYP2=200              RESERVE 200 LUS ON PU.T2 PUS
          :
:
```

Figure 90. NCP Definition - Dynamic Reconfiguration Pool Space

Each token-ring interface coupler (TIC), the physical attachment from the 37xx to the token-ring, is specified by a GROUP macro with the parameter ECLTYPE=PHYSICAL. Note that the GROUP name is matched by the GRPNM parameter in the VTAM switched major node definition. This ensures that both VTAM and the PCOMM V4.1 workstation are communicating through the same token-ring adapter.

The GROUP macro is followed by a LINE, PU and LU macro to fully describe the TIC. The token-ring address of the 37xx is given by the LOCADD= parameter; this is also the destination address for the PCOMM V4.1 workstation.

```
*****
*          PHYSICAL GROUP FOR NTRI TIC 2          *
*****
EG24P01  GROUP ECLTYPE=PHYSICAL,      TRN LAN PHYSICAL GROUP      X
          TYPE=NCP,                      X
          DIAL=NO,                       X
          LNCTL=SDLC,                    X
          :
EL24081  LINE ADDRESS=(81,FULL),                      X
          PORTADD=1,          PHYSICAL PORT ADDRESS OF 2ND TIC  X
          LOCADD=400001240001,  LOCALLY ADMIN. ADDRESS OF 2ND TIC X
          RCVBUFC=4095,          MAX RECEIVE BUFFER SIZE      X
          MAXTSL=1108,          TRANSMIT FRAME SIZE          X
          :
EP24081  PU ADDR=01
EU24081  LU ISTATUS=INACTIVE,                      X
          :
```

Figure 91. NCP Definition - Physical Group for NTRI

Each downstream workstation configured as a PU (stand alone or gateway) on the ring will need a logical LINE and PU definition. These are defined on a GROUP ECLTYPE=LOGICAL that follows the GROUP ECLTYPE=PHYSICAL for each TIC. Rather than coding a lot of LINE and PU statements, you can use the AUTOGEN facility to automatically generate the required number of concurrently active stations. In this example, the AUTOGEN=12 statement means that up to 12 concurrently active downstream PU workstations are allowed on this TIC. Note also the OWNER= statement in Figure 92. This 37xx is attached to more than one host but this logical group is owned by the subarea host SA2. This means that your VTAM switched major node definition *must* be activated in this subarea.

```
*****
*          LOGICAL GROUP FOR NTRI TIC 2          *
*****
EG24L01  GROUP ECLTYPE=LOGICAL,                      X
          AUTOGEN=12,                      X
          CALL=INOUT,                      X
          :
          OWNER=SA2,                      X
          PHYPORT=1,                      X
          TYPE=NCP,                      X
          DIAL=YES,                      X
          LNCTL=SDLC,                    X
          :
```

Figure 92. NCP Definition - Logical Group for NTRI

5.4 PCOMM V4.1 LAN Attachment to an AS/400

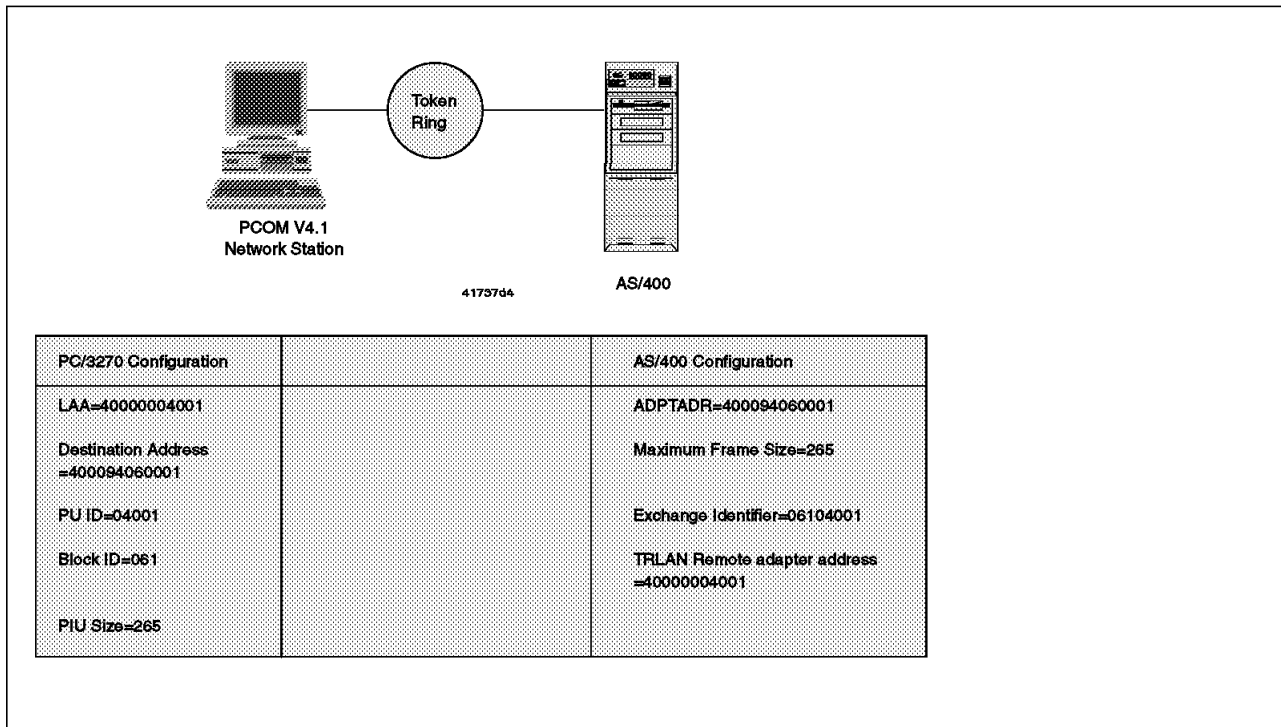


Figure 93. Token-Ring Attachment to an AS/400

Although 5250 emulation is more normally used by workstations communicating to the AS/400, 3270 emulation is supported via token-ring, Ethernet and SDLC connections. To the AS/400, the PCOMM V4.1 for DOS (Full-Function Mode) and for Windows 3.1 workstation looks like a 3x74 control unit with multiple display stations attached.

In this connectivity scenario, a PCOMM V4.1 workstation is connected via a token-ring to an AS/400 host. The PCOMM V4.1 workstation will have two sessions to the AS/400.

To re-create this example, we need to do the following:

- Configure the PCOMM V4.1 workstation to access the AS/400.
- Create a line description in the AS/400 to describe the AS/400 token-ring adapter and attachment.
- Create a controller description in the AS/400 to represent the PCOMM V4.1 workstation.
- Create a device description in the AS/400 for each session configured in the PCOMM V4.1 workstation.

Note: Not all of the required configuration, customization or definition panels will be shown; only those that are significant to the example are included.

5.4.1 Configuring PCOMM V4.1 for Token-Ring Attachment

In this section we discuss only those parameters that directly relate to configuring this particular connectivity. For more information regarding the configuration process please see the following sections:

- 5.1.1, “Configuring LAN Attachment via IEEE 802.2 Protocol (DOS FF Mode)” on page 78.
- 5.1.2, “Configuring LAN Attachment via IEEE 802.2 Protocol (Windows 3.1)” on page 79.

For both environments, the destination address *must* match the local adapter address (ADPTADR) in the token-ring line description on the AS/400. This is the token-ring address of the AS/400 on the LAN. The Physical Unit ID and the Block ID *must* also match the exchange identifier (XID). See Figure 100 on page 106.

```

----- Advanced Options for LAN Attachment via 802.2 Protocol ----- More: -+
-----
Enter the required information.

Total number of LAN sessions . . . . . 2
Link name . . . . . lan1
Destination address . . . . . [400094060001]
Number of sessions for this gateway . . [2]
Physical Unit ID . . . . . [04001]
Adapter number . . . . . [0]
Remote SAP/Local SAP . . . . . [04]/[04]
Block ID . . . . . [061]
PIU size . . . . . [0265]

F1=Help F3=Exit F7=Backward F8=Forward
```

Figure 94. LAN Attachment to AS/400 - for DOS (Full-Function Mode)

```

----- Advanced Options for Network Stations ----- More: -+
-----
Enter the required information.

File-transfer packet size for non-SNA . . . [07160]
File-transfer packet size for SNA . . . . [02500]

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

a           lan1         0               [LU 02]
b           lan1         0               [LU 03]
              [         ]
              [         ]
              [         ]
              [         ]
              [         ]
              [         ]

F1=Help F3=Exit F7=Backward F8=Forward
```

Figure 95. LU Address - LAN Attachment to AS/400 - for DOS (Full-Function Mode)

In Figure 95 on page 103, we are using LUs of x'02' for the first session and x'03' for the second session to match the Local location address values defined in our device descriptions on the AS/400 (see Figure 101 on page 107 and Figure 102 on page 107).

To attach the PCOMM V4.1 for Windows 3.1 workstation to an AS/400 with 3270 emulation, select **Host: S/390** shown in Figure 96. To do this, click on **Communication** in the host session and then click on **Configure...** in the displayed pull-down menu to get the Customize Communication panel shown in Figure 96. You can also get this panel by double-clicking on the Start/Configure Session icon.

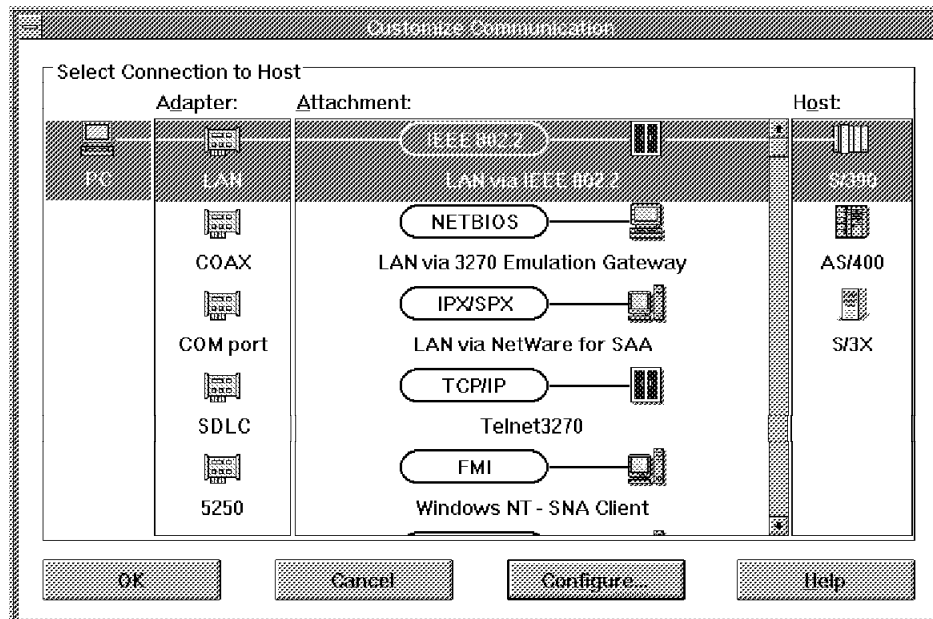


Figure 96. Customize Communication - LAN via IEEE 802.2 - Windows 3.1

Note: Since the idea of configuring 3270 sessions via a LAN connection to an AS/400 might be new to some people, the above panel is shown only for clarification.

As in Figure 96 choose the **LAN** for adapter, the **LAN via IEEE 802.2** for attachment and **S/390** for Host and click on the **Configure...** button to get the Customize Communication - 3270 Host panel shown in Figure 97 on page 105.

In PCOMM V4.1 for Windows 3.1 you can create multiple sessions in a variety of different ways. If you always want the same session to be associated with the same AS/400 LU (as would be the case if you were defining both display and printer sessions), configure each session separately. Since we are configuring two display sessions, the only difference between the two display sessions would be the LU number. Rather than accepting the Default (Next Available) value for each session, we would instead define one session using an LU number of x'02' (shown) and define the other session using x'03' (not shown).

In this example, we are using LUs of x'02' for the first session and x'03' for the second session to match the Local location address values defined in our device descriptions on the AS/400 (see Figure 101 on page 107 and Figure 102 on page 107).

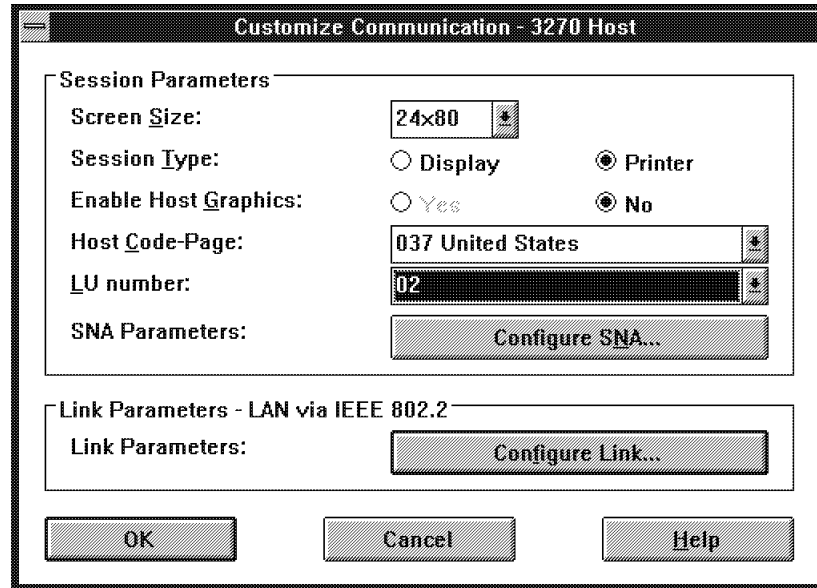


Figure 97. LU Number - LAN Attachment to AS/400 - Windows 3.1 - Session One

Open the **Link parameters** in Figure 97, this will bring you to the IEEE 802.2 panel shown in Figure 98.

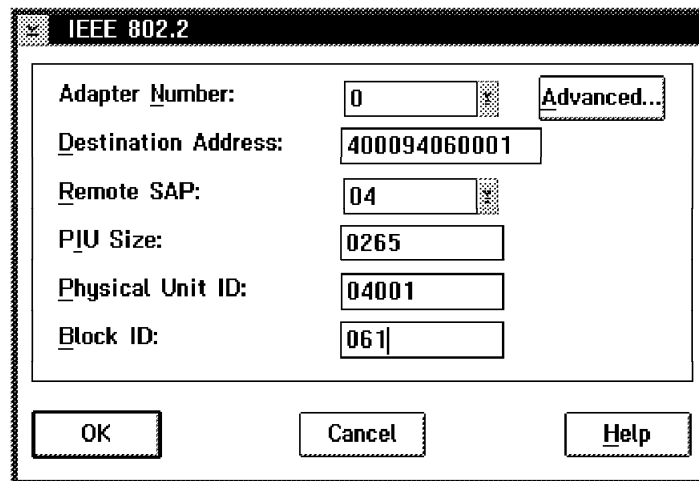


Figure 98. LAN via IEEE 802.2 Link Parameters Window - LAN Attachment to AS/400 - Windows 3.1

Note: For this configuration, you cannot start the same WorkStation icon twice.

5.4.2 AS/400 Definitions for Token-Ring Attachment

```

Display Line Description - Token-Ring

Line description . . . . . : LIND      TRNLINE01
Resource name . . . . . : RSCRCNAME  LIN021
Online at IPL . . . . . : ONLINE     *YES
Vary on wait . . . . . : VRYWAIT     *NOWAIT
Network controller . . . . . : NETCTL
Maximum controllers . . . . . : MAXCTL  40
Maximum frame size . . . . . : MAXFRAME 1994
TRLAN Manager logging level . . . : TRNLOGLVL *MAX
Current logging level . . . . . : *MAX
Local adapter address . . . . . : ADPTADR  400094060001
Exchange identifier . . . . . : EXCHID  056A0001
Source service access points . . . : SSAP
04

Error threshold level . . . . . : THRESHOLD *OFF

More...

Press Enter to continue.

F3=Exit  F12=Cancel

```

Figure 99. AS/400 Configuration Panel - Local Adapter Address

5.4.3 AS/400 Definitions for PCOMM V4.1 Workstation

The PCOMM V4.1 workstation *must* be defined to the AS/400 as a remote 3174 workstation controller. The Block ID and PUID in our PCOMM V4.1 configuration *must* match the Exchange identifier in the remote workstation controller description. Our PIU size *must* match the Maximum frame size in the same controller description. Our PCOMM V4.1 workstation LAA in CONFIG.SYS *must* match the TRLAN remote adapter address on the same panel.

```

Create Ctl Desc (Remote WS) (CRTCTLRWS)

Type choices, press Enter.

Controller description . . . . . > PC4001      Name
Controller type . . . . . > 3174             3174, 3274, 5251, 5294, 5394
Controller model . . . . . > 0                0, 1, 0001, 2, 0002, 12, 0012
Link type . . . . . > *TRLAN                 *SDLC, *TRLAN, *X25
Online at IPL . . . . . *YES                  *YES, *NO
Switched line list . . . . . trnline01       Name
+ for more values

Maximum frame size . . . . . 265             *LINKTYPE, 265, 521, 1033...
Exchange identifier . . . . . 06104001       00100000-FFFFFFFF
Initial connection . . . . . *DIAL           *DIAL, *ANS
TRLAN remote adapter address . . 400000004001 000000000001-FFFFFFFFFFFF
Text 'description' . . . . . PC/3270 workstation'

Bottom

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys

```

Figure 100. AS/400 Configuration Panel - Remote Workstation Controller Description

In addition to the above configuration, the AS/400 *must* have a display station defined for every screen session on our PCOMM V4.1 workstation. The AS/400 thinks that it has a controller with multiple display stations attached.

Create Device Desc (Display) (CRTDEV DSP)

Type choices, press Enter.

Device description	> PC400102	Name
Device class	> *RMT	*LCL, *RMT, *VRT
Device type	> 3279	3101, 3151, 3161, 3162...
Device model	> 0	0, 1, 2, 11, 12, 23, 31...
Local location address	02	00-FE
Online at IPL	*YES	*YES, *NO
Attached controller	PC4001	Name
Keyboard language type		*SYSVAL, AGB, AGI, BLI...
Drop line at signoff	*no	*YES, *NO
Text 'description'	'DEVD for PC4001 LU=02'	

Bottom

F3=Exit	F4=Prompt	F5=Refresh
F13=How to use this display	F10=Additional parameters	F12=Cancel
	F24=More keys	

Figure 101. AS/400 Configuration Panel- Device Description

Create Device Desc (Display) (CRTDEV DSP)

Type choices, press Enter.

Device description	> PC400103	Name
Device class	> *RMT	*LCL, *RMT, *VRT
Device type	> 3279	3101, 3151, 3161, 3162...
Device model	> 0	0, 1, 2, 11, 12, 23, 31...
Local location address	03	00-FE
Online at IPL	*YES	*YES, *NO
Attached controller	PC4001	Name
Keyboard language type		*SYSVAL, AGB, AGI, BLI...
Drop line at signoff	*no	*YES, *NO
Text 'description'	'DEVD for PC4001 LU=03'	

Bottom

F3=Exit	F4=Prompt	F5=Refresh
F13=How to use this display	F10=Additional parameters	F12=Cancel
	F24=More keys	

Figure 102. AS/400 Configuration Panel- Device Description

There is a device description for each display station session defined on the PCOMM V4.1 workstation.

5.5 AS/400 Pass-Through via LAN to an S/390

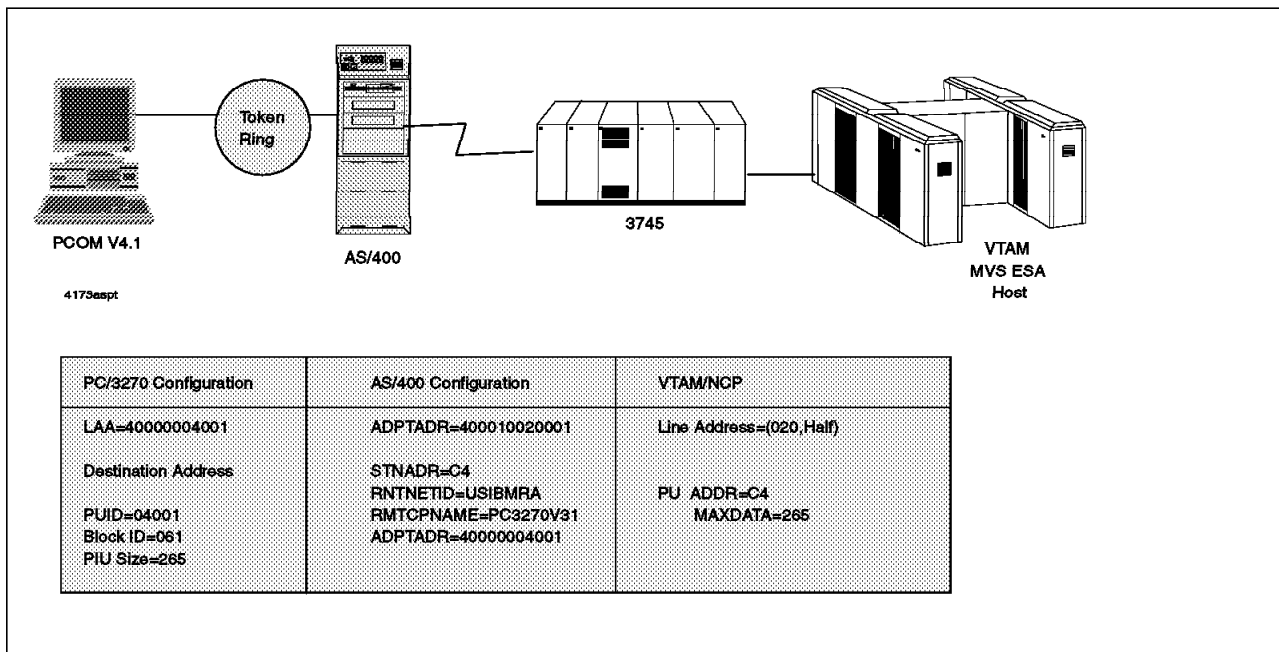


Figure 103. Token-Ring through AS/400 to S/390

In this connectivity scenario, a PCOMM V4.1 for Windows 3.1 workstation is connected via a token-ring to an AS/400 in SNA Pass-Through mode. The AS/400 is utilizing its APPN capabilities for routing through the network. This scenario differs from the previous in that the destination host is a real S/390 and it is not the 3270 emulation mode of the AS/400. The PCOMM V4.1 for Windows 3.1 workstation will have two sessions to the S/390.

For this example, we need to do the following:

- Configure the PCOMM V4.1 for Windows 3.1 for connections to the AS/400.
- Create a line description in the AS/400 to describe the AS/400 token-ring adapter and attachment to PCOMM V4.1 for Windows 3.1.
- Create a line description in the AS/400 to describe the AS/400 SDLC adapter and attachment to VTAM/NCP.
- Create a controller description in the AS/400 to represent the PCOMM V4.1 for Windows 3.1 workstation.
- Create a device description in the AS/400 for each session configured in the PCOMM V4.1 for Windows 3.1 workstation.

Note: Not all of the required configuration, customization or definition panels will be shown; only those that are significant to the example are included.

5.5.1 PCOMM V4.1 for Windows 3.1 Definitions

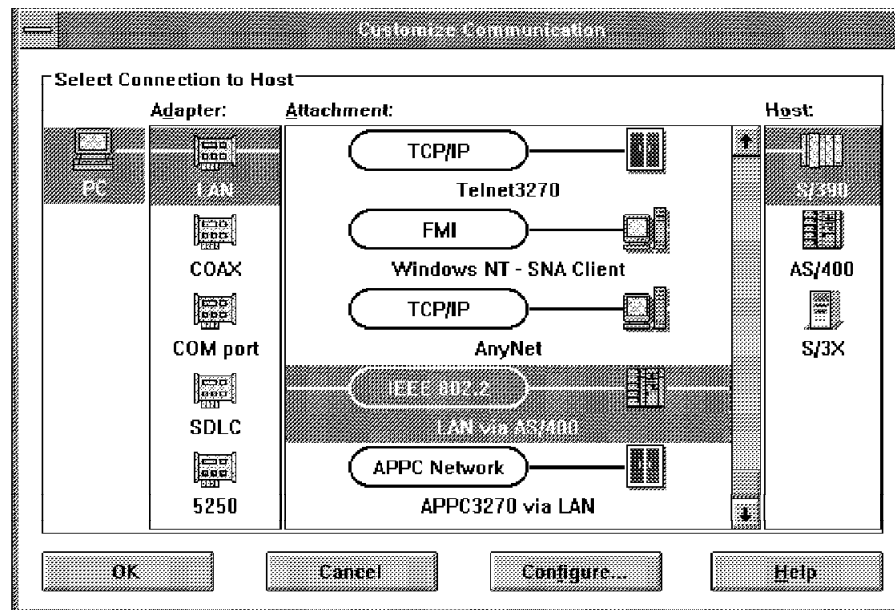


Figure 104. Customize Communications Panel - LAN via AS/400

In the Customize Communication panel, select the **LAN** Adapter, the **LAN via AS/400** attachment and the **S/390** Host. Click on **Configure...** to get the Customize Communication - 3270 Host panel, and then, click on **Configure Link...** to get the IEEE802.2 panel.

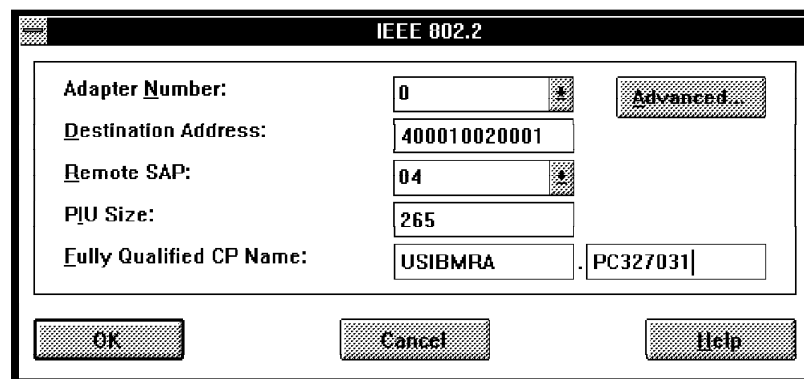


Figure 105. IEEE 802.2 Panel

The values shown in the Fully Qualified CP Name fields (NetID and CP Name) are important for this connection. The NetID must match the value specified in the RMTNETID statement in the upstream controller description (see Figure 107 on page 110). The CP Name must match the value specified in the RMTCPNAME statement in the downstream controller description (see Figure 108 on page 111).

The PIU Size must be equal to or greater than the maximum frame size statement in the AS/400 Workstation.

5.5.2 VTAM/NCP Definitions for AS/400

```

RAOL0020 LINE ADDRESS=(020,HALF),   TRANSMIT AND RECEIVE ADDRESSES   **
      NPACOLL=YES,                      NPA**
      ANS=CONTINUE,                     DON'T BREAK CROSS DOMAIN SESSIONS **
      ISTATUS=ACTIVE,                   **
      DUPLEX=(FULL),                   REQUEST TO SEND ALWAYS UP      **
      ETRATIO=30,                      DEFAULT                        **
      LPDATS=LPDA1,                   **
      MAXPU=9,                        ALLOW NO MORE THAN 9 PUS ON LINE  **
      SERVLIM=2,                      **
      SRT=(,64),                      **
      SPEED=(4800)                     LINE SPEED IS 4800 BPS
*      NGFTXT=' AS/400A'
*****
*      SERVICE MACRO SPECIFICATION FOR SDLC (LINE 020)
*****
      SERVICE ORDER=(RAOP1B),
      MAXLIST=9
*****
*      PU AND LU DEFINITIONS OF AS/400A TO SUPPORT DEPENDENT
*      AND INDEPENDENT LUS
*****
RAOP1B  PU  ADDR=C4,
      ISTATUS=ACTIVE,      (V) VTAM ONLY
      XID=YES
      STATOPT=' AS/400A'
*****
RAOT1B8B LU LOCADDR=139,  X'8B'  3270 EMULATION FOR SNAPST
      MODETAB=MTGS3X,
      USSTAB=US327X,
      ISTATUS=ACTIVE

```

Figure 106. VTAM Definitions

5.5.3 AS/400 Definitions (RALYAS4A) for the Upstream Link

```

/* SDLC Line Definition Upstream to VTAM at RALYAS4A */

CRTLINSDLC LIND(RAOL0020) RSRNAME(LIN071) ROLE(*SEC) +
      EXCHID(*SYSGEN) NRZI(*YES) DUPLEX(*HALF) +
      TEXT(' SNA lease line to Subarea 24')

CRTCTHHOST CTLD(RAOP1B) LINKTYPE(*SDLC) APPN(*YES) +
      LINE(RAOL0020) RMTNETID(USIBMRA) RMTCPNAME(RAK) +
      STNADR(C4) CPSSN(*NO) NODETYPE(*LENNODE) +
      TEXT(' SNA controller to Subarea 24')

CRTDEVSNPT DEVD(RAOT1B8B) SNPTCLS(*UP) +
      LOCADR(8B) CTL(RAOP1B) +
      SNPTDEV(T3174T20)
      TEXT(' SNPT Device for PCOMM V4.1 T2.0 to Host')

. . .

```

Figure 107. AS/400 Definitions for the Upstream Link

5.5.4 AS/400 Definitions (RALYAS4A) for the Downstream PCOMM V4.1 Link

```
/* Token-Ring Line Definition downstream to PCOMM V4.1 at RALYAS4A */

      CRTLINTRN  LIND(L41TR) RSRNAME(LIN041) +
                ADPTADR(40001002001) SSAP((04 *MAXFRAME +
                *SNA) (08 *MAXFRAME *SNA)) +
                TEXT('Token-Ring Line Description')

      CRTCTLAPPC CTLD(PC327031) LINKTYPE(*LAN) APPN(*NO) +
                TYPE(3174) SWTLINLST(L41TR) +
                RMTCPNAME(PC327031) ADPTADR(400000004001)
                TEXT('PC/3270 V3.1 PU T2.0 non-APPN for SNPT')

      CRTDEVDP  DEVD(PC327031) DEVCLS(*SNPT) TYPE(3278) +
                MODEL(0) LOCADR(02) CTL(PC327031) +
                SNPTDEV(RAOT1B8B)
                TEXT('PC/3270 V3.1 LU 2 for SNPT')

      . . .
```

Figure 108. AS/400 Definitions for the Downstream PCOMM V4.1 Link

5.5.5 Operation

In order to activate the current scenario, you need to perform the following steps:

1. Vary on the lines RAOL0020 and PC327031 on the AS/400, and IML the customized diskette.

When we display the configuration status with the command WRKCFGSTS *CTL PC327031 on RALYAS4A, after getting the sign on screen, we will see the following:

```
Work with Configuration Status                                06/06/92
Position to . . . . . Starting characters
Type options, press Enter.
 1=Vary on  2=Vary off  5=Work with job  8=Work with description
 9=Display mode status ...
Opt Description      Status      -----Job-----
   L41TR             ACTIVE
   PC327031          ACTIVE
   PC327031          VARIED ON
```

Figure 109. Configuration Status of RALYAS4A

2. As soon as we log on to the VTAM application, the status of PC327031 will change to ACTIVE:

```
Work with Configuration Status                                06/06/92
Position to . . . . . Starting characters
Type options, press Enter.
 1=Vary on  2=Vary off  5=Work with job  8=Work with description
 9=Display mode status ...
Opt Description      Status      -----Job-----
   L41TR             ACTIVE
   PC327031          ACTIVE
   PC327031          ACTIVE
```

Figure 110. Configuration Status of RALYAS4A

5.6 Token-Ring Attachment to OS/2 Communications Server Gateway

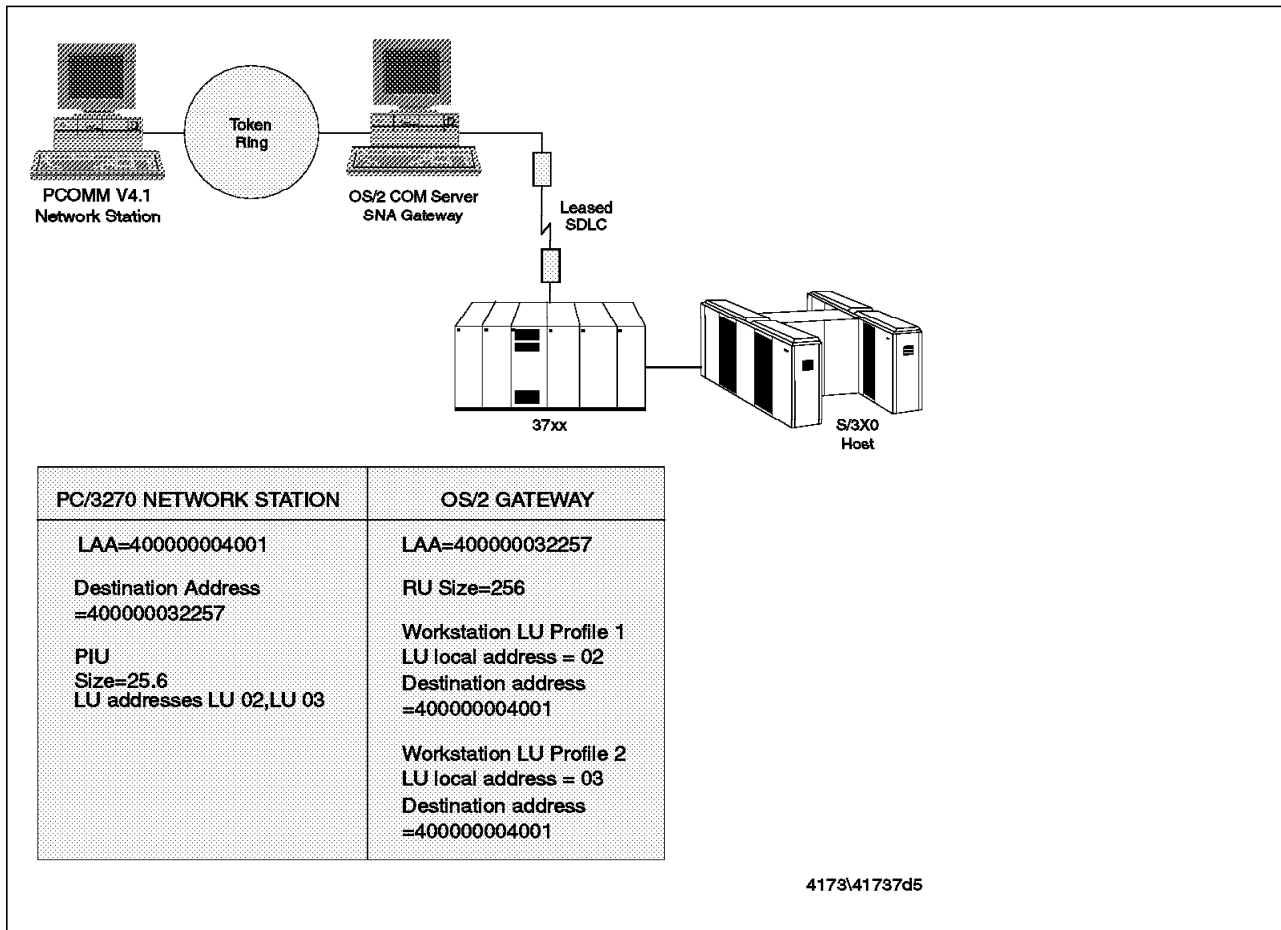


Figure 111. Token-Ring Attachment to OS/2 Communications Server SNA Gateway

In this connectivity scenario, a PCOMM V4.1 workstation is connected via a token-ring to an OS/2 Communications Server SNA gateway. The PCOMM V4.1 workstation will have two sessions to the S/390 host.

For this example, we need to do the following:

- Configure the PCOMM V4.1 workstation to access the OS/2 Communications Server gateway.
- Configure the OS/2 Communications Server gateway to provide sessions to the PCOMM V4.1 workstation
- Define the OS/2 Communications Server gateway in NCP as a PU with multiple LUs.

In this example, the link between the host and the OS/2 Communication Server gateway is shown as an SDLC line. This link could have been another link type such as an 802.2 LAN or X.25. This is transparent to the PCOMM V4.1 network station. The host sees the OS/2 Communications Server gateway as a single PU T2.0 with multiple LUs, two of which are actually in use on the PCOMM V4.1 workstation.

Note: Not all of the required configuration, customization or definition panels will be shown; only those that are significant to the example are included.

5.6.1 Configuring PCOMM V4.1 for Token-Ring Attachment

```

-----
Advanced Options for LAN Attachment via 802.2 Protocol  More: -+
-----
Enter the required information.

Total number of LAN sessions . . . . . 2
Link name . . . . . lan1
Destination address . . . . . [400000032257]
Number of sessions for this gateway . . [2]
Physical Unit ID . . . . . [00000]
Adapter number . . . . . [0]
Remote SAP/Local SAP . . . . . [04]/[04]
Block ID . . . . . [061]
PIU size . . . . . [0265]

F1=Help F3=Exit F7=Backward F8=Forward

```

Figure 112. Adv. Opt. for LAN Attachment via 802.2 Protocol Panel - LAN Attachment to OS/2 Gateway - DOS FF Mode

IEEE 802.2

Adapter Number: 0

Destination Address: 400000032257

Remote SAP: 04

PIU Size: 0265

Physical Unit ID: 90001

Block ID: 061

Advanced...

OK Cancel Help

Figure 113. LAN via IEEE 802.2 Link Parameters - LAN Attachment to OS/2 Gateway - Windows 3.1

In this configuration, the PUID and Block ID are not required and any value may be entered. The most important parameter is the destination address, which *must* match the LAA of the OS/2 Communications Server gateway's token-ring adapter.

5.7 Network Station Token-Ring Attachment to PCOMM V4.1 Gateway

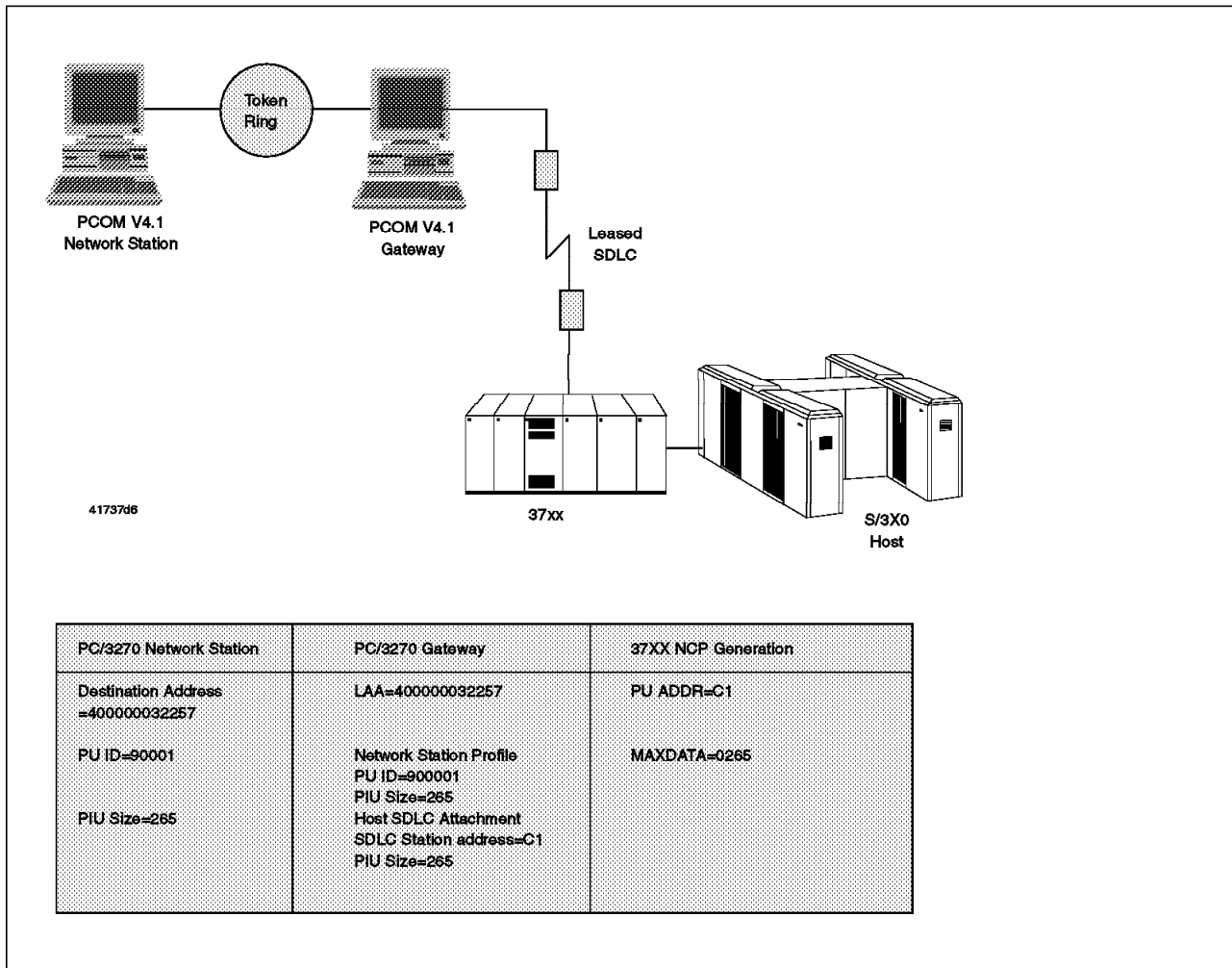


Figure 114. Token-Ring Attachment to a PCOMM V4.1 Gateway

In this connectivity scenario, a PCOMM V4.1 workstation is connected via a token-ring to a PCOMM V4.1 gateway. The PCOMM V4.1 workstation will have two sessions to the S/390 host.

For this example, we need to do the following:

- Configure the PCOMM V4.1 workstation to access the PCOMM V4.1 gateway.
- Configure the PCOMM V4.1 gateway to provide sessions to the PCOMM V4.1 workstation.

For details of the PCOMM V4.1 gateway configuration, please see 8.5, "Configuring a PCOMM V4.1 Gateway" on page 195.

- Define the PCOMM V4.1 gateway in NCP as a PU with multiple LUs.

Note: Not all of the required configuration, customization or definition panels will be shown; only those that are significant to the example are included.

In this example, the link between the host and the PCOMM V4.1 gateway is shown as an SDLC line. This link could have been another link type such as an 802.2 LAN or X.25. This is transparent to the PCOMM V4.1 network station. The host sees the gateway as a single PU T2.0 with multiple LUs, two of which are actually in use on the PCOMM V4.1 network station.

5.7.1 Configuring PCOMM V4.1 for Token-Ring Attachment

```

Advanced Options for LAN Attachment via 802.2 Protocol  More: -+
-----
Enter the required information.

Total number of LAN sessions . . . . . 2
Link name . . . . . lan1
Destination address . . . . . [400000032257]
Number of sessions for this gateway . . [2]
Physical Unit ID . . . . . [90001]
Adapter number . . . . . [0]
Remote SAP/Local SAP . . . . . [04]/[04]
Block ID . . . . . [061]
PIU size . . . . . [0265]

F1=Help F3=Exit F7=Backward F8=Forward
  
```

Figure 115. Adv. Opt. for LAN Attachment via 802.2 Protocol Panel - LAN Attachment to PCOMM V4.1 Gateway - DOS FF Mode

IEEE 802.2

Adapter Number:	0	Advanced...
Destination Address:	400000032257	
Remote SAP:	04	
PIU Size:	0265	
Physical Unit ID:	90001	
Block ID:	061	

OK Cancel Help

Figure 116. IEEE 802.2 Link Parameters Window - LAN Attachment to PCOMM V4.1 Gateway - Windows 3.1

The destination address *must* match the LAA of the token-ring adapter in the gateway. The Block ID is not used in this configuration, but has been left at the default.

The PUID may or may not be important. A *network station profile* can be set-up at the gateway which will give a specific set of LUs to this particular workstation. Perhaps this workstation has a printer attached and you wish to define a specific printer LU for the workstation printer. In this case, the PUID is used to find the network profile. If there is no match, then a default network station profile will be assigned to the workstation. The default network station profile is also specified at the gateway.

The PIU value shown on this screen should match the PIU specified in the network profile that it picks up from the gateway.

Note: There are some special considerations for LAN IEEE 802.2 connection and workstations. Please refer to 4.1, "General Considerations" on page 63.

5.7.2 Configuring the PCOMM V4.1 Gateway

The gateway configuration is covered in its own chapter. Please refer to Chapter 8, "The PCOMM V4.1 Gateway" on page 191 for details.

5.8 Ethernet Attachment to OS/2 CM/2 Gateway

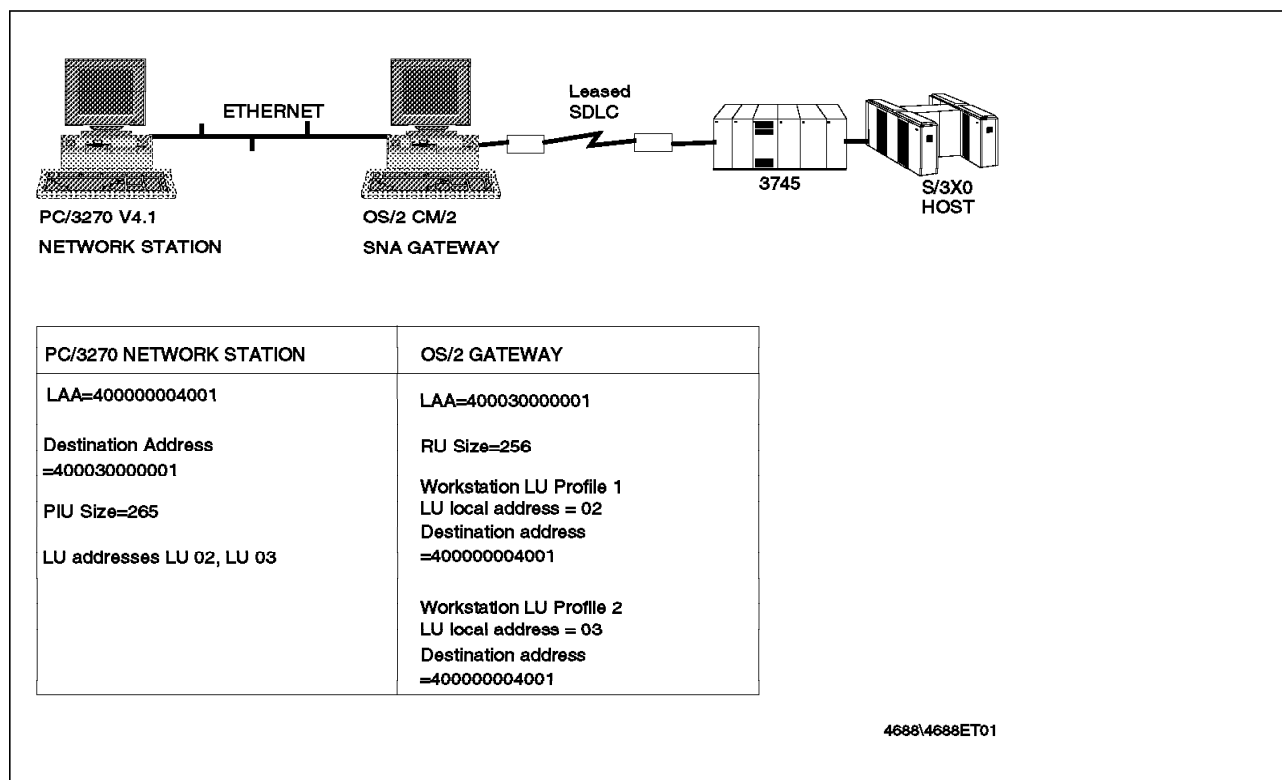


Figure 117. Ethernet Attachment to an OS/2 CM/2 SNA Gateway

In this connectivity scenario, a PCOMM V4.1 workstation is connected via an Ethernet IEEE 802.3 network to an IBM OS/2 CM/2 SNA gateway. This OS/2 CM/2 gateway is attached via an SDLC link to a 37xx Communication Controller, and then to an S/390 host. The PCOMM V4.1 workstation will have two sessions to the S/390 host.

For this example, we need to do the following:

- Configure LAN Support Program on the PCOMM V4.1 workstation to include appropriate device drivers and parameters (see “Configuring LAN Support Program V1.3 for an Ethernet Network” on page 66).
- Update the PROTOCOL.INI file on the PCOMM V4.1 workstation to add appropriate statements (see “Updating PROTOCOL.INI for the IBM Ethernet Adapter” on page 68).
- Configure the PCOMM V4.1 workstation to access the OS/2 CM/2 gateway.
- Configure the OS/2 CM/2 gateway to provide sessions to the PCOMM V4.1 workstation.
- Define the OS/2 CM/2 gateway in NCP as a PU with multiple LUs.

Note: Not all of the required configuration, customization or definition panels will be shown; only those that are significant to the example are included.

5.8.1 Configuring PCOMM V4.1 for Ethernet Attachment

Configuring a PCOMM V4.1 workstation for Ethernet LAN attachment via an OS/2 CM/2 gateway is the same as configuring a PCOMM V4.1 workstation for token-ring LAN attachment. The Ethernet connection also uses the 802.2 interface, which means, you should select the **LAN via 802.2 protocol** on the Attachment Types panel (PCOMM V4.1 for DOS FF Mode) or the **LAN via IEEE802.2** on the Customize Communication window (PCOMM V4.1 for Windows 3.1).

Attachment Types More: -+

Enter the required information.

Total number of sessions for:

Distributed Function Terminal (DFT)	[0]
LAN via 802.2 protocol	[2]
LAN via NetBIOS	[0]
3174 Peer Communication	[0]
Synchronous Data Link Control (SDLC)	[0]
Asynchronous Data Link Control (ASYNCH) (for attachment to a Series/1 SNA gateway only)	[0]
CCITT X.25 Network (X.25)	[0]

F1=Help F3=Exit F7=Backward **F8=Forward**

Figure 118. Attachment Types Panel - Ethernet LAN Attachment to OS/2 Gateway - DOS FF Mode

Advanced Options for LAN Attachment via 802.2 Protocol More: -+

Enter the required information.

Total number of LAN sessions	2
Link name	lan1
Destination address	[400030000001]
Number of sessions for this gateway . .	[2]
Physical Unit ID	[00000]
Adapter number	[0]
Remote SAP/Local SAP	[04]/[04]
Block ID	[061]
PIU size	[0265]

F1=Help F3=Exit F7=Backward **F8=Forward**

Figure 119. Adv. Opt. for LAN Attachment via 802.2 Protocol Panel - Ethernet LAN Attachment to OS/2 Gateway - DOS FF Mode

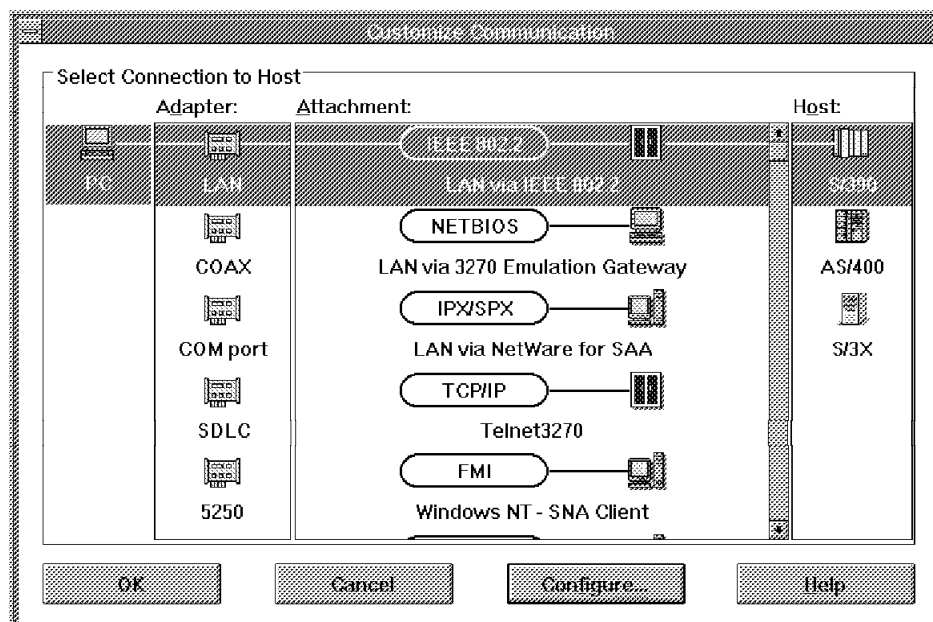


Figure 120. Customize Communication Window - Ethernet LAN Attachment to OS/2 Gateway - Windows 3.1

Once you have selected the **LAN via IEEE 802.2** connection, click on the **Configure...** button to go to the Customize Communication-3270 Host window. For the Session Parameters see 2.5, "Customize PCOMM for OS/2 and for Windows" on page 15.

In the Customize Communication panel, click on the **Configure Link...** button to go to the IEEE 802.2 Link parameter window shown in Figure 121 on page 119.

Figure 121. LAN via IEEE 802.2 Link Parameters Window - Ethernet LAN Attachment to OS/2 Gateway - Windows 3.1

In this configuration, the PUID and Block ID are not used. The most important parameter is the destination address, which *must* match the LAA of the OS/2 gateway's Ethernet adapter.

5.9 Network Station Ethernet Attachment to a PCOMM V4.1 Gateway

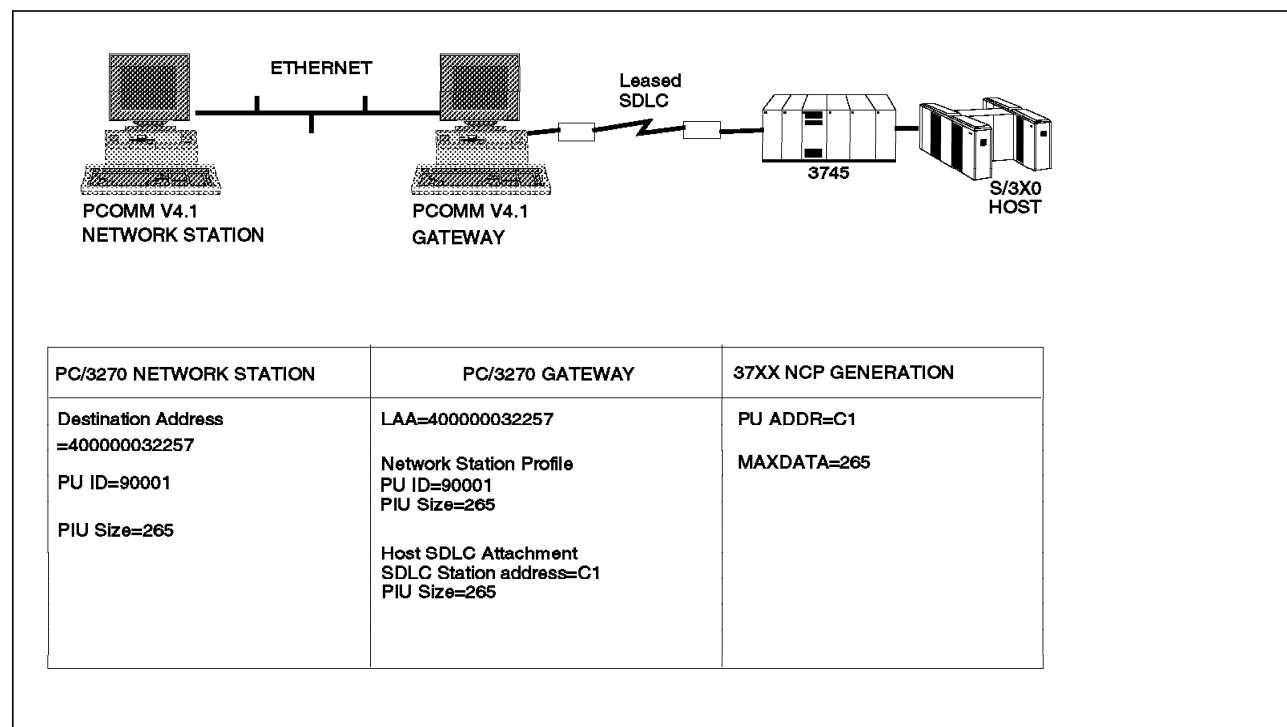


Figure 122. Ethernet Attachment to a PCOMM V4.1 Ethernet Network Gateway

In this connectivity scenario, a PCOMM V4.1 workstation is connected via an Ethernet network directly to a PCOMM V4.1 Ethernet gateway. The PCOMM V4.1 workstation will have two sessions to the S/390 host.

For this example, we need to do the following:

- Configure LAN Support Program on the PCOMM V4.1 workstation to include the Ethernet network device drivers and parameters (see “Configuring LAN Support Program V1.3 for an Ethernet Network” on page 66).
- Update the PROTOCOL.INI file on the PCOMM V4.1 workstation to add appropriate statements (see “Updating PROTOCOL.INI for the IBM Ethernet Adapter” on page 68).
- Configure the PCOMM V4.1 workstation to access the PCOMM V4.1 Ethernet gateway.
- Configure the PCOMM V4.1 Ethernet gateway to provide sessions to the PCOMM V4.1 Ethernet workstation.

For details of the PCOMM V4.1 gateway configuration, please see 8.5, “Configuring a PCOMM V4.1 Gateway” on page 195.

- Define the PCOMM V4.1 gateway in NCP as a PU with multiple LUs.

Note: Not all of the required configuration, customization or definition panels will be shown; only those that are significant to the example are included.

We use the same example that we used in 5.7, “Network Station Token-Ring Attachment to PCOMM V4.1 Gateway” on page 114. There is nothing that has to be changed in the PCOMM V4.1 configuration, but you have to add the Ethernet network parameter to your CONFIG.SYS and PROTOCOL.INI files. The link between the host and the PCOMM V4.1 gateway is shown as an SDLC line. This link could have been another link type such as an 802.2 LAN or X.25. This is transparent to the PCOMM V4.1 Ethernet network station.

5.9.1 Configuring PCOMM V4.1 for Ethernet Attachment

Advanced Options for LAN Attachment via 802.2 Protocol More: -+

Enter the required information.

Total number of LAN sessions	2
Link name	lan1
Destination address	[400000032257]
Number of sessions for this gateway . .	[2]
Physical Unit ID	[90001]
Adapter number	[0]
Remote SAP/Local SAP	[04]/[04]
Block ID	[061]
PIU size	[0265]

F1=Help F3=Exit F7=Backward **F8=Forward**

Figure 123. Adv. Opt. for LAN Attachment via 802.2 Protocol Panel - LAN Attachment to PCOMM V4.1 Ethernet Gateway - DOS FF Mode

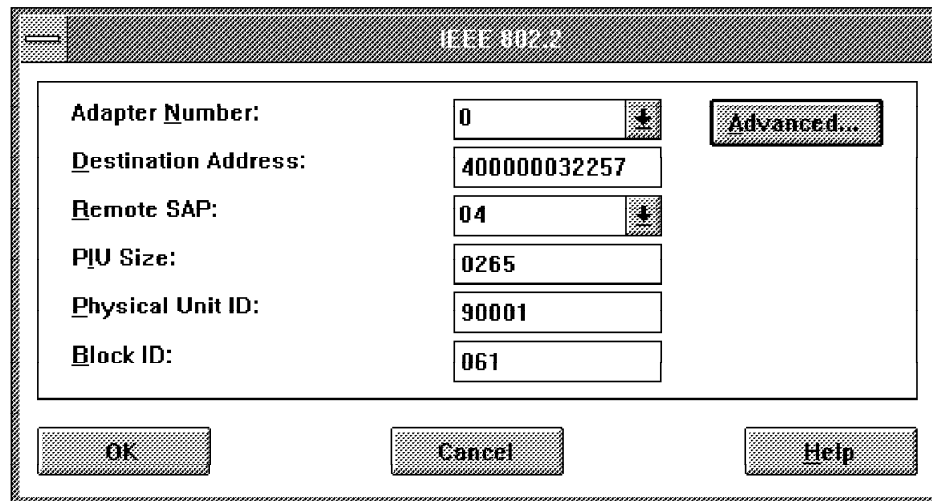


Figure 124. LAN via IEEE 802.2 Link Parameters Window - LAN Attachment to PCOMM V4.1 Ethernet Gateway - Windows 3.1

The destination address *must* match the LAA of the Ethernet adapter in the gateway. The Block ID is not used in this configuration, but has been left as default.

The PUID may or may not be important. A *network station profile* can be set up at the gateway which will give a specific set of LUs to this particular workstation. Perhaps this workstation has a printer attached and you wish to define a specific printer LU for the workstation printer. In this case, the PUID is used to find the network profile. If there is no match, then a default network station profile will be assigned to the workstation. The default network station profile is also specified at the gateway.

The PIU value shown on this panel should match the PIU specified in the network profile that it picks up from the gateway.

Notes:

1. When using PCOMM V4.1 with an Ethernet adapter, the maximum PIU size allowable is 1490. If the PIU size is greater than 1490, you will get a MACH682 error (the LAN adapter failed to open).
2. There are some special considerations for LAN IEEE 802.2 connection and workstations. Please refer to 4.1, "General Considerations" on page 63.

5.9.2 Configuring the PCOMM V4.1 Gateway

For the configuration of a PCOMM V4.1 Gateway we have the same rules as for a PCOMM V4.1 workstation on the Ethernet network. The CONFIG.SYS and the PROTOCOL.INI files have to be customized to support the Ethernet network and your installed adapter. An LAA is required on the PCOMM V4.1 gateway station and the EST parameter should match the number of network stations that access the gateway. The PCOMM V4.1 gateway customization for an Ethernet network is equal to the gateway configuration for a token-ring network. Refer to Chapter 8, "The PCOMM V4.1 Gateway" on page 191 for more detailed information.

5.10 Network Station LAN Attachment to PC 3270 EP V3.0 Gateway

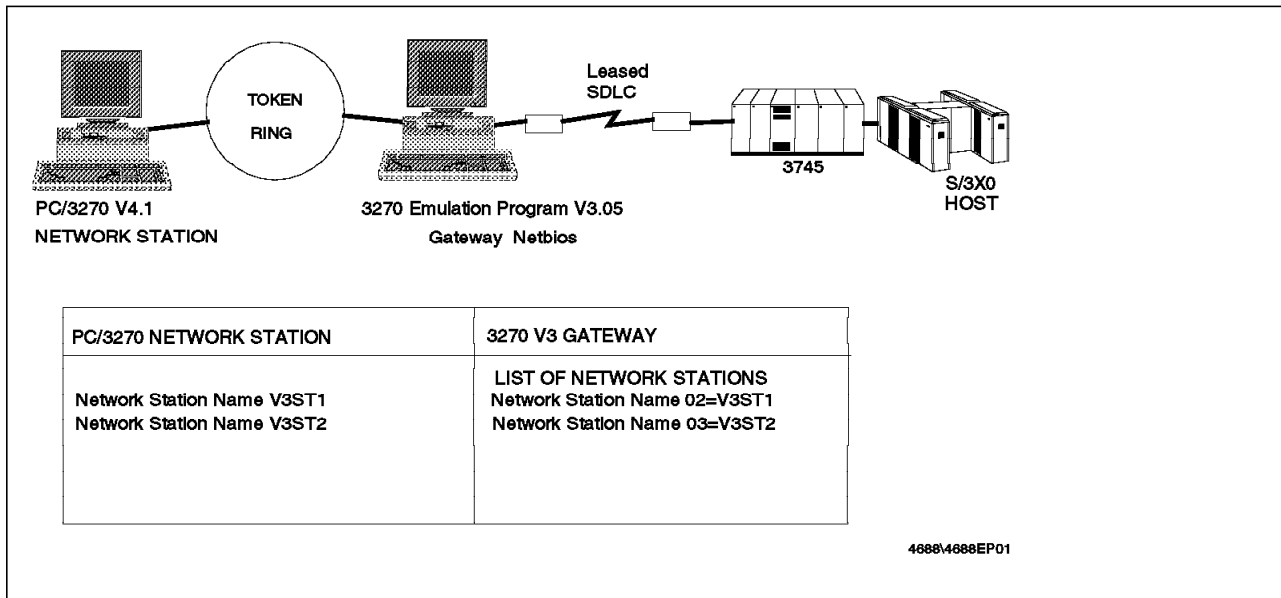


Figure 125. Token-Ring Attachment to a 3270 Emulation V3.05 Gateway

In this connectivity scenario, a PCOMM V4.1 workstation is connected via a token-ring to a PC 3270 Emulation Program V3.05 gateway. The PCOMM V4.1 workstation will have two sessions to the S/390 host.

For this example, we need to do the following:

- Configure the PCOMM V4.1 workstation to access the PC 3270 Emulation Program V3.05 gateway.
- Configure the PC 3270 Emulation Program V3.05 gateway to provide sessions to the PCOMM V4.1 workstation.
- Define the PC 3270 Emulation Program V3.05 gateway in NCP as a PU with multiple LUs.

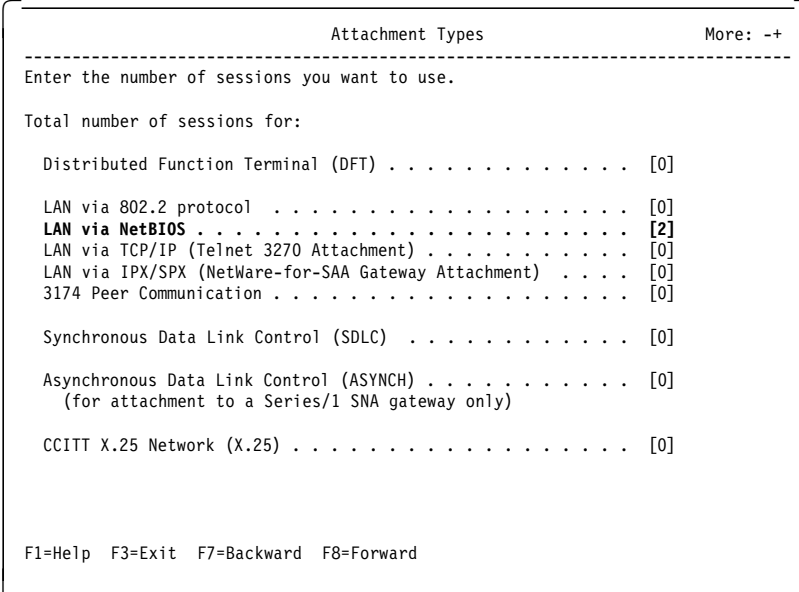
Note: Not all of the required configuration, customization or definition panels will be shown; only those that are significant to the example are included.

PCOMM V4.1 can communicate to a host via a PC 3270 Emulation Program V3.05 gateway, but *must* do so using the NetBIOS interface, as the PC 3270 Emulation Program V3.0x gateway does not support IEEE 802.2 protocol downstream to the network stations.

In this example, the connection between the host and the gateway is shown as SDLC, but this equally could be a DFT or token-ring connection. This is transparent to the PCOMM V4.1 network station. The host sees the PC 3270 Emulation Program V3.05 gateway as a single PU T2.0 with multiple LUs. In our example, two of these LUs are in use on the PCOMM V4.1 workstation.

5.10.1 Configuring PCOMM V4.1 for LAN NetBIOS Attachment

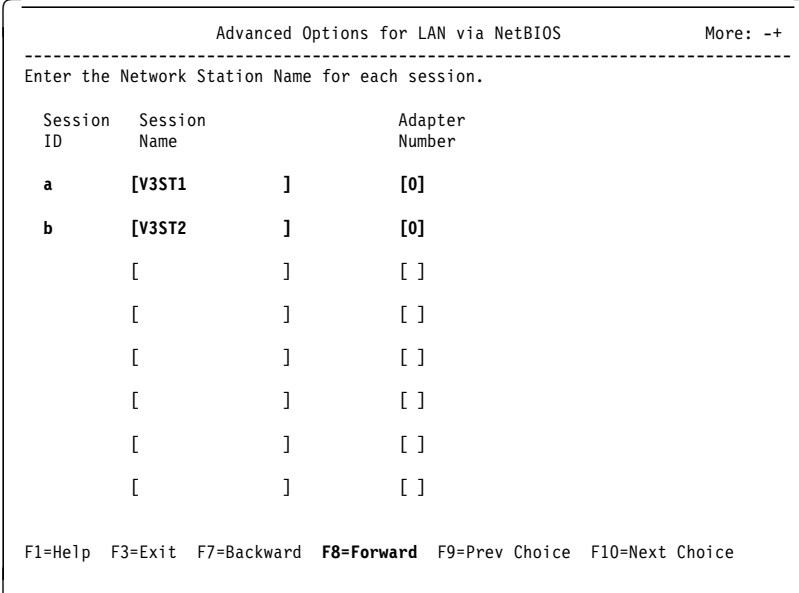
To configure a PCOMM V4.1 workstation to communicate with a host via a PC 3270 Emulation Program V3.05 gateway, select the **LAN via NetBIOS** option from the Attachment Types panel (for DOS FF Mode) or the Customize Communication window (Windows 3.1).



The screenshot shows a window titled "Attachment Types" with a "More: -+" button in the top right. Below the title bar is a dashed line, followed by the text "Enter the number of sessions you want to use." and "Total number of sessions for:". A list of attachment types follows, each with a corresponding number in brackets: "Distributed Function Terminal (DFT) [0]", "LAN via 802.2 protocol [0]", "**LAN via NetBIOS [2]**", "LAN via TCP/IP (Telnet 3270 Attachment) [0]", "LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment) [0]", "3174 Peer Communication [0]", "Synchronous Data Link Control (SDLC) [0]", "Asynchronous Data Link Control (ASYNCH) [0] (for attachment to a Series/1 SNA gateway only)", and "CCITT X.25 Network (X.25) [0]". At the bottom, there are function key instructions: "F1=Help F3=Exit F7=Backward F8=Forward".

Attachment Types		More: -+
Enter the number of sessions you want to use.		
Total number of sessions for:		
Distributed Function Terminal (DFT)		[0]
LAN via 802.2 protocol		[0]
LAN via NetBIOS		[2]
LAN via TCP/IP (Telnet 3270 Attachment)		[0]
LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment)		[0]
3174 Peer Communication		[0]
Synchronous Data Link Control (SDLC)		[0]
Asynchronous Data Link Control (ASYNCH) (for attachment to a Series/1 SNA gateway only)		[0]
CCITT X.25 Network (X.25)		[0]
F1=Help F3=Exit F7=Backward F8=Forward		

Figure 126. Attachment Types Panel - LAN via NetBIOS to 3270 Emulation Program V3.0 Gateway - DOS FF Mode



The screenshot shows a window titled "Advanced Options for LAN via NetBIOS" with a "More: -+" button in the top right. Below the title bar is a dashed line, followed by the text "Enter the Network Station Name for each session." A table with three columns is displayed: "Session ID", "Session Name", and "Adapter Number". The first two rows are pre-filled: "a" with "[V3ST1]" and "[0]", and "b" with "[V3ST2]" and "[0]". The remaining four rows have empty brackets. At the bottom, there are function key instructions: "F1=Help F3=Exit F7=Backward **F8=Forward** F9=Prev Choice F10=Next Choice".

Advanced Options for LAN via NetBIOS			More: -+
Enter the Network Station Name for each session.			
Session ID	Session Name	Adapter Number	
a	[V3ST1]	[0]	
b	[V3ST2]	[0]	
	[]	[]	
	[]	[]	
	[]	[]	
	[]	[]	
	[]	[]	
	[]	[]	
F1=Help F3=Exit F7=Backward F8=Forward F9=Prev Choice F10=Next Choice			

Figure 127. Advanced Options for LAN via NetBIOS Panel - DOS FF Mode

Configuring in PCOMM V4.1 for DOS (Full-Function Mode) consists of entering a network station name for each session on the Session name fields on the Advanced Options for LAN via NetBIOS panel (see Figure 127 on page 123). These names *must* match the names in the list of network stations in the gateway configuration (Figure 132 on page 127).

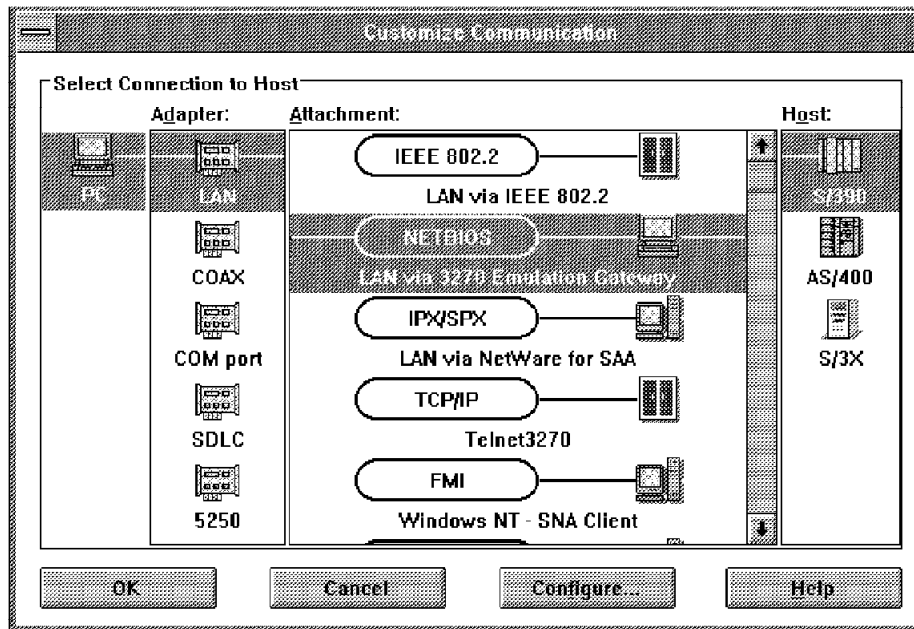


Figure 128. Customize Communication Window - LAN via 3270 Emulation Gateway - Windows 3.1

In the Customize Communication window choose the **LAN** adapter, the **LAN via 3270 Emulation Gateway** attachment and the **S/390** host and click on the **Configure...** button to get the LAN via 3270 Emulation Gateway Panel shown in Figure 129 on page 125 for session One and in Figure 129 on page 125 for session Two.

Configuring in PCOMM V4.1 for Windows 3.1 consists of entering a network station name for each session on the LAN via 3270 Emulation Gateway panel. These names *must* match the names in the list of network stations in the gateway configuration (Figure 132 on page 127).

Note that for PCOMM V4.1 for Windows 3.1 you *must* perform the configuration for each session separately because the network station name has to be different (refer to Figure 129 on page 125 and Figure 130 on page 125). In this configuration you can't start the same WorkStation icon twice.

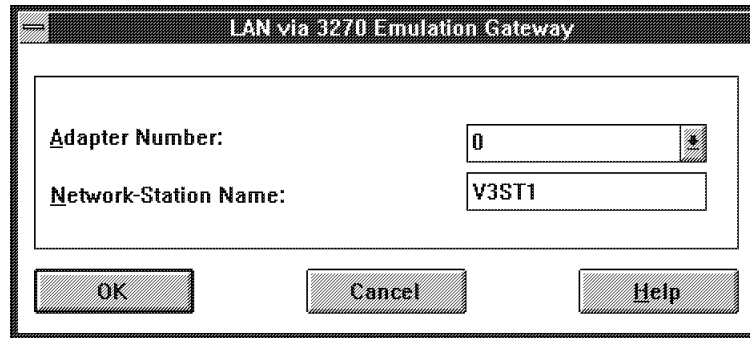


Figure 129. LAN via 3270 Emulation Gateway Parameters Window - Session One - Windows 3.1

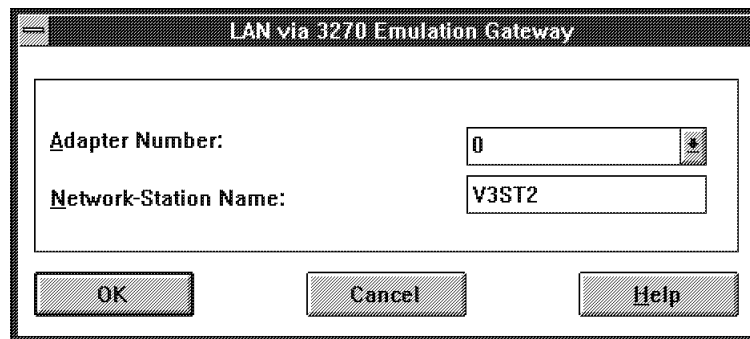


Figure 130. LAN via 3270 Emulation Gateway Parameters Window - Session Two - Windows 3.1

Changing CONFIG.SYS File for LAN NetBIOS Attachment

Because the NetBIOS interface is required for this connection, the DXMT0MOD.SYS device driver *must* be used in the CONFIG.SYS of the PCOMM V4.1 network station. Figure 131 shows a sample CONFIG.SYS file for this configuration, using IBM PC DOS 5.0 and a token-ring network.

```

DEVICE=C:\DOS50\HIMEM.SYS
DOS=HIGH
DEVICE=C:\DOS50\ANSI.SYS
DEVICE=C:\DOS50\SMARTDRV.SYS 512 128
DEVICE=C:\LSP\DXMAOMOD.SYS
DEVICE=C:\LSP\DXMCOMOD.SYS 400000004001
DEVICE=C:\LSP\DXMTOMOD.SYS
SHELL=C:\DOS\COMMAND.COM /P /E:256
LASTDRIVE=E
BUFFERS=10
FILES=20
FCBS=16,8
  
```

Figure 131. Sample CONFIG.SYS for LAN Attachment via NetBIOS (DOS 5.0)

Special Considerations for LAN NetBIOS Windows WorkStation

Pay special attention to the following DFT configurations:

- If VVLAND.386 is added in SYSTEM.INI (Windows 3.1).

VVLAND.386 is added only when the following conditions are satisfied:

- Windows is running in enhanced mode.
- IBM PC LAN support program is installed on your system and NetBIOS interface is available.

This virtual device allows you to make a connection to a host via NetBIOS in Microsoft Windows V3.1 enhanced mode environment.

```
[386Enh]
:
VpollHeapSize=XX
device=C:\PCSWIN\VpollD.386
device=C:\PCSWIN\Vvland.386
```

If you have upgraded Personal Communications Version 2.0 to Version 3.0, VVLAND.386 is added only if PC/3270 V2.0 was configured for the connection via NetBIOS to a 3270 Emulation program gateway and Microsoft Windows V3.1 is running in enhanced mode.

- If PCSVLAN.EXE is added in PCSTSR.BAT (Windows 3.1).

PCSVLAN.EXE is added only when the following conditions are satisfied:

- Microsoft Windows V3.1 is running in standard mode.
- IBM PC LAN support program is installed on your system and NetBIOS interface is available.

This DOS TSR program allows you to make a connection to the host via NetBIOS in Microsoft Windows V3.1 standard mode environment. The configuration procedure will add the following lines to the PCSTSR.BAT file. Use PCSWIN.BAT to start Microsoft Windows V3.1 instead of WIN.

```
C:\PCSWIN\PCSPOLL.EXE /B=XX
C:\PCSWIN\PCSVLAN.EXE
```

Note: PCSVLAN.EXE is not added in PCSTSR.BAT when Windows is running in enhanced mode.

If you have upgraded Personal Communications Version 2.0 to Version 3.0, PCSVLAN.EXE is added only if PC/3270 V2.0 is configured for the connection via NetBIOS to a 3270 Emulation program gateway and Microsoft Windows V3.1 is running in standard mode.

5.10.2 Configuring the PC 3270 Emulation Program V3.05 Gateway

```
Chg Profile          GWAY1                               Ext 101          305

                                LIST OF NETWORK STATIONS

ID ITEM                                YOUR CHOICE                                POSSIBLE CHOICES

a Network Station Name 02          V3ST1                                Up to 15 Characters
b Network Station Name 03          V3ST2                                Up to 15 Characters
c Network Station Name 04          V3ST3                                Up to 15 Characters
d Network Station Name 05          V3ST4                                Up to 15 Characters
e Network Station Name 06          V3ST5                                Up to 15 Characters
f Network Station Name 07          V3ST6                                Up to 15 Characters
g Network Station Name 08          V3ST7                                Up to 15 Characters
h Network Station Name 09          V3ST8                                Up to 15 Characters

i Display Sessions                02 03 04 05 06 07 08 09 02-09 Separated
j Printer Sessions                by Spaces

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

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

Figure 132. 3270 Emulation Program V3.0 Gateway Configuration Panel - List of Network Stations

Note that the PIU size on the PCOMM V4.1 workstation is not configurable. This is because PC 3270 Emulation Program V3.05 only supports a PIU size of 265 bytes. This is the PIU size that will be used by the PCOMM V4.1 workstation.

Note: It is recommended that you update your PC 3270 Emulation Program V3.0x if it isn't at level 3.05.

Changing CONFIG.SYS file for PC 3270 Emulation Program V3.05 Gateway

If PCOMM V4.1 for Windows 3.1 is customized for NetBIOS attachment via a PC 3270 Emulation Program V3.05 gateway and Microsoft Windows V3.1 standard mode is required, or if PCOMM V4.1 for DOS (Full-Function Mode) is customized for NetBIOS attachment via a PC 3270 Emulation Program V3.05 gateway, you need to install the PCSGW.SYS module in the gateway machine in order to avoid timeout errors. Take the following steps to install PCSGW.SYS:

1. Insert the 3.5 inch product diskette #1 (Windows 3.1 Installation) or the 5.25 inch diskette #2 of PCOMM V4.1 for Windows 3.1 in the diskette drive of the gateway machine.
2. Copy PCSGW.SYS from the diskette to the gateway.
3. Edit the CONFIG.SYS file of the gateway as follows:

```
:
DEVICE=C:\LSP\DXMTOMOD.SYS 0=N ES=1 EST=2
DEVICE=(d:)\(path)\PCSGW.SYS
:
```

Insert the `DEVICE=(d:)\(path)\PCSGW.SYS` statement immediately after the `DEVICE=DXMTOMOD.SYS` statement. The actual drive, path name and parameters for `DXMTOMOD` will depend on your installation, of course.

4. Reboot the gateway.

5.11 PCOMM V4.1 LAN via NetWare for SAA Gateway

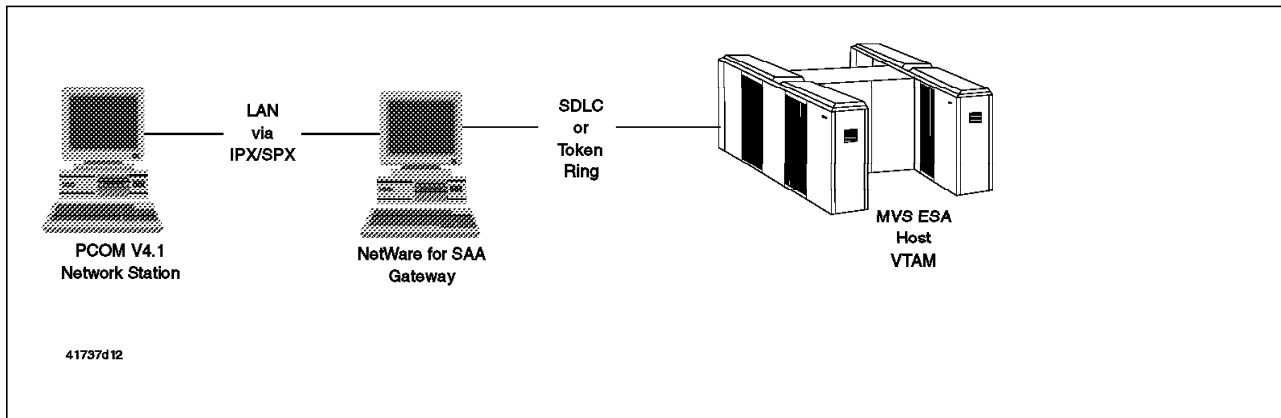


Figure 133. NetWare for SAA Gateway Attachment (LAN via IPX/SPX)

In this section, you will see how to customize the PCOMM V4.1 to connect to a NetWare for SAA gateway through an IPX/SPX LAN, as shown in Figure 133.

The NetWare for SAA Gateway Attachment involves some new terms such as Server name, User name, Service name, LU category, and so on. A brief explanation of these terms is given below.

Server name

It is the name assigned by your system administrator when communication services were installed on the NetWare server. This communication services name will not be the same as that of the NetWare file server.

A server name can be in the form of up to 47 alphanumeric characters.

User name

It is the name by which the workstation will gain access to the NetWare gateway. This *must* be a name that is defined in the bindery on the NetWare server.

The user name *must* be in the form of up to 47 alphanumeric characters.

User password

It is the password required for the user to gain access to the NetWare gateway.

Service name

It is the name of the SAA service you are accessing, typically the name of your host connection. It corresponds to the name of the SAA profile that was used by your system administrator when the SAA service was started.

A service name can be in the form of up to 47 alphanumeric characters.

LU category

It identifies the type of LU that is to be used in establishing a host session; an LU will be allocated from the chosen category. Access to an LU will be given if the user has the necessary access rights (if security is turned on at the gateway).

You can specify four types of LU:

Public	This is an unnamed LU. If a public LU is requested, NetWare for SAA will allocate the first such LU that is available.
Pooled	A pooled LU belongs to a named LU pool. Your system administrator may, for example, have defined an LU pool for your department or for users that need to access a specific application.
Dedicated	This is a named LU; it may be dedicated to a specific user or for use in accessing a specific application, for example.
Any	If the Any option is specified, NetWare for SAA will search all the LU pools, all the dedicated LUs and all the public LUs to which the user has access rights for a session that matches the type of LU being requested.

LU-pool name

This is the name of the LU pool to be used, if you are using pooled LUs.

LU name It indicates the name of the dedicated LU you are using.

For 5.11.2, "Configuring PCOMM V4.1 for DOS (Full-Function Mode) for IPX/SPX" on page 130 and 5.11.3, "Configuring PCOMM V4.1 for Windows 3.1 for IPX/SPX" on page 134, the following is assumed:

- The Server name is RTPNET4.
- The User name is TEST.
- The gateway does not require a password.
- The Service name is SAAPRF1.
- The LU category is Pooled and the LU-pool name is IBMHOST for DOS (Full-Function mode). For Windows 3.1, the LU category is Any.
- Two 24 x 80 sessions will be used.

5.11.1 Prerequisites

The connection of PCOMM V4.1 to the NetWare for SAA requires:

- Novell's NetWare file server V3 or V4.0 and Novell's NetWare for SAA Version 1.2 or later in the gateway workstation.
- Novell's NetWare client software installed in the client workstation.

You can get the client software from the package that is installed in the gateway workstation and install it manually, or you can use NetWare Workstation for DOS/Windows or NetWare Client for DOS/Windows products to install the client software.

In addition, for Windows 3.1, you need to invoke the Windows SETUP program to set the network to Novell's NetWare. Be sure you choose the correct level for the client software.

- A token-ring, Ethernet or PC Network adapter card with the required IPX/SPX protocol driver stack.

There is no special requirement for the CONFIG.SYS file.

5.11.2 Configuring PCOMM V4.1 for DOS (Full-Function Mode) for IPX/SPX

The setup for LAN via IPX/SPX (NetWare for SAA gateway attachment) under DOS FF mode can be done when you first install PCOMM V4.1, or after you have installed it. In this section, we present the specific IPX/SPX-related panels only.

After you go through the initial panels shown by the INSTALL or CONFIG programs, you get the Attachment Types panel as shown in Figure 134.

```
Attachment Types                                     More: -+
-----
Enter the number of sessions you want to use.

Total number of sessions for:

Distributed Function Terminal (DFT) . . . . . [0]
LAN via 802.2 protocol . . . . . [0]
LAN via NetBIOS . . . . . [0]
LAN via TCP/IP (Telnet 3270 Attachment) . . . . . [0]
LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment) . . . . [2]
3174 Peer Communication . . . . . [0]

Synchronous Data Link Control (SDLC) . . . . . [0]
Asynchronous Data Link Control (ASYNCH) . . . . . [0]
  (for attachment to a Series/1 SNA gateway only)
CCITT X.25 Network (X.25) . . . . . [0]

F1=Help F3=Exit F7=Backward F8=Forward
```

Figure 134. Attachment Types Panel - LAN via IPX/SPX - DOS FF Mode

After you specify 2 LAN via IPX/SPX sessions, press F8 to get the Advanced Options for NetWare-for-SAA Gateway Attachment panel shown in Figure 135 on page 131.

Advanced Options for NetWare-for-SAA Gateway Attachment

More: -+

Enter the information for this session.
Press PgDn to see next.

Session ID a

User name [TEST]

Password [

Server name [RTPNET4]

Service name [SAAPRF1]

LU category \$[Pooled]

LU-pool name [IBMHOST]

LU name [

Page select: 1 of 2. Enter a page number and press F2 to display it.

File-transfer packet size [02500]

F1=Help F2=Page F3=Exit F7=Bkwd F8=Forward F9=Prev choice F10=Next choice

Figure 135. Advanced Options for NetWare-for-SAA Gateway Attachment - DOS FF Mode

To get the help for any field in Figure 135, place the cursor in the desired field and press F1.

Fill in the fields for Figure 135:

User name TEST

Password (blank)

In our case, there's no password, so this field should be left blank.

Note: If a password is provided and the NetWare server does not require one, you will not be able to connect to the host, and 648 will be displayed in the OIA line.

Server name RTPNET4

If you specify an asterisk, PCOMM V4.1 will search all the NetWare servers that are running NetWare for SAA to find an available session.

Service name SAAPRF1

If you specify an asterisk, PCOMM V4.1 searches on the specified server for the first available service that includes the correct LU category.

LU category Pooled

Press F9 or F10 to select the Pooled LU category.

LU-pool name IBMHOST

If you specified **Pooled** in the LU category, you need to specify the LU-pool name here.

LU name (blank)

This field *must* be left blank, as you are not using dedicated LUs.

For the File-transfer packet size field, accept the default value (2500), or specify a greater value (up to 32000) for improved performance.

After all required fields are filled in for the first session (session ID a), you have to provide the same information for the remaining sessions. To display the panel in Figure 135 on page 131 for the other sessions, either press PgUp/PgDn, or change the Page select field to the desired session and press F2.

As the Advanced Options for NetWare for SAA Gateway Attachment panel is displayed for each specific session, you have the power to select among different servers, users, services, LU categories and LU pools, from a single workstation with PCOMM V4.1.

After both session instances are configured, press F8 to get the Screen Sizes panel in Figure 136.

Screen Sizes More: -+

Press F9 or F10 to change the choices.

Session ID	Link name	Screen size
a	ipxlan	↓[24 x 80]
b	ipxlan	↓[24 x 80]
		↓[]
		↓[]
		↓[]
		↓[]
		↓[]
		↓[]

F1=Help F3=Exit F7=Backward **F8=Forward** F9=Prev choice F10=Next choice

Figure 136. Screen Sizes Panel - LAN via IPX/SPX - for DOS (Full-Function Mode)

This panel allows you to specify the screen size for each session. Notice that the sizes you select should be in accordance with the chosen Service name specified in Figure 135 on page 131, that is, the subject screen size should be supported by the indicated SAA profile (Service name) of the NetWare for SAA server.

Specify 24 x 80, for instance, as the screen size for both sessions, and then, press F8 to get and customize the remaining installation panels until you get the End of Configuration panel, where you should press F6 to save the configuration.

When you are led to the DOS command prompt, take note of the BAT file name used to activate this configuration. If you didn't change the default, the name will be PC3270.

The INSTALL/CONFIG program creates a PC3270.NW file containing the configuration as shown in Figure 137.

```
SN=2
RB=6
N=nwcstrace0
ID=1 UN=TEST
ID=1 PW=
ID=1 TY=D2
ID=1 CS=RTPNET4
ID=1 SS=SAAPRF1
ID=1 LC=Pooled
ID=1 LU=IBMHOST
ID=2 UN=TEST
ID=2 PW=
ID=2 TY=D2
ID=2 CS=RTPNET4
ID=2 SS=SAAPRF1
ID=2 LC=Pooled
ID=2 LU=IBMHOST
END
```

Figure 137. NetWare-for-SAA Configuration File PC3270.NW - DOS FF Mode

This file is used as input data by the PC3270.BAT file to gather configuration information you entered in the Advanced Options for NetWare-for-SAA Gateway Attachment panel shown in Figure 135 on page 131. If you want to change the configuration, you can edit this file as an alternative to executing the CONFIG program.

The keywords have the following meanings:

SN	Number of host sessions
RB	Number of receive buffers
N	PCSMON trace table name
ID	Host session number
UN	User name
PW	Password
TY	Session type (D2 means 24 x 80 display)
CS	Communication server name
SS	SNA service name
LC	LU category
LU	LU (or LU-pool) name
END	File end indicator

5.11.3 Configuring PCOMM V4.1 for Windows 3.1 for IPX/SPX

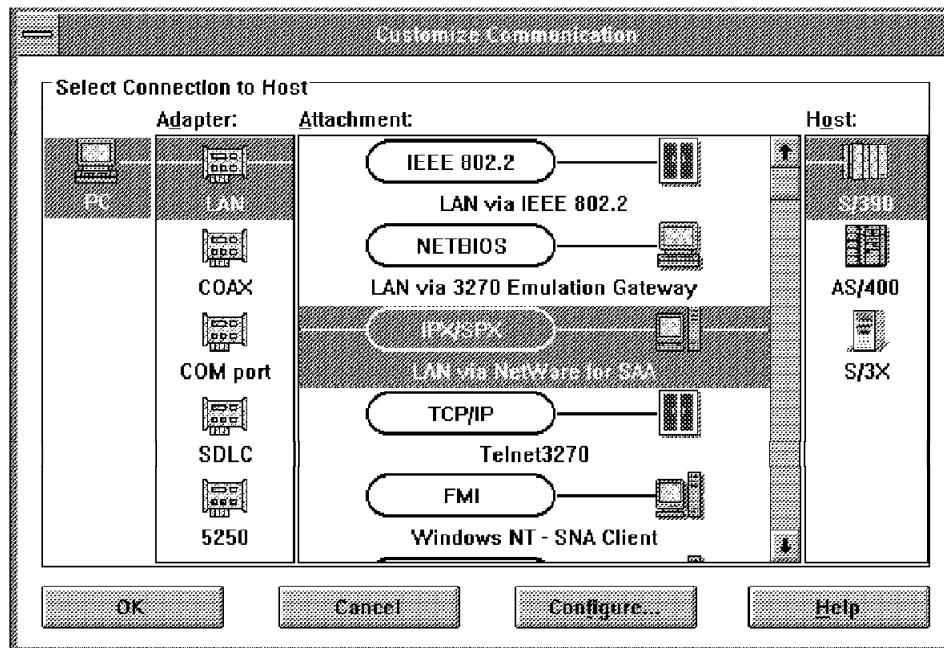


Figure 138. Customize Communication - LAN via IPX/SPX - Windows 3.1

In the Customize Communication window, choose the **LAN** adapter and the **LAN via NetWare for SAA** attachment, as shown in Figure 138.

Click on **Configure...** to get the Customize Communication-3270 Host window, shown in Figure 139.

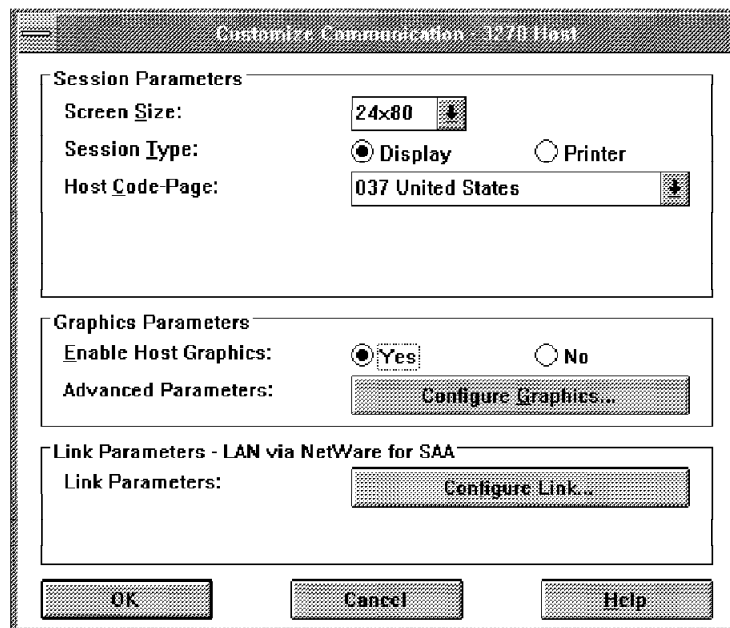


Figure 139. Customize Communication-3270 Host - LAN via IPX/SPX - Windows 3.1

In the Customize Communication-3270 Host window, shown in Figure 139 on page 134, set-up the Session Parameters fields as required, and then click on **Configure Link...** in the Link Parameters-LAN via NetWare for SAA box to get the LAN via NetWare for SAA window, shown in Figure 140.

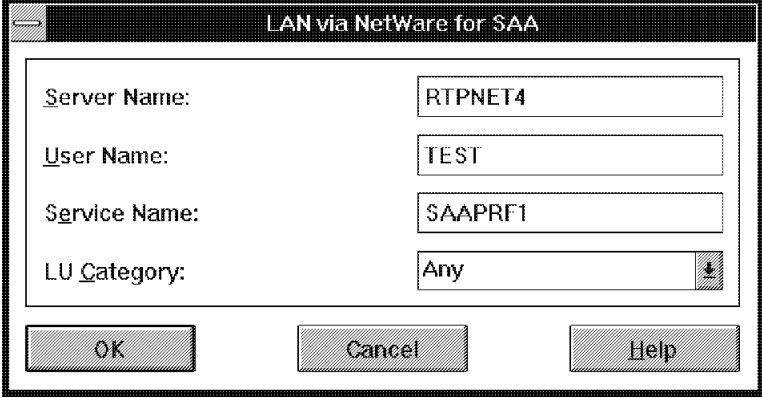


Figure 140. LAN via NetWare for SAA - Windows 3.1

In the LAN via NetWare for SAA window in Figure 140, you provide PCOMM V4.1 the required parameters to access the NetWare gateway.

The parameters are:

Server Name RTPNET4

User Name TEST

Service Name SAAPRF1

LU Category Any

After you fill in the fields, click on **OK** until you are returned to the host session window.

5.11.4 Limitations

The following functions are not available when you attach PCOMM V4.1 to a NetWare for SAA Gateway via IPX/SPX:

- SDDL (self-defining dependent LUs or DDDL)
- SNA compression/decompression

In addition, PCOMM V4.1 for Windows 3.1 is supported under Windows enhanced mode only.

5.12 Configuring for Telnet3270 (TCP/IP)

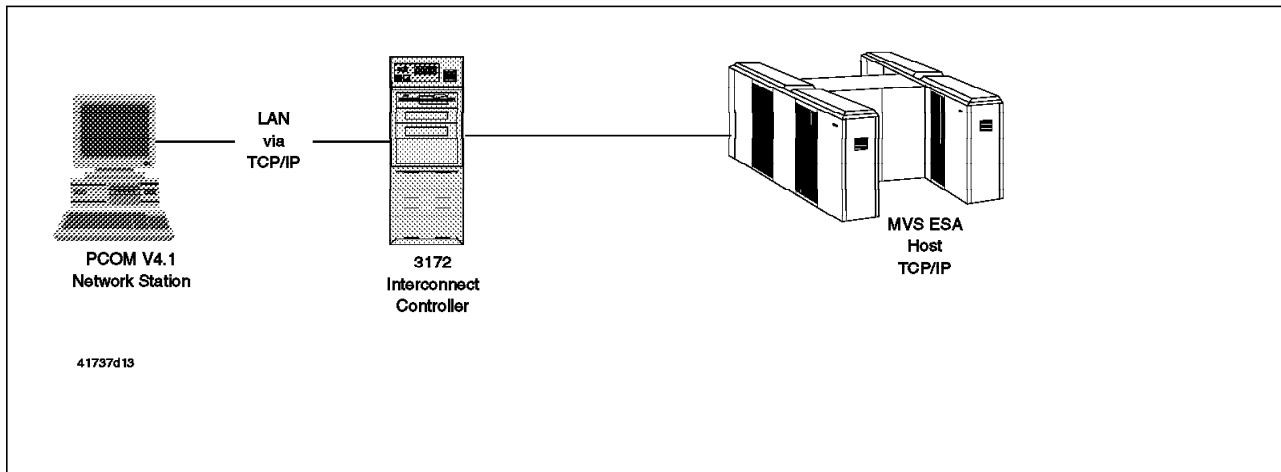


Figure 141. Telnet3270 Attachment (LAN via TCP/IP)

In this section, you will see how to customize the PCOMM V4.1 to connect to an IBM 3X0 host via the TCP/IP protocol stack, using the TCP/IP application Telnet. Figure 141 shows a PCOMM V4.1 workstation connected via TCP/IP to an MVS ESA host through a 3172 Interconnect Controller.

The TCP/IP Telnet facility provides a standard interface that allows a program on one host (the Telnet client) to have access to resources of another host (the Telnet server) as the client were a local terminal connected to the server.

When you use Telnet, you have two types of operation: line mode and transparent mode. The transparent mode is needed to emulate IBM 3270-type display stations, which are full-screen devices. This Telnet implementation that supports 3270 data streams is also known as TN3270 or Telnet3270. PCOMM V4.1 relies on the TN3270 capability of TCP/IP for DOS Version 2.1 to establish full-screen 3270 sessions to an IBM S/3x0 host with TCP/IP. This is a connectivity enhancement of PCOMM V4.1 supported under DOS FF Mode and Windows 3.1.

The TN3270 attachment involves some new terms such as: TCP/IP, host, IP address, and so on. A brief explanation of these terms is given below.

TCP/IP Transmission Control Protocol/Internet Protocol is a suite of communications protocols that became a defacto industry.

Host In the TCP/IP world, host is any entity capable of communicating through an *Internet Network* with another host in peer-to-peer fashion.

IP address

The IP address identifies a host within a TCP/IP network. It is composed of 32 bits. It is specified as four decimal numbers separated by dots as in **9.67.38.134**.

Host Address

The same as host IP address.

Host Name

It is possible to identify a host by a name (as an alternative to IP address) if a *Domain Name Server* is available.

Host Server

Any TCP/IP host that provides some service such as remote terminal (Telnet), remote printing (LPD), etc.

For 5.12.2, "Configuring PCOMM V4.1 for DOS (Full-Function Mode) for TCP/IP" on page 139 and 5.12.4, "Configuring PCOMM V4.1 for Windows 3.1 for TCP/IP" on page 143, the following is assumed:

- The MVS TCP/IP host address is 9.67.38.134.
- Two 24 x 80 sessions will be used.

5.12.1 Prerequisites

The connection of PCOMM V4.1 via the Telnet3270 (LAN via IP) requires:

- TCP/IP for MVS or TCP/IP for VM installed in the S/3x0 host, and the Telnet server function properly customized.
- TCP/IP Version 2.1 for DOS/Windows in the client workstation where PCOMM V4.1 will be installed.

Note: Be sure to use the last CSD (Corrective Service Diskette) for TCP/IP Version 2.1 for DOS/Windows.

- A token-ring, Ethernet or PC Network adapter card and the required IP protocol driver stack for a LAN connection, a standard RS-232 compatible serial interface for a SLIP (Serial Line Internet Protocol) attachment, or an IBM 3270 Connection Card or IBM 3278-3279 Emulation Adapter for a 3174 Peer Communication attachment.

The CONFIG.SYS and AUTOEXEC.BAT files are automatically set-up for the Telnet3270 attachment when you install TCP/IP Version 2.1 for DOS/Windows. The TCP/IP related entries are shown for the CONFIG.SYS, AUTOEXEC.BAT and PROTOCOL.INI files in Figure 142 on page 138, Figure 143 on page 138 and Figure 144 on page 139, for your reference.

```

.
.
.
FILES=50 1
.
.
.
DEVICE = C:\DOS\ANSI.SYS 2
DEVICE = C:\TCPDOS\BIN\PROTMAN.DOS /I:C:\TCPDOS\ETC 3
DEVICE = C:\TCPDOS\BIN\DOSTCP.SYS 3
DEVICE = C:\TCPDOS\BIN\IBMTOK.DOS 3 4
.
.
.

```

Figure 142. CONFIG.SYS - TCP/IP Statements - TN3270 Attachment

Notes:

- 1 This is recommended for TCP/IP Version 2.1 for DOS/Windows.
- 2 This statement is required if you intend to use your workstation as an ANSI terminal. PCOMM V4.1 does not require this statement.
- 3 These statements take care of the LAN connection.
- 4 This NDIS driver depends on the specific network adapter card used. It is IBMTOK.DOS for the IBM Token-Ring Network Adapter/A for instance.

```

C:\TCPDOS\BIN\NETBIND 1
.
.
.
SET ETC=C:\TCPDOS\ETC
PATH=C:\WINDOWS;C:\DOS;C:\TCPDOS\BIN; 2
.
.
.
CALL TCPSTART 3
.
.
.

```

Figure 143. AUTOEXEC.BAT - TCP/IP Statements - TN3270 Attachment

Notes:

- 1 This entry is required to open LAN the adapter.
- 2 WINDOWS may be present in the PATH statement if Windows is installed.
- 3 This statement should be included if you want TCP/IP to be started automatically every time you boot your workstation.

Note: You *must* activate TCP/IP (with TCPSTART or TCPCHECK) before you start PCOMM V4.1.

To deactivate the TCP/IP environment, use TCPSTOP.

```
[PROTMAN_MOD]
  DriverName = PROTMAN$

[TCPIP_V21]
  DriverName = DOSNDIS$
  Bindings = IBMTOK,,

[IBMTOK]
  DriverName = IBMTOK$
```

Figure 144. *PROTOCOL.INI for TCP/IP - TN3270 Attachment*

5.12.2 Configuring PCOMM V4.1 for DOS (Full-Function Mode) for TCP/IP

The setup for LAN via TCP/IP (TN3270 attachment) under DOS FF Mode can be done when you first install PCOMM V4.1, or after you have installed it. In this section, we present only the specific TCP/IP related panels.

After you go through the initial panels shown by the INSTALL or CONFIG programs, you get the Attachment Types panel as in Figure 145. If you don't want the default file-transfer packet size value (2500), you have to specify **Advanced** for Link options in the Choose Configuration panel.

Attachment Types		More: -+
Enter the number of sessions you want to use.		
Total number of sessions for:		
Distributed Function Terminal (DFT)	[0]	
LAN via 802.2 protocol	[0]	
LAN via NetBIOS	[0]	
LAN via TCP/IP (Telnet 3270 Attachment)	[2]	
LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment)	[0]	
3174 Peer Communication	[0]	
Synchronous Data Link Control (SDLC)	[0]	
Asynchronous Data Link Control (ASYNCH) (for attachment to a Series/1 SNA gateway only)	[0]	
CCITT X.25 Network (X.25)	[0]	
F1=Help F3=Exit F7=Backward F8=Forward		

Figure 145. *Attachment Types Panel - LAN via TCP/IP - DOS FF Mode*

After you specify 2 LAN via TCP/IP (TN3270 Attachment) sessions, press F8 to get the LAN via TCP/IP (Telnet 3270 Attachment) panel shown in Figure 146, if you selected **Base** for Link options in the Choose Configuration panel. If you selected **Advanced** for Link options in the Choose Configuration panel, you will get the Advanced Options for Telnet 3270 Attachment panel shown in Figure 147, the only difference being the extra File-transfer packet size field.

```

LAN via TCP/IP (Telnet 3270 Attachment)                                     More: -+
-----
Enter the IP address and/or name of the Telnet 3270 Server for each session.

Session  Server Host      Server Host
ID       IP address      Name

a        [9.67.38.134    ] [
b        [9.67.38.134    ] [
        [                ] [
        [                ] [
        [                ] [
        [                ] [
        [                ] [
        [                ] [

F1=Help  F3=Exit  F7=Backward  F8=Forward

```

Figure 146. LAN via TCP/IP for TN3270 Attachment - DOS FF Mode

```

Advanced Options for Telnet 3270 Attachment                               More: -+
-----
Enter the IP address and/or name of the Telnet 3270 Server for each session.

Session  Server Host      Server Host
ID       IP address      Name

a        [9.67.38.134    ] [
b        [9.67.38.134    ] [
        [                ] [
        [                ] [
        [                ] [
        [                ] [
        [                ] [
        [                ] [

File-transfer packet size . . . . . [2500]

F1=Help  F3=Exit  F7=Backward  F8=Forward

```

Figure 147. Advanced Options for TN3270 Attachment - DOS FF Mode

To get the help for any field in Figure 146 or Figure 147, place the cursor in the desired field and press F1.

For each session, you have to supply the Host Server IP address or name. Notice that you have the flexibility to specify a different host server for each session.

The file-transfer packet size can be any value from 2500 to 8000. Larger values generally yield better performance.

Press F8 to get the Screen Sizes panel in Figure 148.

Screen Sizes More: -+

Press F9 or F10 to change the choices.

Session ID	Link name	Screen size
a	telnet	⌘[24 x 80]
b	telnet	⌘[24 x 80]
		⌘[]
		⌘[]
		⌘[]
		⌘[]
		⌘[]
		⌘[]

F1=Help F3=Exit F7=Backward **F8=Forward** F9=Prev choice F10=Next choice

Figure 148. Screen Sizes Panel - LAN via IPX/SPX - DOS FF Mode

This panel allows you to specify the screen size for each session.

Specify 24 x 80, for instance, as the screen size for both sessions, and then press F8 to get and customize the remaining installation panels until you get to the End of Configuration panel, where you should press F6 to save the configuration.

When you are led to the DOS command prompt, take note of the BAT file name used to activate this configuration. If you didn't change the default, the name will be PC3270.

The INSTALL/CONFIG program creates a PC3270.TCP file containing the configuration as shown in Figure 149.

```
CL=2
N=tciptrace0
ID=1 SN=
ID=1 SA=9.67.38.134
ID=1 TT=IBM-3278-2-E
ID=2 SN=
ID=2 SA=9.67.38.134
ID=2 TT=IBM-3278-2-E
END
```

Figure 149. Telnet3270 Configuration File PC3270.TCP - DOS FF Mode

This file is used as input data by the PC3270.BAT file to gather configuration information you entered either in the LAN via TCP/IP (Telnet 3270 Attachment) panel (Link options=Base) shown in Figure 146 on page 140, or in the Advanced Options for Telnet 3270 Attachment panel (Link option=Advanced) shown in Figure 147 on page 140. If you want to change the configuration, you can edit this file as an alternative to executing the CONFIG program.

The keywords have the following meanings:

CL	Number of clients (host sessions)
N	PCSMON trace table name
ID	Client ID (host session number)
SN	Telnet server name
SA	Telnet server IP address
TT	Terminal type (IBM-3278-2-E means a 3278 model 2 that supports extend attributes)
END	File end indicator

The port number of a Telnet3270 server is usually set to 23. If you need to use a different port number, 5031 for instance, include the following two lines (one for each client) in the configuration file shown in Figure 149 on page 141:

```
ID=1 PT=5031
ID=2 PT=5031
```

If your Telnet3270 server does not support the terminal type IBM-3278-2-E, you can change it to 3279, or remove the E if extended attribute fields are not supported.

5.12.3 Restrictions for TCP/IP under DOS Full-Function Mode

Be aware of the following restriction:

- PCOMM V4.1 TCP/IP does not coexist with any TCP server applications such as FTPD and LPD.
- If another TCP client application works in the background of the DOS session, PCOMM V4.1 TCP/IP *must* be in *Resume Mode*.
- If another TCP client application in the DOS session is not closed, 3270 sessions cannot be logged off or disconnected, and PCOMM V4.1 TCP/IP cannot be terminated.
- The maximum packet size *must* be less than 8 KB for the file transfer and other SPI applications.
- PCOMM V4.1 TCP/IP does not coexist with the stealth mode of Quarterdeck's Expanded Memory Manager.

5.12.4 Configuring PCOMM V4.1 for Windows 3.1 for TCP/IP

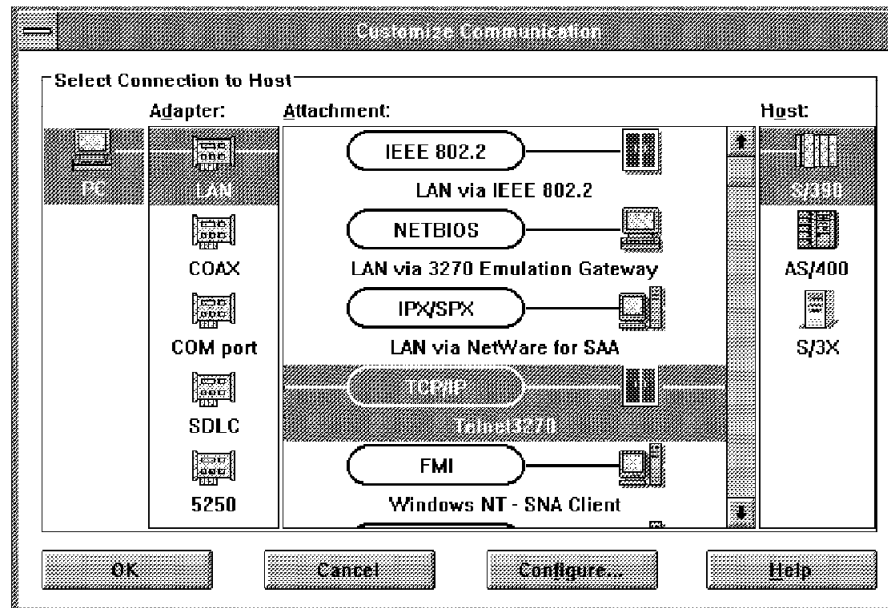


Figure 150. Customize Communication - Telnet3270 - Windows 3.1

In the Customize Communication window, choose **LAN** for the Adapter and **Telnet3270** for the Attachment, as shown in Figure 150.

Click on **Configure...** to get the Customize Communication-3270 Host window, shown in Figure 151.

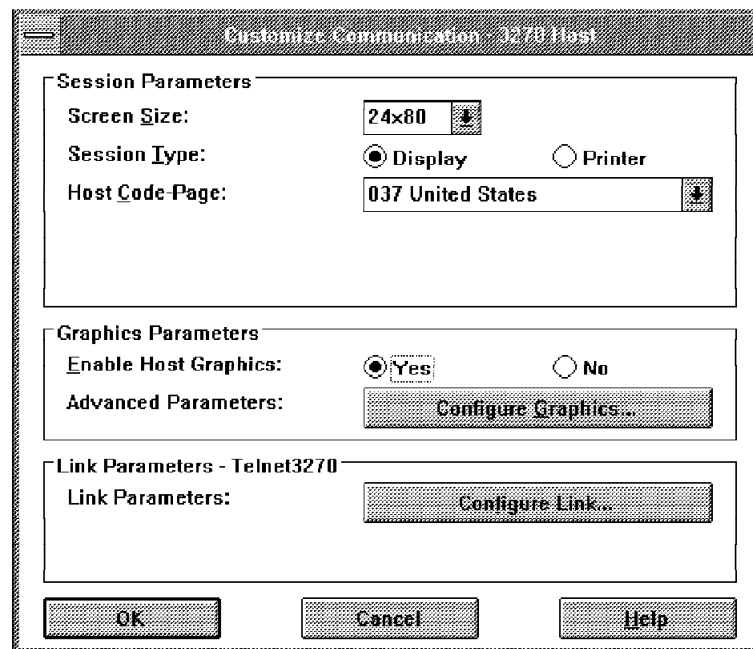


Figure 151. Customize Communication-3270 Host - TN3270 - Windows 3.1

In the Customize Communication-3270 Host window, shown in Figure 151 on page 143, set up the Session Parameters fields as required, and then, click on **Configure Link...** in the Link Parameters-Telnet3270 box to get the Telnet3270 window, shown in Figure 152.

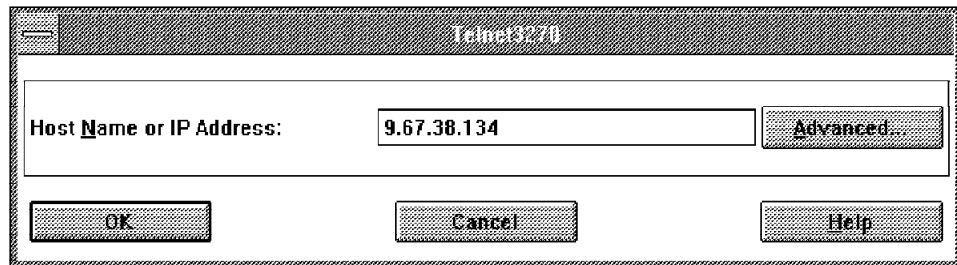


Figure 152. TN3270 - Windows 3.1

In the Telnet3270 window in Figure 152, specify the IP address or name for the host you want to connect to.

After you key in the Host Name or Host IP address, click on **OK** until you are returned to the host session window.

If you had an operational host session before you started the configuration, you have to save your WorkStation profile now by clicking on **File** in the menu bar and clicking on **Save as...** in the displayed pull-down menu. Name the profile as tcpip.ws, for instance.

If you didn't have an operational host session before you started, you will be prompted to save your WorkStation profile when you exit the host session window.

As a result of the *Start/Configure Session* process, a WorkStation profile file is created (TCPIP.WS or the name you chose). The Telnet3270 attachment-related statements of the file are shown in Figure 153 for reference.

```
[Profile]
ID=WS
Description=

[Communication]
AutoConnect=Y
Link=telnet3270
Session=3270

[Telnet3270]
HostName=9.67.38.134
```

Figure 153. WorkStation Profile TCPIP.WS - Windows 3.1

If you need to specify a different port number for the Telnet3270 server host (the default is 23), terminal type (default is 3278), or inhibit extended attribute (extended attribute is enabled by default), you can add the entries shown in Figure 154 in the [Telnet3270] stanza of the TCPIP. WS profile shown in Figure 153 on page 144.

```
HostPortNumber=XXXX
TerminalType=3279
ExtendedColor=N
```

Figure 154. Additional Parameters - WorkStation Profile - Windows 3.1

Presently, PCOMM V4.1 for Windows 3.1 GA module will only accept values up to 255 for HostPortNumber. The fix module which accepts values up to 32767 is available upon request from IBM.

The available TerminalTypes are 3278 and 3279.

5.12.5 Restrictions for TCP/IP under Windows 3.1

Be aware of the following restriction:

- Windows version and mode (386 enhanced mode or standard mode) depends on the WINSOCK.DLL module used. If WINSOCK.DLL of *IBM TCP/IP for DOS/Windows* is used, only Version 3.1 of Windows with 386 enhanced mode is supported.
- PCOMM V4.1 TCP/IP does not coexist with any TCP server application such as FTPD and LPD.
- The maximum packet size *must* be less than 8 KB for the file transfer and other SPI applications.

5.12.6 PCOMM V4.1 TCP/IP Advantages over TN3270

- EHLLAPI interface is supported
- ECF interface is supported
- IND\$FILE file transfer is supported
- PCOMM V4.1 has unique functions (COPY, RECORD/PLAY, RULE LINE, etc.)
- Enhanced front of screen (3270 font, Model 5 full screen, 3270 OIA and its divider line)

5.12.7 Telnet3270 Restrictions

The following functions are not available when you attach PCOMM V4.1 via Telnet3270 to an IBM S/3x0 host:

- SDDL (Self-defining Dependent LUs)¹.
- SNA session-level compression/decompression².

¹ The LUs are pre-defined within a VTAM application major node for the Telnet server in this case.

² This is an SNA intrinsic function and cannot be carried out in the IP session path.

5.13 APPC3270 via LAN IEE802.2 for Windows 3.1

PCOMM Version 4.1 for Windows 3.1 provides APPN LEN node support for workstations. APPC3270 via LAN IEE802.2 is one of two APPC3270 connection types, the other being APPC3270 via SDLC.

APPC3270 is an APPC Client/Server PU Type 2.1 LU 6.2 environment. Installing and configuring A3270 in VTAM V4R2 or higher defines the server. Configuring PCOMM V4.1 for Windows 3.1 for APPC3270 via LAN defines the client. First we will briefly discuss the steps necessary to configure the A3270 server in VTAM.

Configuring the A3270 Server on MVS

1. Define the A3270 server to VTAM.
2. Configure VTAM to start the A3270 server automatically.
3. Activate the A3270 application program major node.
4. Modify the A3270 server MVS PROC.

For complete details, see the book *APPC Application Suite, Administration Version 1 for MVS/ESA and VM/ESA*, SC31-6533-00.

5.13.1 Configuring PCOMM V4.1 for Windows 3.1 for APPC3270 via LAN

The steps you take to configure an APPC3270 via LAN IEE802.2 connection are similar to configuring LAN IEE802.2 parameters discussed in this chapter. In addition to configuring the parameters that define the LAN IEE802.2 link, you must configure the APPC parameters. We will only discuss configuring the APPC portion of the connection in this section.

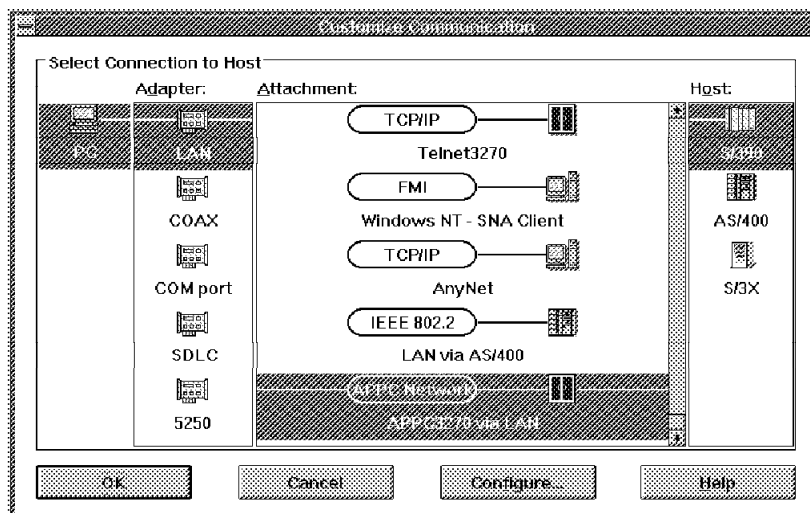


Figure 155. Customize Communication - APPC3270 via LAN IEE802.2 - Windows 3.1

In the PCOMM V4.1 for Windows 3.1 Customize Communication panel, choose **LAN** for the Adapter, **APPC3270 via LAN** for the Attachment, **S/390** for the Host and click on **Configure...** or double-click on **APPC3270 via LAN** to continue.

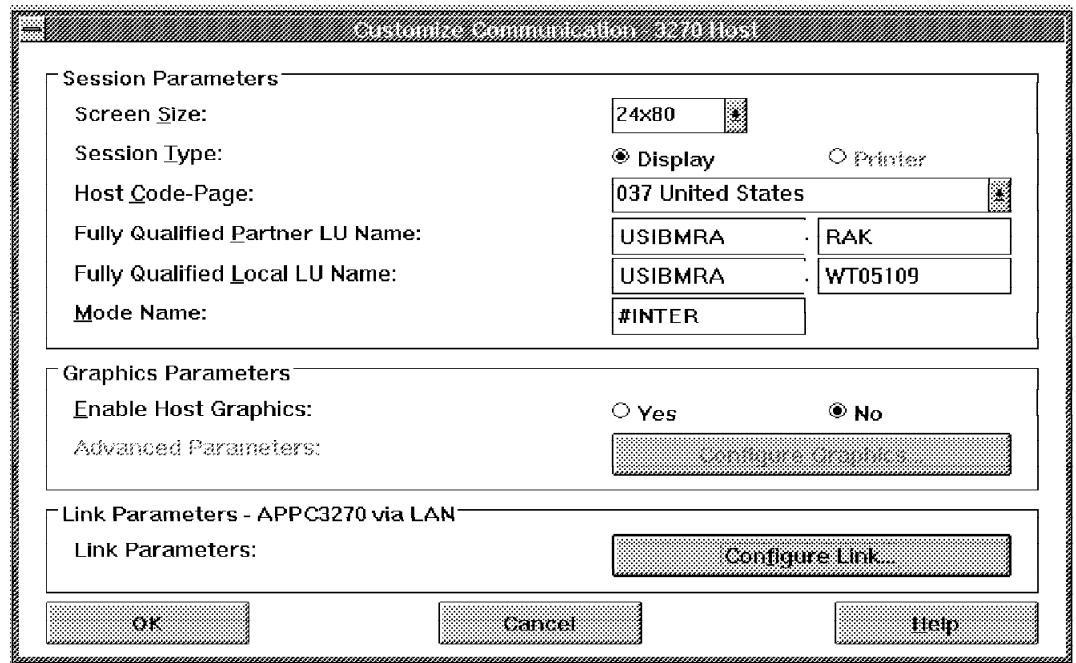


Figure 156. Customize Communication - 3270 Host - Windows 3.1

You must configure the Fully Qualified Partner LU Name and the Fully Qualified Local LU Name fields (see Figure 156) with the names of the networks and applications that are defined on their respective systems.

Fully Qualified Partner LU Name: The name of the target APPC application comprising its Network ID and CP Name, respectively.

Fully Qualified Local LU Name: The name of the local workstation APPC application comprising its Network ID and CP name.

Mode Name: The default is #INTER, which comes standard on most APPN platforms. You should change the Mode Name only if so directed by your network administrator.

For this example, we want to configure a workstation application named WT05109 to communicate with a target APPC application named RAK3270D. In our case, both the target and local APPC applications reside on the same system, therefore, we use the same Network ID (USIBMRA) for both the target and local APPC applications. If the target and local APPC applications reside on different systems, then we would have a different Network ID for the target and workstation APPC applications. These definitions will be provided by your network administrator.

From the Customize Communication - 3270 Host panel, select **Configure Link** (see Figure 156).

Adapter Number:	0	Advanced...
Destination Address:	400008220120	
Remote SAP:	04	
PJU Size:	0265	
Physical Unit ID:	05109	
Block ID:	061	
Fully Qualified CP Name:	USIBMRA	WT05109

OK Cancel Help

Figure 157. Configure Link - APPC3270 via LAN IEE802.2 - Windows 3.1

You will notice that the LAN IEE802.2 Attachment panel for APPC3270 via LAN IEE802.2 (see Figure 157) is very similar to the LAN IEE802.2 Attachment panel (see Figure 64 on page 80) except for the addition of the Fully Qualified CP Name field. Unlike the Fully Qualified Partner LU Name and Fully Qualified Local LU Name fields which describe the APPC applications, the Fully Qualified CP Name defines your workstation as a control point and *must* be unique in the network. It is made up of the Network ID and the CP Name.

Network ID This is the name of the network to which your workstation and S/390 host are attached. The default is APPN.

CP Name This is the name by which your PC is known in the network.

These definitions will be provided by your network administrator. In our example, the Network ID = USIBMRA and the CP Name for our workstation = WT05109. You must enter the Network Id and the CP Name for your workstation in the two fields respectively.

Once you are sure that all the link parameters and the Fully Qualified CP Name fields are correct, you can click **OK** to return to the Customize Communication - 3270 Host panel.

5.14 PC400 V4.1 LAN via IEEE802.2

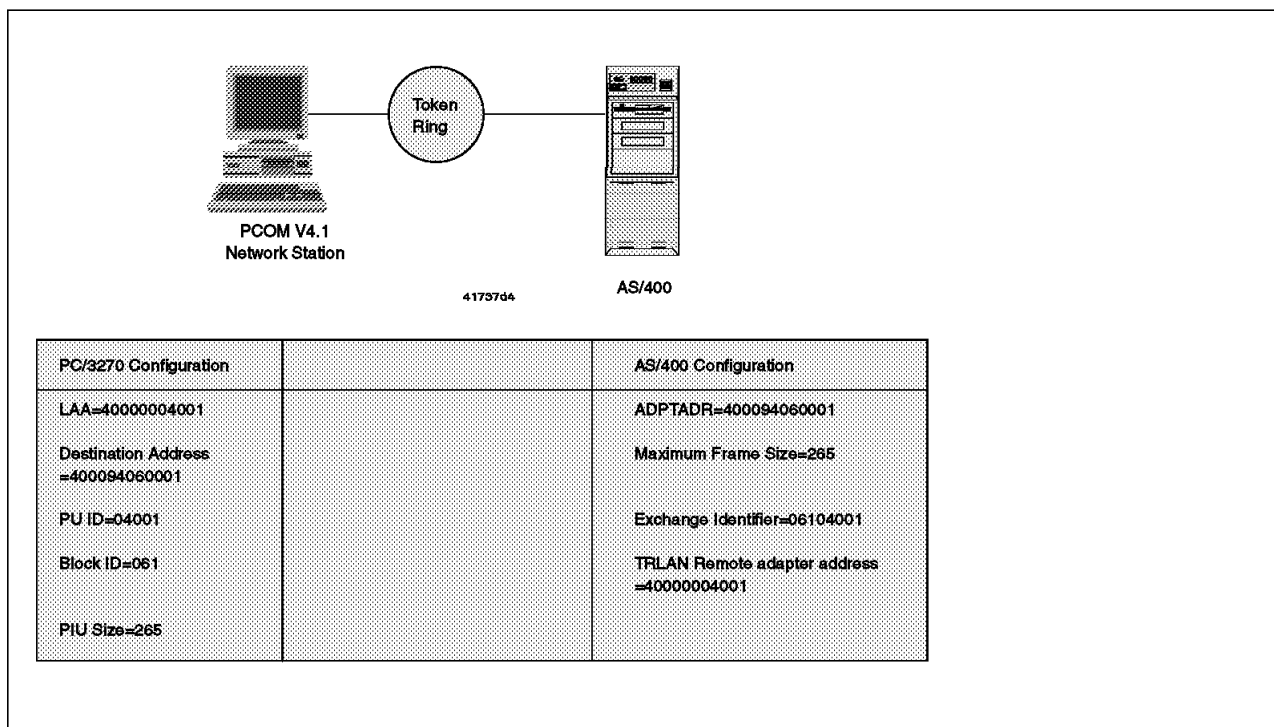


Figure 158. PC400 V4.1 LAN via IEEE802.2

In this connectivity scenario, a PCOMM V4.1 for Windows 3.1 workstation is connected via token-ring to an AS/400 host.

For this example, we need to do the following:

- Configure the PC400 V4.1 for Windows 3.1 workstation to access the AS/400.
- Create a line description in the AS/400 to describe the AS/400 token-ring adapter and attachment.
- Create a controller description in the AS/400 to represent the PCOMM V4.1 for Windows 3.1 workstation.
- Create a device description in the AS/400 for each session configured in the PC400 V4.1 for Windows 3.1 workstation.

Note: Not all of the required configuration, customization or definition panels will be shown; only those that are significant to the example are included.

5.14.1 Configuring PC400 V4.1 for Token-Ring Attachment

In this section we discuss only those parameters that directly relate to configuring this particular connectivity. For more information regarding the configuration process or the panels that follow please see:

- 5.1.2, "Configuring LAN Attachment via IEEE 802.2 Protocol (Windows 3.1)" on page 79.

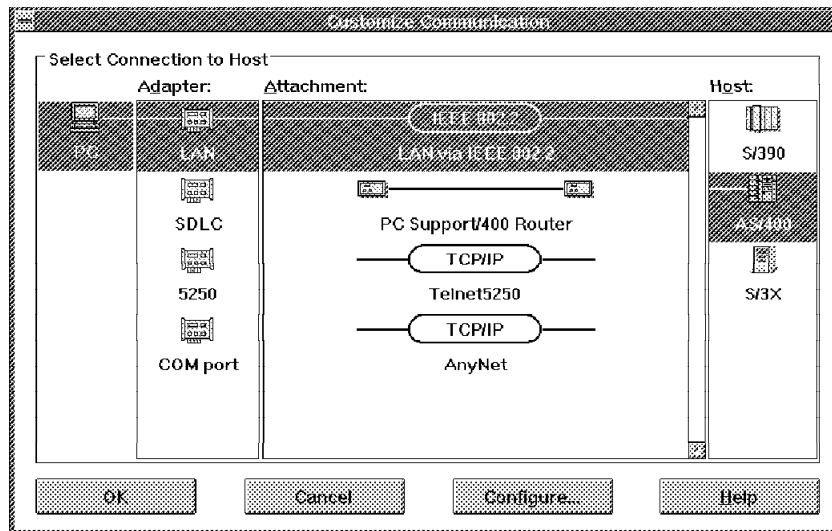


Figure 159. Customize Communication - LAN via IEEE 802.2

Select **AS/400** for the Host, **LAN** for the Interface and **LAN via IEEE802.2** for the Attachment (see Figure 159). Click on **Configure...** and then **Configure Link...** or double click on **LAN via IEEE802.2** to continue.

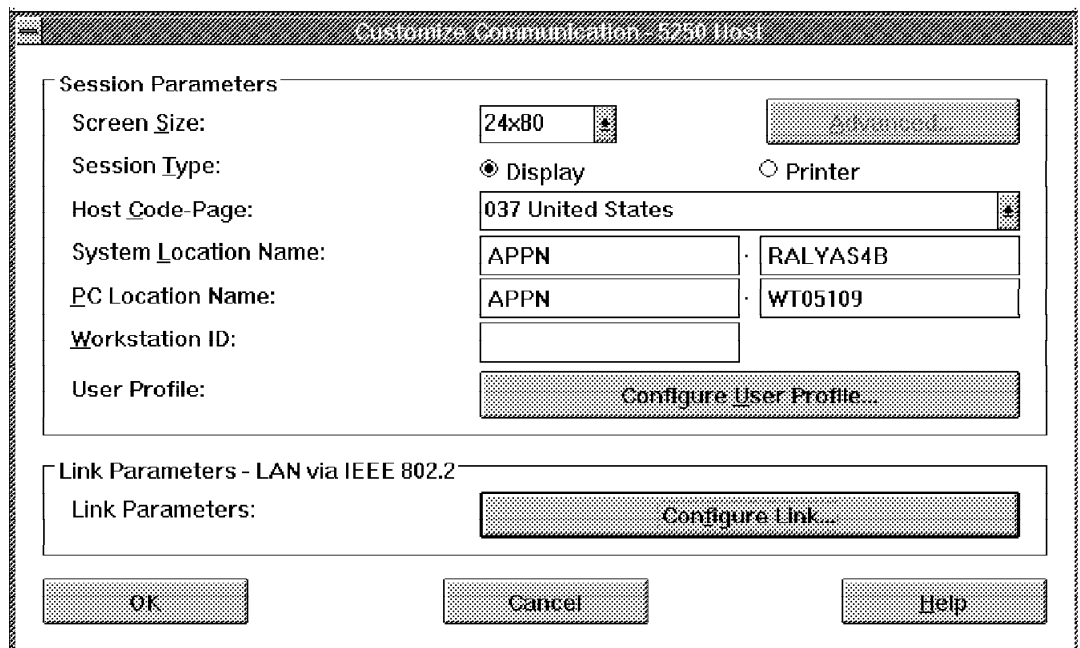


Figure 160. Customize Communication - 5250 Host - PC400 V4.1 LAN via IEEE802.2

The PC400 V4.1 Customize Communication - 5250 Host panel differs from the PC/3270 Customize Communication - 3270 Host panel mainly in the Session Parameters box: it does not contain the LU number and the SNA parameters fields, but instead it contains the System Location Name, PC Location Name and the Workstation ID fields.

From the Session Parameters box in the Customize Communication - 5250 Host panel you define the following:

System Location Name: This option defines the AS/400 LU-name to which this PCOMM V4.1 for Windows 3.1 workstation will be connected. It consists of the Network Identifier and the Location Name.

The Network Identifier is the name of the local Net ID of the AS/400. To determine the AS/400 Net ID, issue the AS/400 DSPNETA to get the Display Attributes panel.

The Location Name is the local location name of the AS/400. In this example it is RALYAS4B.

PC Location Name: This option defines the session to be used by this PCOMM V4.1 for Windows 3.1 workstation. It consists of the Network Identifier and the Location Name.

The Network Identifier is the name of the local Net ID for the PCOMM V4.1 for Windows 3.1 workstation.

The Location Name is the local location name of the PCOMM V4.1 for Windows 3.1 workstation. In this example it is WT05109. The name should match the Remote CP Name (RMTCPNAME) you define in the AS/400 Controller Description.

Workstation ID: This option define the name of this PCOMM V4.1 for Windows 3.1 workstation and consists of up to 10 characters. If you do not specify an ID, the program will define one automatically according to the currently active session number.

User Profile: With this option you can save your user ID and password in a user profile and then you will not have to enter them each time you start a session; you will be logged automatically. To configure a profile, you must choose **Yes** for Auto Logon.

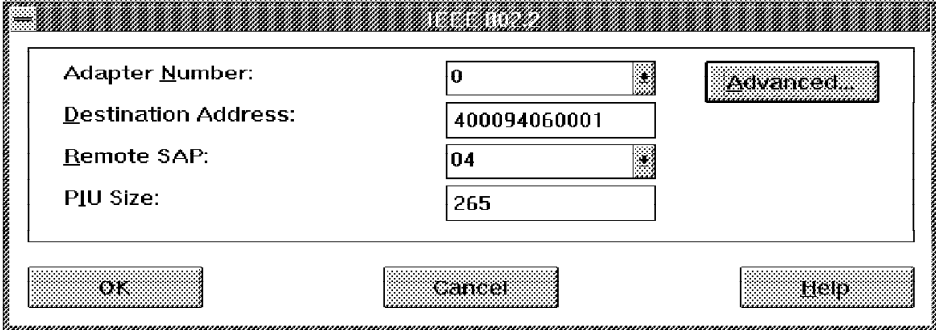


Figure 161. Configure LAN Connection - PC400 V4.1 LAN via IEEE 802.2

The Destination Address must match the ADPTADR statement in the AS/400 Line Description.

If the AS/400 is configured to use the Personal Communications for Windows 3.1, you must also configure the workstation LAA as it appears in the TRLAN remote adapter address statement in the AS/400 Workstation Controller Description. The Remote SAP comes from the source service access points (SSAP) statement in the AS/400 Line Descriptor.

Chapter 6. Personal Communications for OS/2

This section covers PC3270 V4.1 under OS/2, the creation/configuration of new sessions under different scenarios as well as how to save configurations.

Under OS/2 all changes in CONFIG.SYS are taken care of by OS/2. MPTS (Multi Protocol Transport Services) replaces LAPS (LAN Adapter and Protocol Services) and all other changes necessary to CONFIG.SYS are taken care of as well (see Figure 163 on page 154).

Because OS/2 and Windows are described in separate chapters in this book, there are no doubt numerous duplications because configuration windows/panels are very similar or identical. All VTAM, NCP and 3174 notes in the previous chapter for DOS and Windows are viable for this section as well.

The scenarios that will be covered in this chapter are listed below:

- IEEE 802.2 to an S/390 Host (3270)
- IEEE 802.2 to an AS/400 Host (5250)
- IEEE 802.2 via an AS/400 to an S/390 Host (3270)
- TCP/IP to an S/390 Host (3270)
- TCP/IP to an AS/400 Host (5250)
- IPX/SPX via NetWare SAA to an S/390 Host (3270)
- APPC via LAN to an S/390 Host (3270)

6.1 LAN IEEE 802.2 Connection

This section discusses the configuration of Personal Communications workstations communicating via IEEE 802.2 protocol to different types of LAN gateways. The next three sections will cover an IEEE 802.2 connection to an S/390 and to an AS/400 respectively and an IEEE 802.2 connection via an AS/400 to an S/390 host (3270).

6.1.1 IEEE 802.2 to an S/390 Host (3270)

At this point you have successfully installed PC3270 V4.1 under OS/2. You should also have MPTS installed on your workstation with the correct network adapter driver and protocol(s).

For the purpose of the configuration of Personal Communications the LAPS Configuration panel of MPTS is displayed in Figure 162 on page 154. Select **IBM IEEE 802.2** in the Protocols box for this LAN via IEEE 802.2 attachment.

The network adapter driver used in our example is for a PS/2 (micro-channel) machine: IBM Token-Ring Network Adapter.

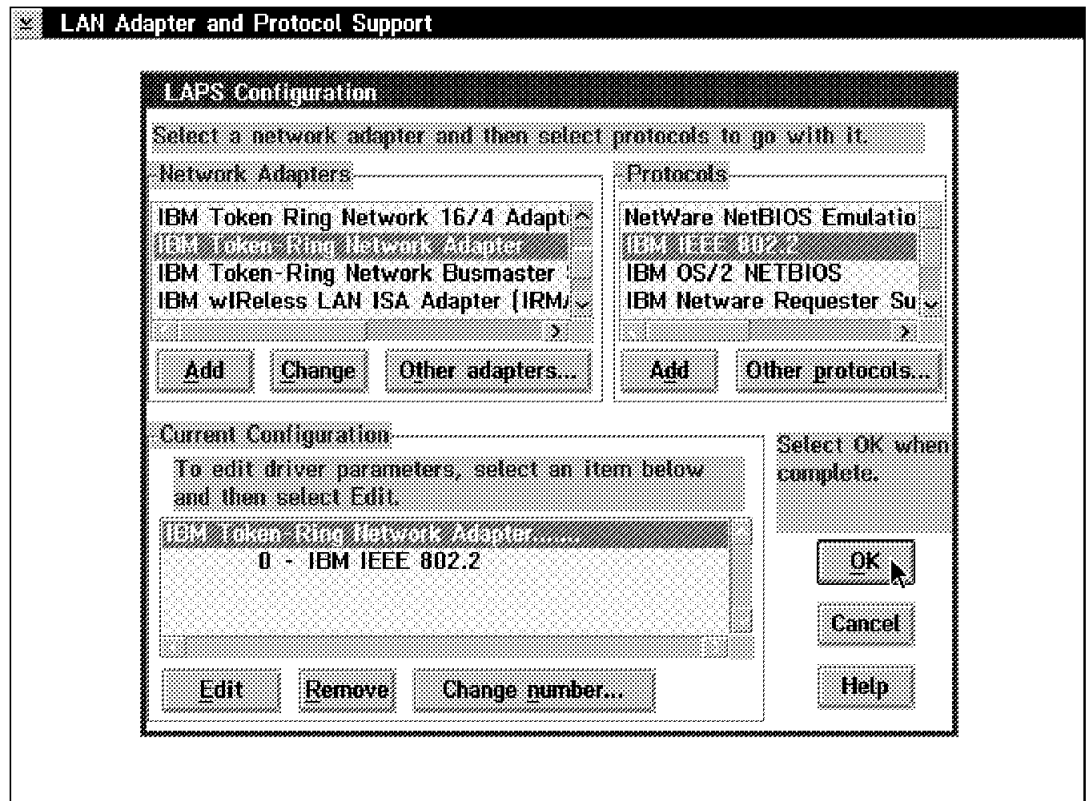


Figure 162. LAPS Configuration Screen - Network Drivers and Protocols

Use the correct network adapter driver for your token-ring adapter. Configuring MPTS will update your CONFIG.SYS file with the following lines:

```
CALL=C:\IBMCOM\PROTOCOL\NETBIND.EXE
RUN=C:\IBMCOM\LANMSGEX.EXE
SET ETC=C:\MPTN\ETC
DEVICE=C:\MPTN\PROTOCOL\SOCKETS.SYS
DEVICE=C:\MPTN\PROTOCOL\AFOS2.SYS
RUN=C:\MPTN\BIN\CNTRL.EXE
CALL=C:\OS2\CMD.EXE /Q /C C:\MPTN\BIN\MPTSTART.CMD
DEVICE=C:\IBMCOM\PROTOCOL\LANDD.OS2
DEVICE=C:\IBMCOM\PROTOCOL\LANDLLDD.OS2
DEVICE=C:\IBMCOM\MACS\IBMTOK.OS2
RUN=C:\IBMCOM\PROTOCOL\LANDLL.EXE
```

Figure 163. Statements Added to the CONFIG.SYS File

The lines that are highlighted indicate the difference between other MPTS configurations.

To begin the configuration of a new session, open your newly created folder called Personal Communications.

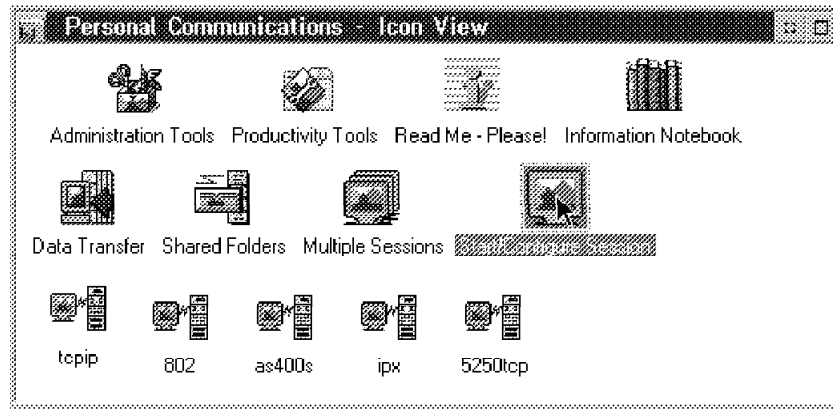


Figure 164. Personal Communications Folder

Inside your folder you will find several icons that allow various functions. Double-click on **Start/Configure Session** to start the process.

You will receive the Welcome window for Personal Communications. At the bottom of the window you can click on **OK** to continue.

The following window is the Customize Communication window. This window displays the various types of connections that are possible.

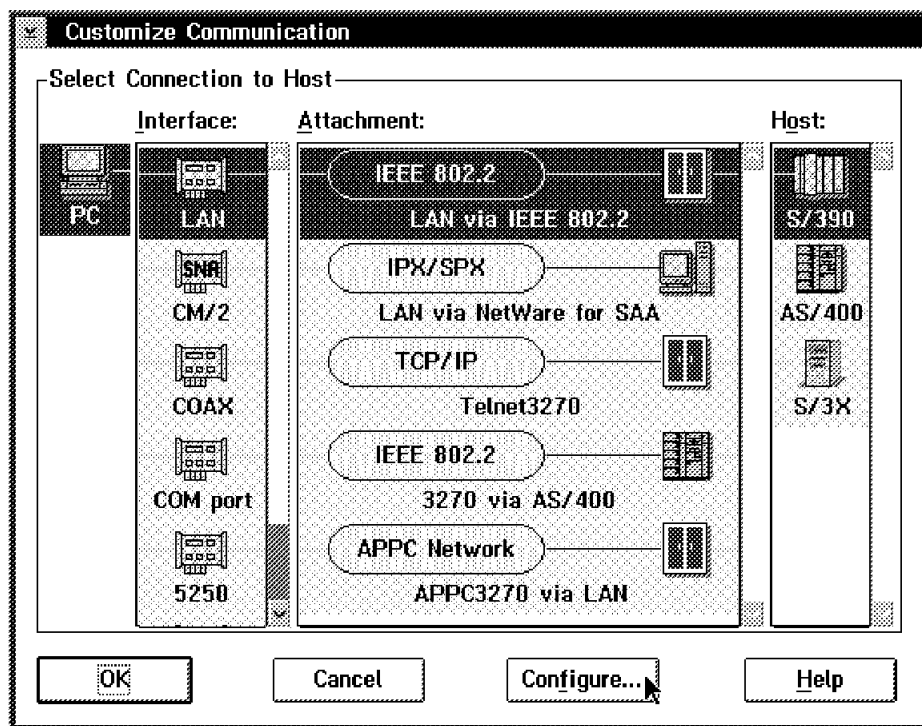


Figure 165. Customize Communication Window

For our exercise you are required to choose **LAN** for the interface, **IEEE 802.2 (LAN via IEEE 802.2)** for the attachment and **S/390** for the host (see Figure 165). Click on **Configure...** at the bottom of the panel to continue.

The window that follows is called Customize Communication - 3270 Host. Here you are allowed to update the Session Parameters, Graphics Parameters and Link Parameters (see Figure 166 on page 156).

Customize Communication - 3270 Host

Session Parameters

Screen Size: 24x80

Session Type: ☒ Display ☐ Printer

Host Code-Page: 037 United States

LU number: Default (Next Available)

SNA Parameters: [Configure SNA...](#)

Graphics Parameters

Enable Host Graphics: ☒ Yes ☐ No

Advanced Parameters: [Configure Graphics...](#)

Link Parameters - LAN via IEEE 802.2

Link Parameters: [Configure Link...](#)

OK Cancel Help

Figure 166. Customize Communication - 3270 Host (Session and Link Parameters)

The Session Parameters can be changed to suit your individual needs. Be sure that the Host Code-Page is correct to your country. You have the option of setting up a Session Type of Display or Printer. You may also set up your session for host graphics and configuring the graphics to your special needs. The Link Parameters is where all your host details need to be included to make a connection possible. Click on **Configure Link...** to continue.

IEEE 802.2

Adapter Number: [Advanced...](#)

Destination Address: 400008220210

Remote SAP: 04

PIU Size: 1033

Physical Unit ID: 05132

Block ID: 05D

OK Cancel Help

Figure 167. 802.2 Link Configuration Window

The information for these parameters is obtained from your VTAM programmer or your LAN administrator. The parameters that are needed are explained briefly to give you an idea of what each means.

Adapter Address

Adapter numbers define which LAN adapter in your PC is to be used for host communication. You may have more than one.

Destination Address

The destination address is the address of the LAN adapter in the destination device (for example, 37XX, 3174) to which the session will be attached.

Remote SAP

Remote SAP is the service access point configured in the destination device with which this session will communicate. It must match the SAP defined in that device.

PIU Size

PIU size defines the number of bytes in the path information unit that is used for link level communication.

Physical Unit ID

The physical unit ID (PUID) identifies this specific device in an SNA network.

Block ID

The block ID identifies the device or product type in an SNA network.

The physical unit ID is concatenated with the Block ID and is sent to the host gateway during link activation. The combined values constitute an XID (exchange identifier).

After completing all the fields with the information given to you by your VTAM programmer you can continue by clicking on **Advance...** in the same window. The next window, as displayed below, allows you to make changes in three fields.

The screenshot shows a window titled "IEEE 802.2" with a dropdown menu on the left. Inside the window, there are three labeled fields: "Local SAP:" with a value of "33", "Receive-Buffer Count:" with a value of "12", and "Link-Station Count:" with a value of "6". Each field has a small icon to its right. At the bottom of the window are three buttons: "OK", "Cancel", and "Help". A mouse cursor is pointing at the "OK" button.

Figure 168. Advance Options for Session Setup

To understand these fields better they are described as follows:

Local SAP

Local SAP is the local (PC) service access point for this session.

Receive-Buffer Count

Receive-Buffer Count is the number of receive buffers allocated for the local SAP.

Link-Station Count

Link-Station Count represents the maximum number of other LAN-attached devices with which your PC can communicate through the same combination of adapter and SAP numbers.

Complete the parameters and click on **OK**. Do the same on every other opened window. After clicking on **OK** on the last window the session your are creating will immediately become active. If your parameters are correct, you will get a host connection. Now that you have an active session with the host, you need to save the new configuration. Follow the instructions in "Save Configuration and Create Icons" and use them for all sessions that you may configure, because the process applies to all.

Save Configuration and Create Icons

After creating a new configuration and completing it by clicking on **OK** as you have done in the previous exercise, your session will be automatically started.

At this point you are ready to save your new configuration. In Figure 169, you can see an open session. In this example we do not have an active session with a host, but the process is exactly the same. Notice that the cursor is on the File choice in the menu bar.

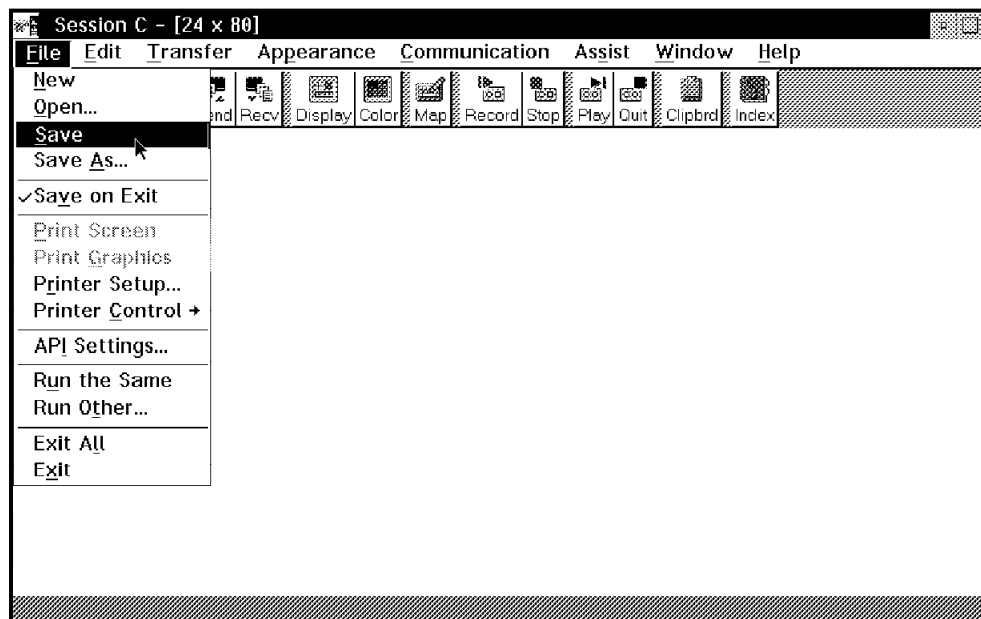


Figure 169. Saving a Configuration

1. Click on **File** on your menu bar.
Additional options will appear vertically.
2. Click on **Save** and wait for the next window.

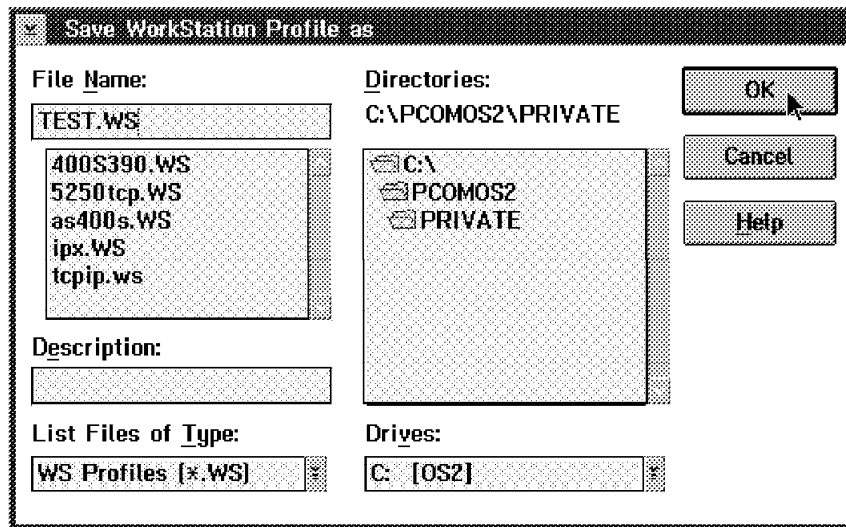


Figure 170. Filling in a File Name

3. In the **File Name** field, type in the session name.
4. Click on **OK** when you are done.
5. The following window that appears asks if you want to create an icon for that session to the desktop.

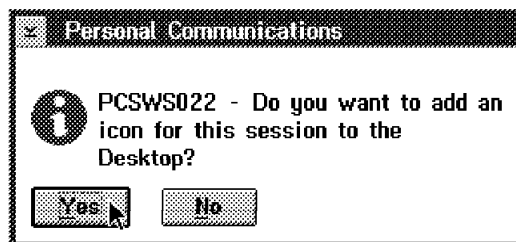


Figure 171. Add an Icon

6. If you click on **No**, you will be informed in which directory the file will be kept and how to run it from a DOS prompt.

Click on **YES** and another window appears informing you to choose the test icon (or whatever you named it) in your Personal Communications folder when you want to start the session. Click on **OK** (see Figure 172).

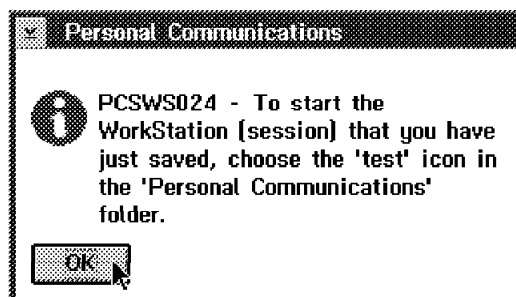


Figure 172. Starting Your 3270 Session

You have successfully created a 3270 session through IEEE 802.2.

6.1.2 IEEE 802.2 to an AS/400 Host (5250)

A Personal Communications for OS/2 workstation is connected via a token-ring to an AS/400 host. The connectivity scenario is shown in Figure 93 on page 102.

Check that your MPTS is installed and configured correctly (see Figure 162 on page 154 and Figure 163 on page 154).

To create a configuration you will start at the same place as the previous configurations. The process remains the same for all new configurations.

From your Personal Communications folder double-click on **Start/Configure Session**. Wait until you have the welcome window and click on **OK**. You will, as before, be presented with the Customize Communication window where you choose the type of connection you require. For this configuration choose:

- LAN for the interface
- IEEE 802.2 (LAN via IEEE 802.2) for the attachment
- AS/400 for the Host

This configuration is shown in the figure below.

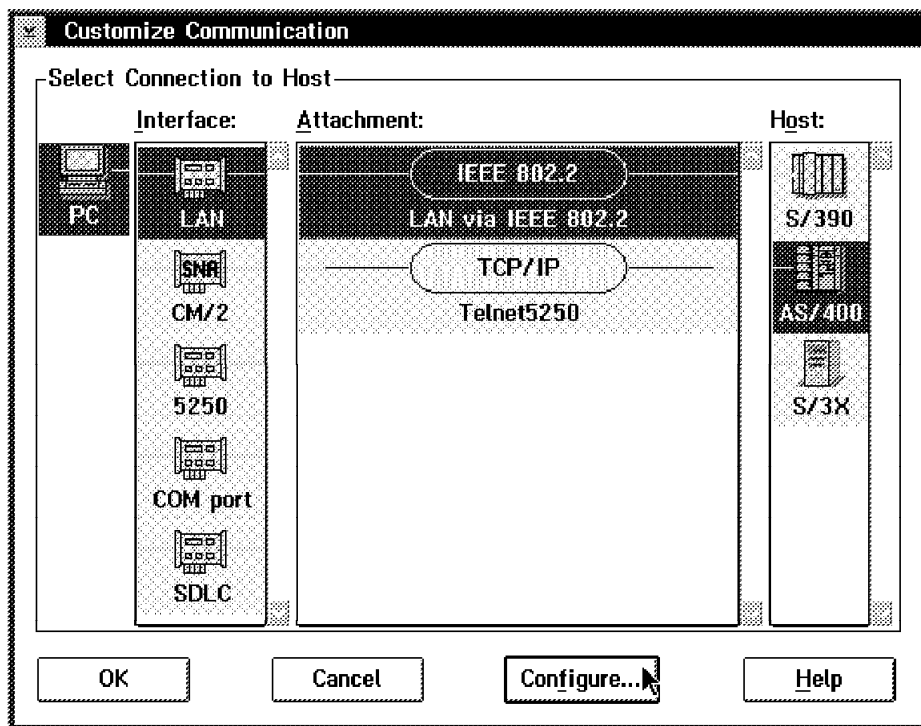


Figure 173. Customize Communication Window with IEEE 802.2 to AS/400 Host

Proceed by clicking on **Configure....** to get the Customize Communication - 5250 Host window.

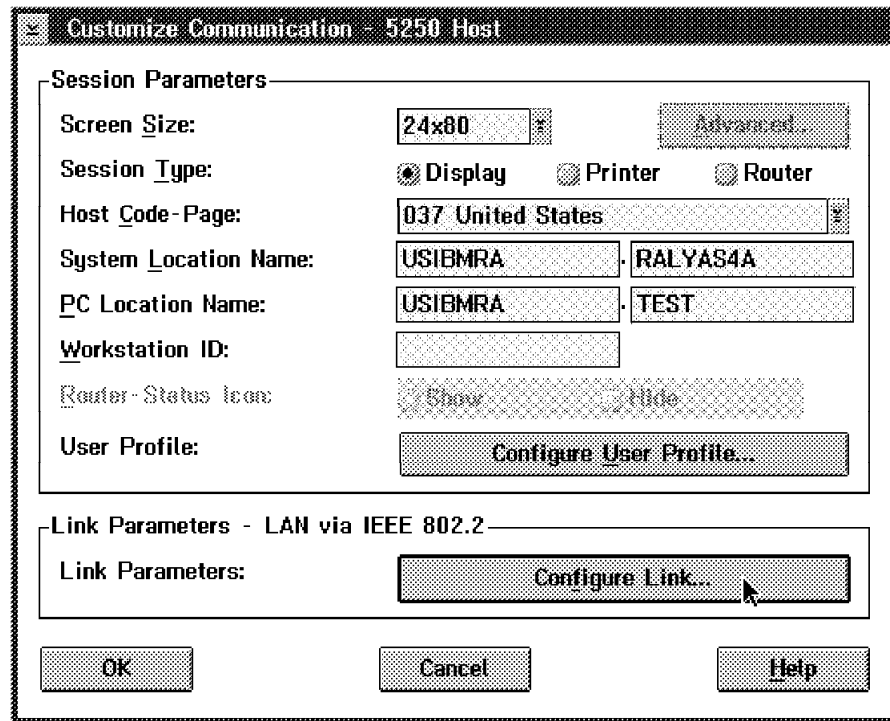


Figure 174. Customize Communication Screen with IEEE 802.2 to AS/400

The parameters have two sections: Session Parameters and Link Parameters.

Session Parameters:

Screen Size:

Defines the number of rows and columns that the session will display.

Session Type:

This option allows you to specify whether this is a Display, a Printer or a Router.

For more information on Printer and Router click on **Help**. For this configuration we are using Display only.

Host-Code Page:

This option specifies the table that is to be used to map EBCDIC codes from the host to appropriate ANSI graphics on the PC.

System Location Name:

This option is a concatenation of two fields: network ID and location name. The network ID is the name of the network that the AS/400 is connected to and the location name is the name of the AS/400. In some cases the AS/400 serial number is used for location name.

PC Location Name:

This is also a concatenation of two fields: network ID and local name (location name). The network ID is also the network to which this PC connects (it could be the same as the AS/400 or it could be different). The second field is the local PC (location name). This field is anything that you want to call your PC.

Workstation ID:

This option defines the name of this workstation and consists of up to 10 characters.

User Profile:

User profile allows you to save your user ID and password in a profile so you that each time you start a session your user ID is logged on automatically.

Link Parameters: Click on **Configure Link...** to proceed to the next window that requires the relevant parameters for your link. The following window, as shown below, requires details that are obtained from your AS/400 programmer.

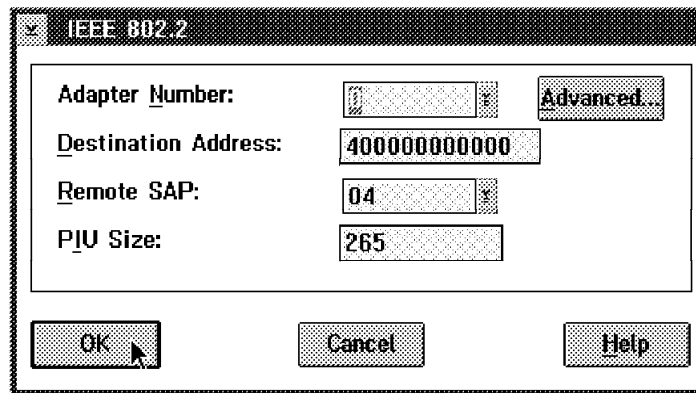


Figure 175. Session Parameters for a 5250 Host Connection

The explanation for all the fields in this window is available from the first configuration (see 6.1.1, “IEEE 802.2 to an S/390 Host (3270)” on page 153). The LAN Destination Address is quite important because it has to be the local adapter address in the AS/400 line description.

When you have completed all fields, click on **Advanced...** See Figure 168 on page 157 for details on the fields in the Advance window if you want to make changes. If you want an explanation of each field, refer to 6.1.1, “IEEE 802.2 to an S/390 Host (3270)” on page 153.

After keying in your details, continue to click on **OK** until the configuration automatically starts your new session.

Proceed to save your new configuration and create a new icon See “Save Configuration and Create Icons” on page 158.

You have successfully created a 5250 session to an AS/400.

6.1.3 AS/400 LAN Controller Description

A LAN connection to an AS/400 requires a controller description on the AS/400. The easier way to do this is to have your AS/400 set to Automatic Configure. If your AS/400 is not set on Automatic Configure, the following process will help you manually create a controller configuration.

Network Attributes: The following screen is the main menu of the AS/400. You will see that the dspneta command has been entered at the command line. Enter this command to display the network attributes with the network ID and control point name fields. These two fields are what is required when creating a configuration linking to an AS/400 under PCOMM Version 4.1. Press Enter.

```

MAIN                               AS/400 Main Menu                System:  RALYAS4B

Select one of the following:

    1. User tasks
    2. Office tasks
    3. General system tasks
    4. Files, libraries, and folders
    5. Programming
    6. Communications
    7. Define or change the system
    8. Problem handling
    9. Display a menu
   10. Information Assistant options
   11. Client Access tasks

   90. Sign off

Selection or command
==> dspneta

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F13=Information Assistant
F23=Set initial menu

```

Figure 176. Entering a Display Command at the Main Menu

```

                                Display Network Attributes
                                System:  RALYAS4B

Current system name . . . . . : RALYAS4B
Pending system name . . . . . :
Local network ID . . . . . : USIBMRA
Local control point name . . . . . : RALYAS4B
Default local location . . . . . : RALYAS4B
Default mode . . . . . : BLANK
APPN node type . . . . . : *NETNODE
Data compression . . . . . : *NONE
Intermediate data compression . . . . . : *NONE
Maximum number of intermediate sessions . . . . : 200
Route addition resistance . . . . . : 128
Server network ID/control point name . . . . . : *LCLNETID  *ANY

More...

Press Enter to continue.

F3=Exit  F12=Cancel

```

Figure 177. Network Attributes

AS/400 Definitions for LAN attachment

A line description (token-ring or Ethernet) is required and we assume that this is already in place. This is a shared configuration object - all connections on the adapter will use the same line description. In the configuration example shown in the following figures, the line description name is TRN2619.

LAN Controller Description

The normal method would be to let the APPC controller autcreate. However, if preferred, the following command can be used to manually create the APPC controller. As in Figure 178 on page 164, enter the command crtctlappc.

```

MAIN                               AS/400 Main Menu                               System: RALYAS4B

Select one of the following:

1. User tasks
2. Office tasks
3. General system tasks
4. Files, libraries, and folders
5. Programming
6. Communications
7. Define or change the system
8. Problem handling
9. Display a menu
10. Information Assistant options
11. Client Access tasks

90. Sign off

Selection or command
====> crtctlappc

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F13=Information Assistant
F23=Set initial menu

```

Figure 178. Entering a Command at the Main Menu

Press F4 (Prompt) for the Controller Description panel.

```

                                Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > PCOMMLAN      Name
Link type . . . . . > *LAN                      *ANYNW, *FAX, *FR, *IDLC...
Online at IPL . . . . . *YES                     *YES, *NO
APPN-capable . . . . . *YES                     *YES, *NO
Switched line list . . . . . > TRN2619          Name
+ for more values
Maximum frame size . . . . . *LINKTYPE          265-16393, 256, 265, 512...
Remote network identifier . . . *NETATR          Name, *NETATR, *NONE, *ANY
Remote control point . . . . . > PEPE          Name, *ANY
Exchange identifier . . . . . 00000000-FFFFFFF
Initial connection . . . . . *DIAL              *DIAL, *ANS
Dial initiation . . . . . *LINKTYPE             *LINKTYPE, *IMMED, *DELAY
LAN remote adapter address . . . 400052005109  0000000000001-FFFFFFFFFFFF
APPN CP session support . . . . *NO           *YES, *NO
APPN node type . . . . . *LENNODE              *ENDNODE, *LENNODE...
APPN/HPR capable . . . . . *YES               *YES, *NO

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

```

Figure 179. Create Controller Description Panel 1 of 2

```

                                Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

APPN transmission group number 1 1-20, *CALC
APPN minimum switched status . . *VRYONPND *VRYONPND, *VRYON
Autocreate device . . . . . *ALL *ALL, *NONE
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' . . . . . PCOMM token-ring

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys

```

Figure 180. Create Controller Description Panel 2 of 2

6.1.4 IEEE 802.2 via an AS/400 to an S/390 Host (3270)

A Personal Communications for OS/2 workstation is connected via a token-ring to an AS/400 in SNA pass-through mode. The connectivity scenario is shown in Figure 103 on page 108.

Check that your MPTS is installed and configured correctly (see Figure 162 on page 154 and Figure 163 on page 154).

To create a configuration you will start at the same place as the previous configurations. The process remains the same for all new configurations.

From your Personal Communications folder double-click on the **Start/Configure Session** icon. Wait until you have the welcome window and click on **OK**. You will be presented with the Customize Communication window where you choose your connection type. For this configuration choose:

- LAN for the interface
- IEEE 802.2 (3270 via AS/400) for the attachment
- S/390 for the host

(as shown in the figure that follows)

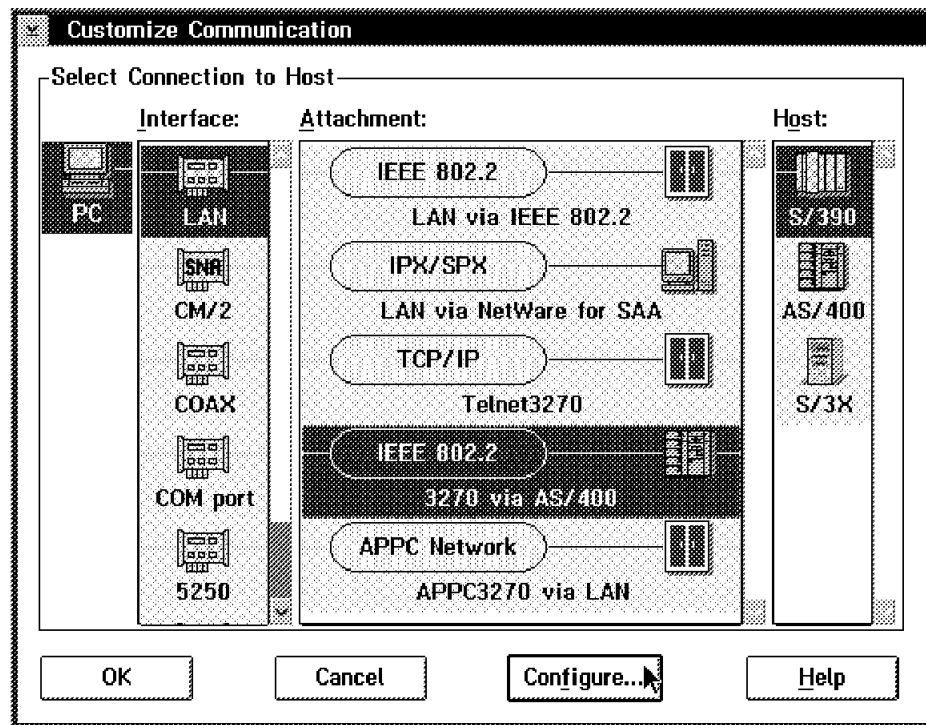


Figure 181. Customize Configuration Window with IEEE 802.2 via AS/400

Make your selections and proceed by clicking on **Configure...** to get the Customize Communication - 3270 Host window. Refer to Figure 166 on page 156 for more details as well as explanations of the parameters that can be changed in this window.

Click on **Configure Link...** to go to the next window called IEEE 802.2 (see Figure 182 on page 166).

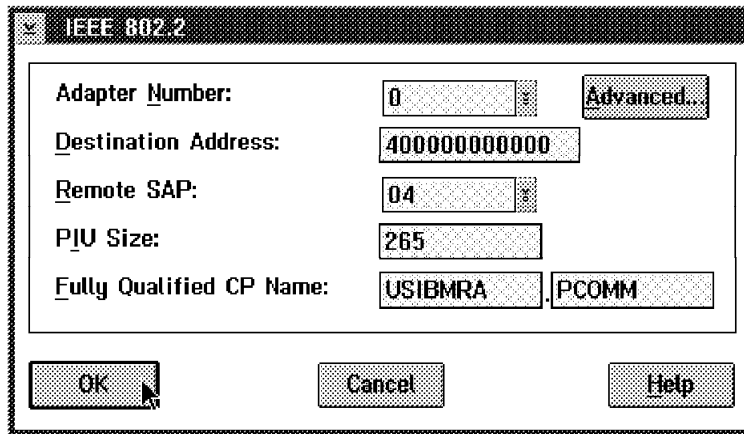


Figure 182. Parameters Window for IEEE 802.2

Listed on this window are several fields where your link parameters have to be inserted. All of these fields are explained in the first configuration in 6.1.1, "IEEE 802.2 to an S/390 Host (3270)" on page 153, except Fully Qualified CP Name.

The Fully Qualified CP Name defines your PC as a control point and must be unique in the network. It is made up of the network ID and the CP name.

- **Network ID**

This is the name of the network (local area and/or wide area) where your PC and AS/400 is attached. The default is APPN.

- **CP Name**

This is the name by which your PC is known on the network.

These definitions will be provided by your network administrator. Complete all that is required and click on **Advanced...** if you want to change your advance features. See Figure 168 on page 157 for the Advanced window and a description of each field.

After completing the fields in the Advanced window, proceed by clicking on **OK** to complete your new configuration.

Continue by clicking on **OK** until your session automatically starts.

Proceed now to save your new configuration by following the steps illustrated under "Save Configuration and Create Icons" on page 158.

You have created a 3270 session via an AS/400 to an S/390 host.

6.2 TCP/IP Connection

This section discusses the configuration of Personal Communications workstations communicating via TCP/IP protocol. The next two sections will cover an TCP/IP connection to an S/390 host and to an AS/400 host respectively.

6.2.1 TCP/IP to an S/390 Host (3270)

The configuration for this connection starts at the same point as the previous configuration (see 6.1.1, "IEEE 802.2 to an S/390 Host (3270)" on page 153). If you are not sure about your MPTS configuration, the following text and figures tells you how to make this configuration of Personal Communications work.

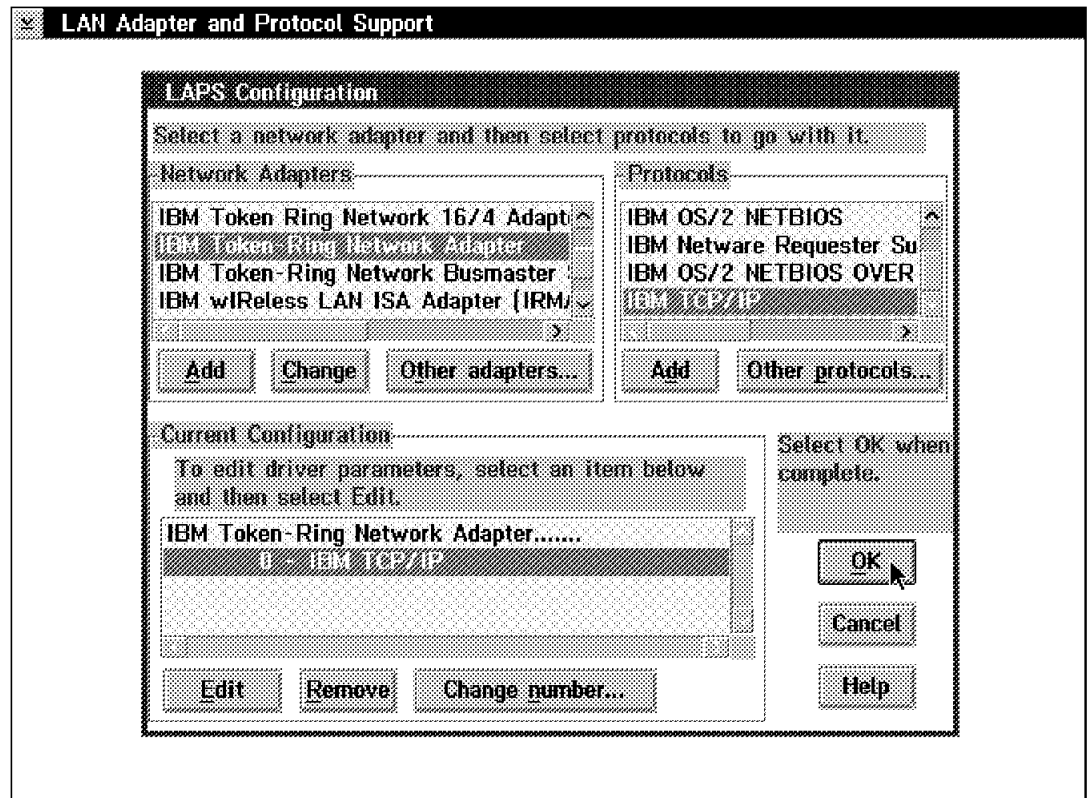


Figure 183. LAPS Configuration - TCP/IP Environment

The network adapter driver used in our example is for a PS/2 (micro-channel) machine. Use the correct network adapter driver for your token-ring adapter.

```
CALL=C:\IBMCOM\PROTOCOL\NETBIND.EXE
RUN=C:\IBMCOM\LANMSGEX.EXE
SET ETC=C:\MPTN\ETC
DEVICE=C:\MPTN\PROTOCOL\SOCKETS.SYS
DEVICE=C:\MPTN\PROTOCOL\AFOS2.SYS
DEVICE=C:\MPTN\PROTOCOL\AFINET.SYS
DEVICE=C:\MPTN\PROTOCOL\IFNDIS.SYS
RUN=C:\MPTN\BIN\CNTRL.EXE
CALL=C:\OS2\CMD.EXE /Q /C C:\MPTN\BIN\MPTSTART.CMD
DEVICE=C:\IBMCOM\MACS\IBMTOK.OS2
```

Figure 184.

The lines that are highlighted indicate the differences between other MPTS configurations.

From your Personal Communications folder, double-click on **Start/Configure Session**. Wait until you have the Welcome panel and click on **OK**. You will be presented with the Customize Communication panel where you will choose the type of connection you require. The following figure will show you how your choice should look.

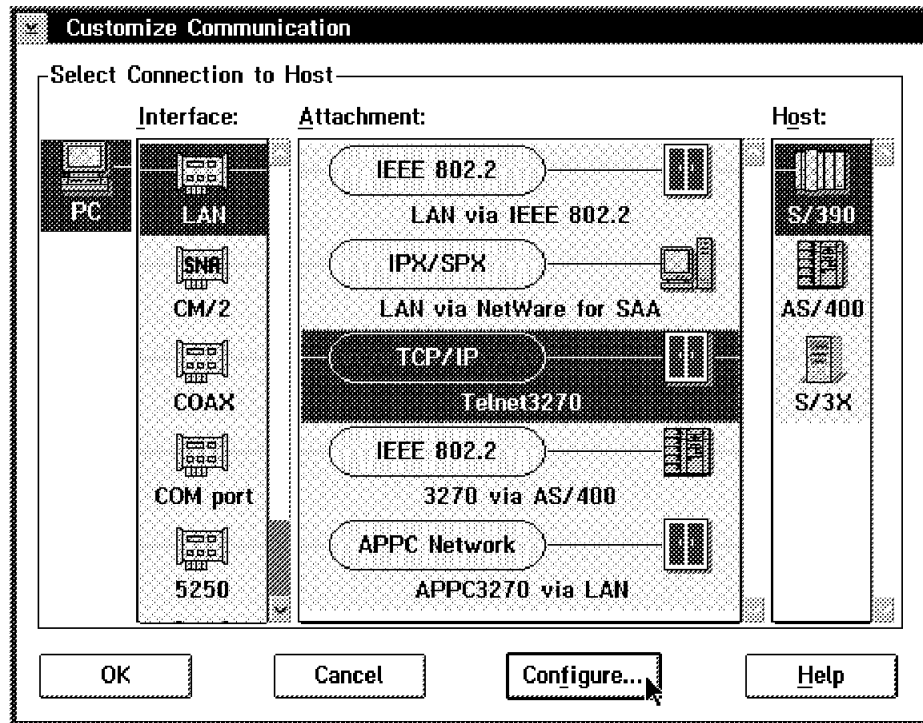


Figure 185. Customize Communication Panel with TCP/IP to an S/390 Host

Choose:

- LAN for the interface
- TCP/IP (Telnet3270) for the attachment
- S/390 for the host

After making These choices, proceed by clicking on **Configure...** to get the Customize Communication - 3270 Host window, which is the same window (minus two items) as in the previous configuration (see Figure 166 on page 156). All information described for the previous configuration also applies to the relevant fields in this window. If you are not familiar with the window you may go back to the previous configuration, 6.1.1, "IEEE 802.2 to an S/390 Host (3270)" on page 153.

After completing any changes on this window you may continue by clicking on **Configure Link...**. The next window is obviously different because it is a new environment that we are trying to set up. The screen looks as follows:

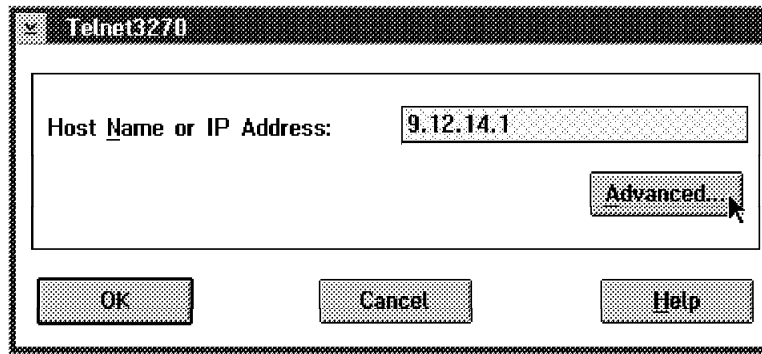


Figure 186. TCP/IP Host Name Parameter

This window only requires the host name or IP address, which you should get from your VTAM programmer or LAN administrator. The name or IP address of the target host must be specified in the following format:

- **Host Name:**

The name of the target host in the form of a string (for example, host.test.ibm.com).

- **Host IP Address:**

The 32-bit internet address of the target host in dotted-decimal notation (for example, 11.22.33.44).

You may choose **Advanced...** for additional options to change as shown in Figure 186.

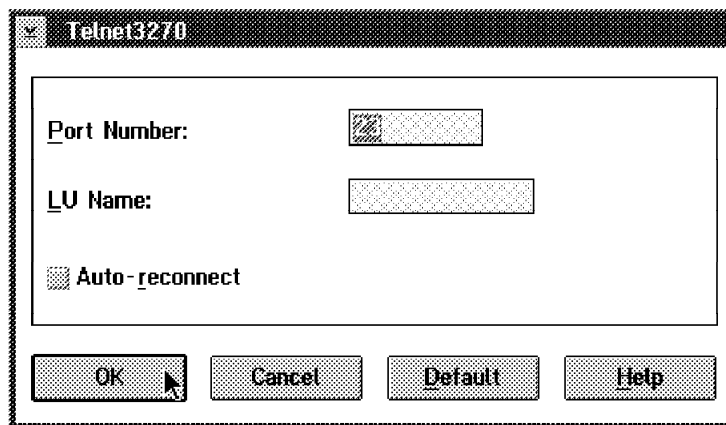


Figure 187. Advance Features for TCP/IP Configuration

The default normally works but you can change to your specific requirements.

Here is a brief explanation of the fields in the Advanced window.

- **Port Number**

Port Number represents the port number of the host that you want to connect to. The default is 23 and normally works.

- **LU Name**

LU Name is used when you want to connect to a specific LU in your host.

- **Auto-reconnect**

Auto-reconnect allows your session to be automatically re-connected if your session is disconnected.

When you have made your changes, click on **OK**. Close all the open windows by clicking on **OK** until the configuration automatically starts your new session. If all your details in your new configuration is correct, then your host session will start immediately. Proceed to save your new configuration and create an icon for it (see "Save Configuration and Create Icons" on page 158).

You have created a 3270 session through TCP/IP.

6.2.2 TCP/IP to an AS/400 Host (5250)

Before you do the following configuration check that your MPTS is configured correctly (see Figure 183 on page 167 and Figure 184 on page 167).

The configuration for this type of connection starts at the same point as all the previous configurations in this section.

From your Personal Communications folder, double-click on **Start/Configure Session**. Wait until you have the Welcome window and click on **OK** to continue. You are presented with the Customize Communication window, where you will choose the type of connection required.

For this configuration choose:

- LAN for the interface
- TCP/IP (Telnet 5250) for the attachment
- AS/400 for the host

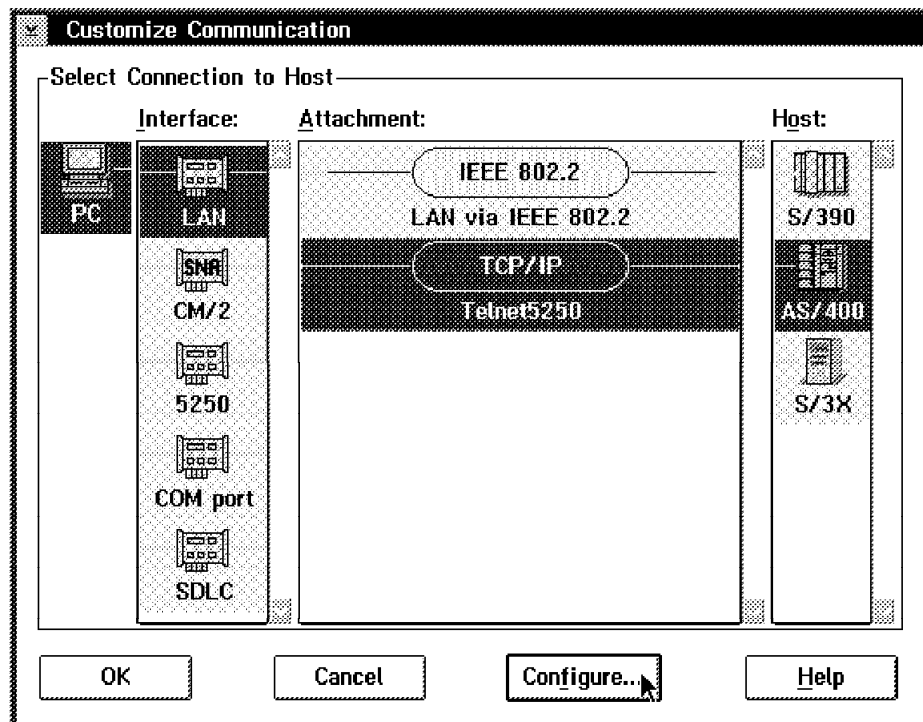


Figure 188. Configuration Choice for 5250 TCP/IP Connection

After making these choices, you may proceed by clicking on **Configure...** to get to the Customize Communication - 5250 Host window. The Session Parameters box only has three possibilities for you to make changes to suite your needs. A brief explanation of these fields can be found in 6.1.1, "IEEE 802.2 to an S/390 Host (3270)" on page 153.

Click on **Configure Link...** in the Link Parameter panel to continue.

The following panel is the same as the TCP/IP configuration previously completed in this section of configurations under OS/2.

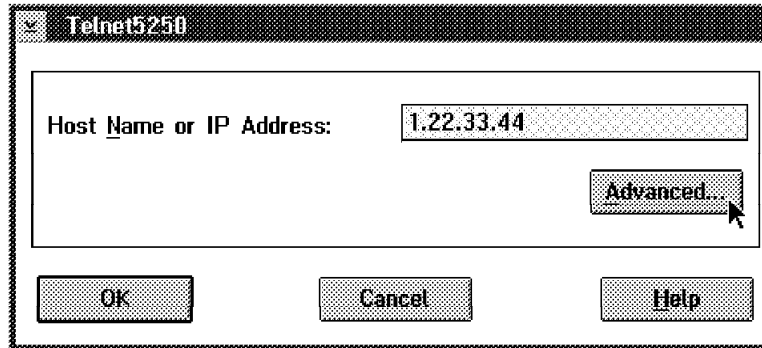


Figure 189. TCP/IP Host and Address Name Parameter

Complete your host name or IP address and click on **Advanced...** if you need to make changes to your advanced features.

In the following figure, you can see that you can change your port number and enable auto-reconnect.

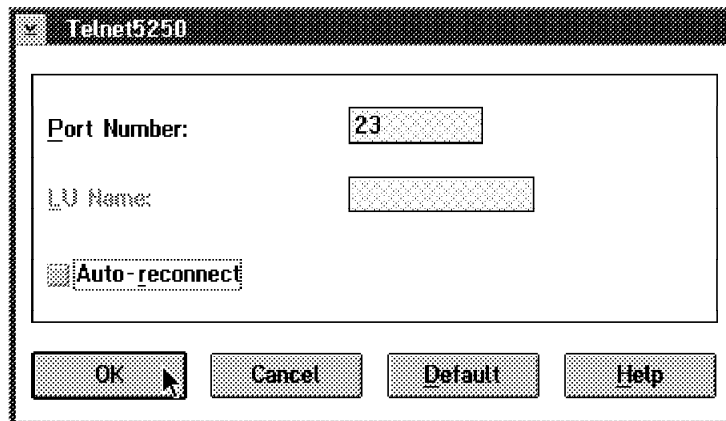


Figure 190. Advance Options for TCP/IP Configuration

Auto-reconnect automatically reconnects your session in the event that it is disconnected for any reason.

Enter all your details and click on **OK**. Proceed to click on **OK** on all open windows until your session is automatically activated. If your parameters are all correct then your session will activate without any problems.

Proceed now to save your configuration by following the steps illustrated under "Save Configuration and Create Icons" on page 158.

6.3 IPX/SPX via NetWare for SAA to an S/390 Host (3270)

Before you continue with the new configuration under IPX/SPX check that you MPTS is installed and configured correctly. Below is the LAPS Configuration window which shows what is needed to make this connection possible.

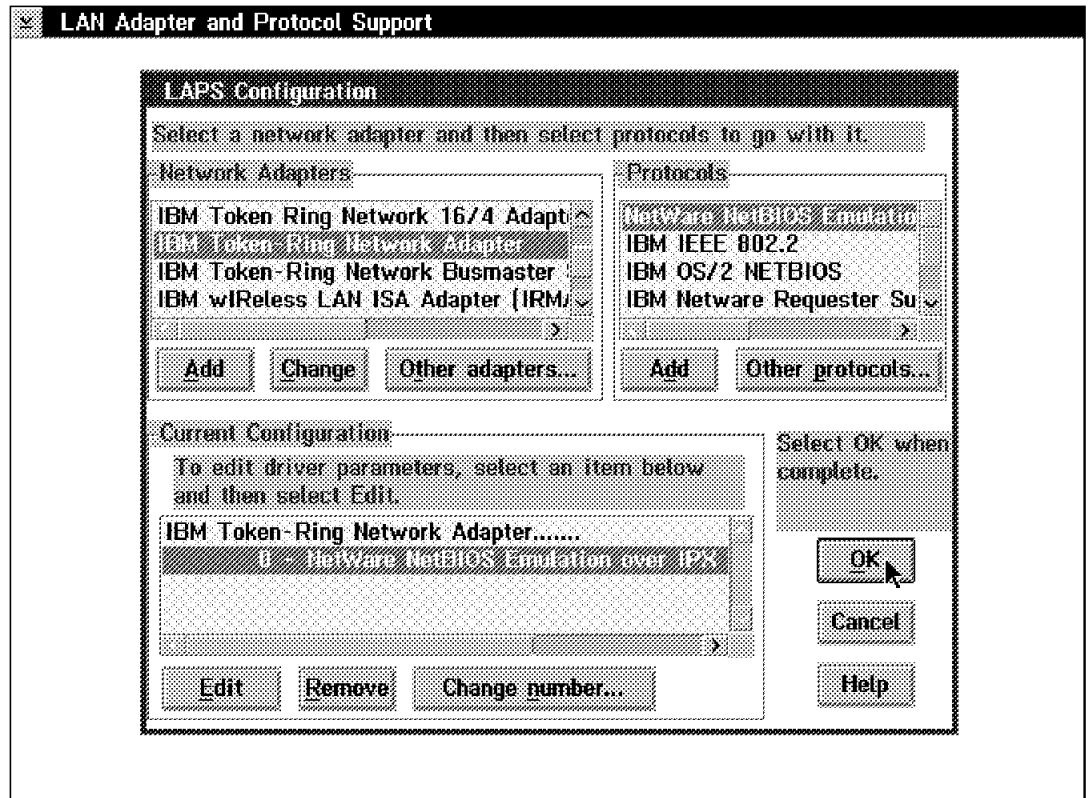


Figure 191. LAPS Configuration - IPX/SPX Environment

The network adapter driver used in our example is for a PS/2 (micro-channel) machine. Use the correct Network Adapter Driver for your token-ring adapter.

Your CONFIG.sys file will be updated with the following lines:

```
CALL=C:\IBMCOM\PROTOCOL\NETBIND.EXE
RUN=C:\IBMCOM\LANMSGEX.EXE
SET ETC=C:\MPTN\ETC
DEVICE=C:\MPTN\PROTOCOL\SOCKETS.SYS
DEVICE=C:\MPTN\PROTOCOL\AFOS2.SYS
RUN=C:\MPTN\BIN\CNTRL.EXE
CALL=C:\OS2\CMD.EXE /Q /C C:\MPTN\BIN\MPTSTART.CMD
DEVICE=C:\IBMCOM\PROTOCOL\NETBIOS.OS2
DEVICE=C:\IBMCOM\MACS\IBMTOK.OS2
```

Figure 192. MPTS Configuration Lines Added to CONFIG.SYS File

The highlighted line indicates the difference between other MPTS configurations.

Prerequisites

- Novell software in the gateway workstation:
 - NetWare file server V3 or V4.0
 - NetWare for SAA V1.2 or later
- Novell's NetWare client for OS/2 installed in the client workstation.

This software allows communication between your OS/2 workstation and the NetWare SAA server. Without this software your configuration will not work. We therefore assume that you have already installed your NetWare Client for OS/2 software and are ready to begin.

As with all previous configurations the starting point for this configuration is the same.

From your Personal Communications folder, double-click on **Start/Configure Session**. Wait until you have the Welcome window and click on **OK**. You are then presented with the Customize Communication window, where you choose the type of communication you require. For this configuration choose:

- LAN for the interface
- IPX/SPX (LAN via NetWare for SAA) for the attachment
- S/390 for the host

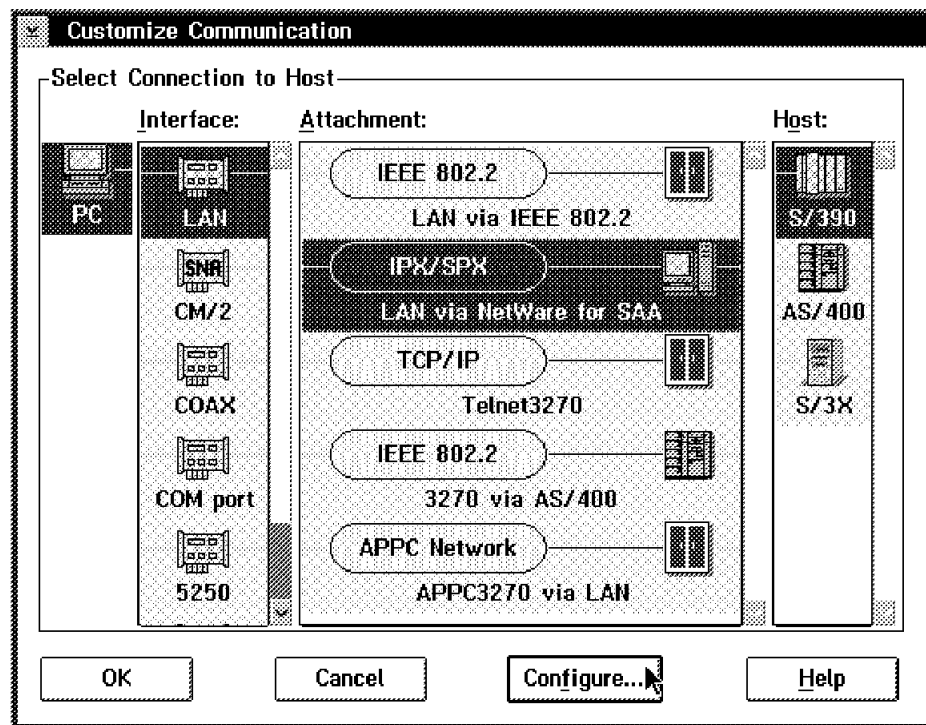


Figure 193. Customize Window for IPX/SPX Configuration

When you have completed your choices, you may click on **OK** and continue on to the next window.

The next window is called Customize Communication - 3270 Host and allows you to make changes to your Session Parameters and Graphic Parameters. The explanation for the above parameters can be found in the first section in 6.1.1, "IEEE 802.2 to an S/390 Host (3270)" on page 153.

Customize Communication - 3270 Host

Session Parameters

Screen Size: 24x80

Session Type: ☒ Display ☐ Printer

Host Code-Page: 037 United States

Graphics Parameters

Enable Host Graphics: ☒ Yes ☐ No

Advanced Parameters: Configure Graphics...

Link Parameters - LAN via NetWare for SAA

Link Parameters: Configure Link...

OK Cancel Help

Figure 194. Window for Session, Graphic and Link Parameters

On the third parameter called Link Parameters - LAN via NetWare for SAA, click on **Configure Link...** to insert your parameters for your new connection.

The following window is called LAN via NetWare for SAA.

LAN via NetWare for SAA

Server Name: RTPNET4

User Name: TEST

Service Name: SAAPRF1

LU Category: Any

OK Cancel Help

Figure 195. Parameters for Connection to a NetWare for SAA Server

This window has four fields where you have to insert information. You can obtain this information from your local administrator of your NetWare Server.

To understand what these fields represent here is a brief explanation of each:

Server Name:

Server Name defines the NetWare server with which this session will communicate. If you specify an astericks, Personal Communication will search all the NetWare servers that are running NetWare for SAA to find an available session.

User Name:

The User Name identifies the user of this workstation to the NetWare gateway. You must be authorized to attach to the server specified by the server name.

Service Name:

Service Name defines which communication service of NetWare for SAA you will access; this is usually the name of the host communication.

LU Category:

LU Category defines which type of LU is to be used in establishing this host session; an LU is allocated by the chosen category. There are four categories available, namely:

- **Public**

All unnamed LUs belong to this category. If a public LU is requested, NetWare for SAA will allocate the first such LU that is available.

- **Pooled**

A pooled LU belongs to a named LU pool. Your system administrator may have defined an LU pool for your department. Choosing this option requires you to specify your LU-pool name.

- **Dedicated**

A dedicated LU has a unique name and may be dedicated to a specific user or application. You have to specify an LU name when choosing this option.

- **Any**

Choosing the ANY option, NetWare for SAA will search all the above options, namely; PUBLIC, POOLED and DEDICATED for a session that matches your LU type and where you have access rights.

Speak to your system administrator and make your decisions according to your requirements. When you have decided, enter in the information and click on **OK** to complete your configuration.

Continue to click on **OK** on the open windows until your session is automatically activated.

If all your parameters are correct and your NetWare Client for OS/2 software is installed and set up, you will get a host connection.

Proceed now to save your configuration by following the steps in "Save Configuration and Create Icons" on page 158.

You have created an IPX/SPX via NetWare for SAA session to an S/390.

Reminder

You must install the NetWare Client for OS/2 and set up SPX support to use the attachment you have created.

The screen size and session type must match the configuration of the LU at the gateway. If they do not, you will not be able to establish communication to the host.

6.4 APPC3270 via LAN to an S/390 Host

PCOMM Version 4.1 for OS/2 provides APPN end node support for workstations. APPC3270 via LAN IEEE 802.2 is one of two direct APPC3270 connection types, the other being APPC3270 via SDLC.

Note: Personal Communications for OS/2 also allows you to use CM/2 or the OS/2 Access feature if you want to use APPC or CPl-C APIs for user-defined applications at the same time.

APPC3270 is an APPC Client/Server PU Type 2.1 LU 6.2 environment. Installing and configuring A3270 in VTAM V4R2 or higher defines the server. Configuring PCOMM V4.1 for OS/2 for APPC3270 via LAN defines the client.

Before starting with any of the configuration find out from your VTAM administrator if the MVS A3270 server is defined. If not, then the following has to be done.

Configuring the A3270 Server on MVS

1. Define the A3270 server to VTAM.
2. Configure VTAM to start the A3270 server automatically.
3. Activate the A3270 application program major node.
4. Modify the A3270 server MVS PROC.

For complete details, see *APPC Application Suite, Administration Version 1 for MVS/ESA and VM/ESA*, SC31-6533-00.

Configuring an APPC Session via LAN

First check that your MPTS configuration is correct. This connection of APPC works over a LAN and thus requires IEEE 802.2 protocol (see Figure 162 on page 154 and Figure 163 on page 154).

From your Personal Communications folder, double-click on **Start/Configure Session**. Wait until you have the Welcome window and click on **OK**. At the **Customize Communication**, choose the type of communication you require. For this configuration choose:

- LAN for the interface
- APPC Network (APPC3270 via LAN) for the attachment
- S/390 for the host

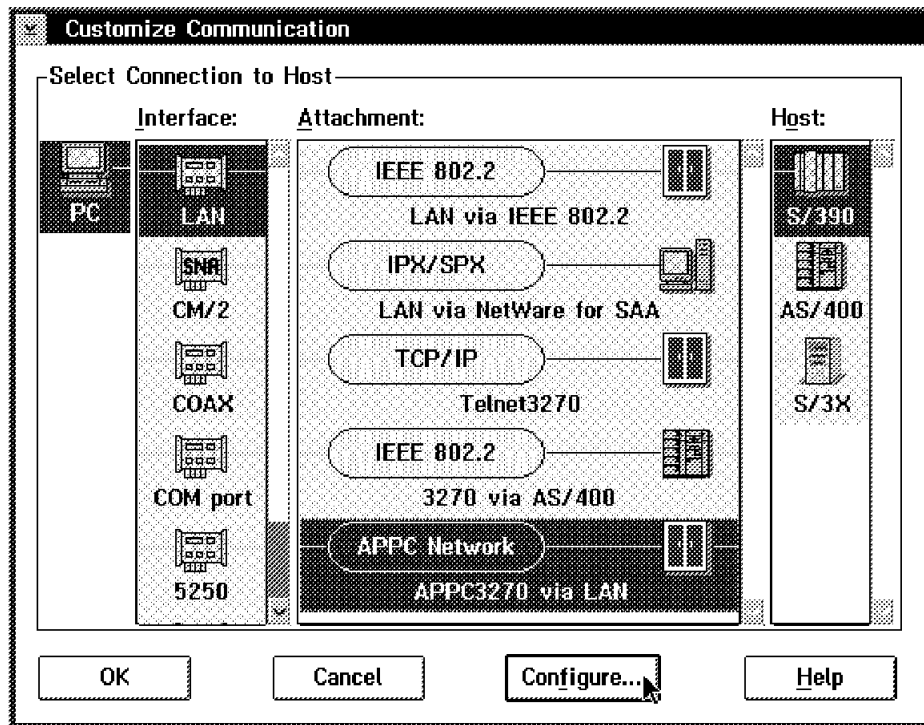


Figure 196. APPC Network via LAN to an S/390 Host

Make your selection and click on **Configure...** to get to the Customize Communication - 3270 Host window. Under Session Parameters, you have a field for APPC Parameters.

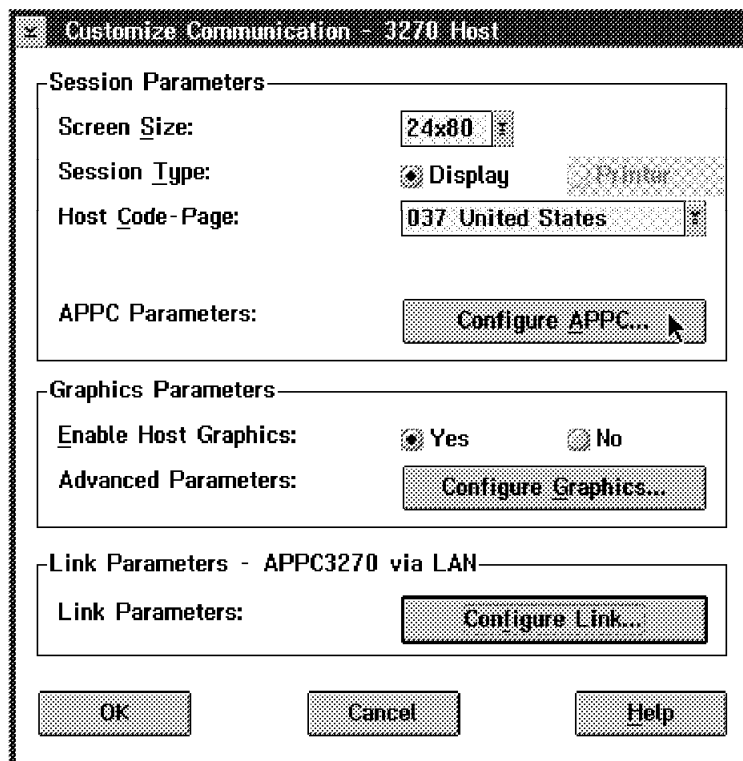
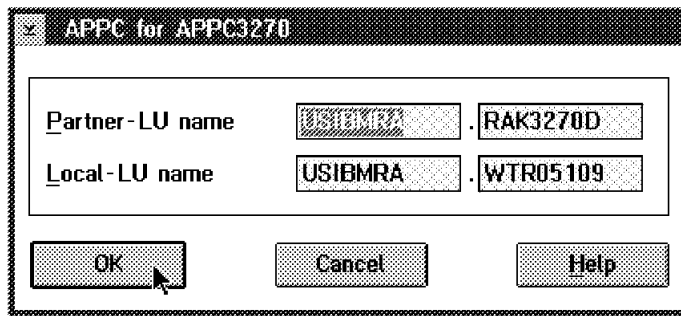


Figure 197. APPC3270 via LAN Customize Communication Window - OS/2

Click on **Configure APPC...** and the following window will appear.



The dialog box is titled "APPC for APPC3270". It contains two rows of input fields. The first row is labeled "Partner-LU name" and contains two text boxes: "USIBMRA" and "RAK3270D". The second row is labeled "Local-LU name" and contains two text boxes: "USIBMRA" and "WTR05109". At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help". A mouse cursor is pointing at the "OK" button.

Figure 198. APPC Parameters

This window requires information for the following two fields:

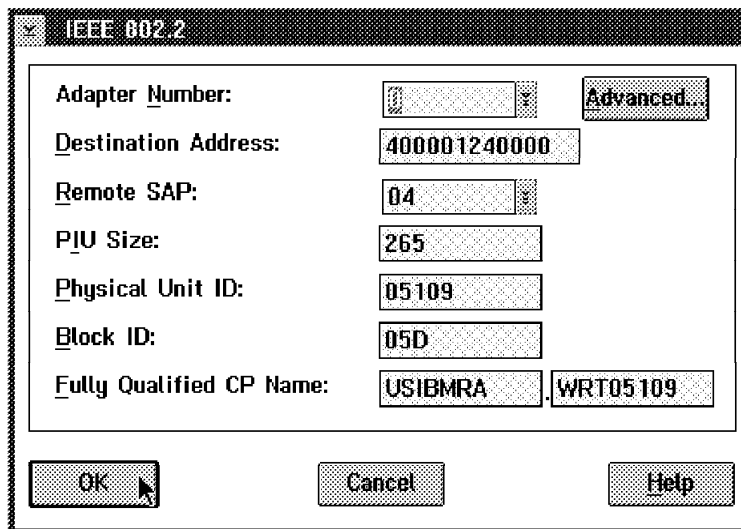
Partner-LU name

Partner-LU name is a concatenation of two fields, namely the network ID, which is the name of the network that you are connected to, and the application ID, which is the name of the APPC application at your host.

Local-LU name

Local-LU name is also a concatenation of two fields, namely the network ID, and the local LU for your workstation.

For the details of these two fields you should get help from your VTAM administrator and LAN administrator. Complete the fields and continue by clicking on **OK**. You will be taken back to the previous window where you can now click on **Configure Link...** under the Link Parameters (see Figure 199).



The dialog box is titled "IEEE 802.2". It contains several input fields. "Adapter Number:" is a dropdown menu with "0" selected and an "Advanced..." button to its right. "Destination Address:" is a text box containing "400001240000". "Remote SAP:" is a dropdown menu with "04" selected. "PIU Size:" is a text box containing "265". "Physical Unit ID:" is a text box containing "05109". "Block ID:" is a text box containing "05D". "Fully Qualified CP Name:" consists of two text boxes: "USIBMRA" and "WRT05109". At the bottom are three buttons: "OK", "Cancel", and "Help". A mouse cursor is pointing at the "OK" button.

Figure 199. APPC Link Parameters

For a description of the fields you can see 6.1.1, "IEEE 802.2 to an S/390 Host (3270)" on page 153 which explains what is required. If you have any problems with the details that are required, your LAN administrator should help you.

Chapter 7. Configuring PC400 V4.1 for a Twinax Connection

The TDLC (twinaxial data link control) attachment allows you to connect PCOMM V4.1 for Windows 3.1 and PCOMM V4.1 for OS/2 workstations to the workstation controller of an AS/400 or to a remote workstation controller (such as an IBM 5394 or 5494) by twinaxial cable. You need a 5250 adapter card in the PCOMM V4.1 workstation to be able to connect to an AS/400 via twinaxial cable. This type of connection can be represented by Figure 200.

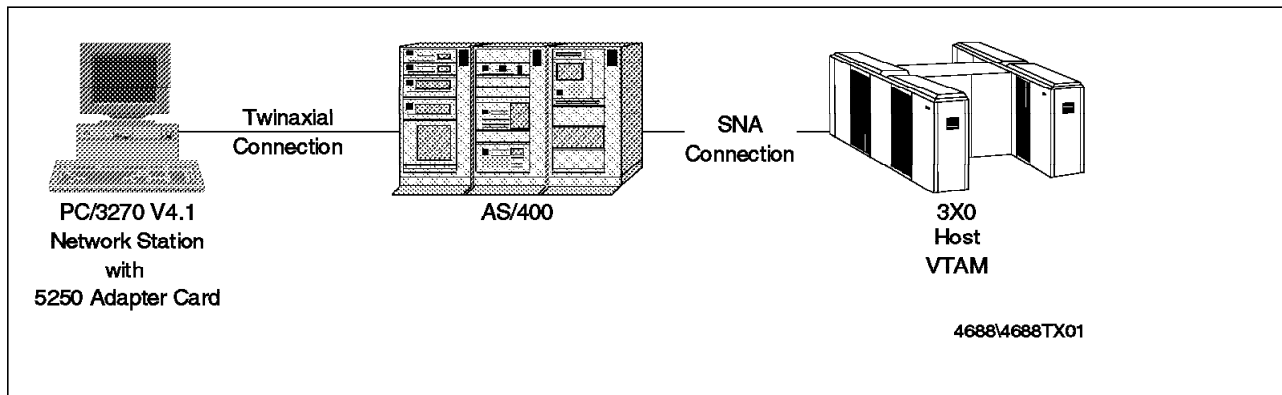


Figure 200. AS/400 3270 Pass-Through via Twinaxial Attachment (TDLC)

7.1 AS/400 3270 Pass-Through via Twinaxial Attachment (TDLC)

A PCOMM V4.1 workstation can be connected to a host computer via one or more AS/400s by using the SNA Pass-Through function of the AS/400 (available for OS/400 Version 2 Release 2 or later). Since the SNA Pass-Through function allows LU 0/1/2/3 data to be passed through AS/400s, a PCOMM V4.1 user can make use of applications that reside in an S/3x0 as if the workstation were directly connected to it. The AS/400 3270 Pass-Through is supported for the LAN via IEEE 802.2, SDLC and TDLC (twinax) attachments. In this chapter, you will see the TDLC attachment. Refer to Chapter 4, "Local Area Network Connections" on page 63 for the LAN attachment, and to 9.5, "SDLC AS/400 Support" on page 215 for the SDLC attachment.

In the TDLC connection for PCOMM V4.1, you need to be acquainted with two new terms:

- TDLC Station Address

Each device that is attached to one port of a controller is identified by a station address from 0 through 6. Because the PC adapters that PCOMM V4.1 uses can support two addresses, you can configure two WorkStation profiles that have unique station addresses respectively and concurrently execute the workstation by using those profiles. One WorkStation profile can be used for multiple sessions.

You *must* be sure not to select an address that is already assigned to another device. If you do so, you will not be able to establish a connection.

- Fully Qualified CP Name

The fully qualified CP name defines your PC as a control point and *must* be unique in the network. It is made up of the network ID and the CP name.

- Network ID

This is the name of the network (local area and/or wide area) to which your PC and the AS/400 are attached. The default is APPN.

- CP Name

This is the name by which your PC is known in the network.

These definitions will be provided by your network administrator.

7.1.1 Configuring PCOMM V4.1 for 3270 via AS/400

To configure PCOMM V4.1 for the TDLC Attachment, locate the PCOMM program group and double-click on the **Start/Configure Session** icon.

The IBM logo will be displayed. Now you have two possibilities:

1. You don't have a coax adapter, or it is not operational.

You will receive a message telling you to customize your WorkStation (host session). Click on **OK** to get the Customize Communication window, shown in Figure 201.

2. You have an operational coax adapter.

You will be presented a host session through the coax connection. To customize for the twinaxial attachment, click on the **Communication** option of the host session menu bar, and then click on **Configure...** in the displayed pull-down menu to get the Customize Communication window, shown in Figure 201.

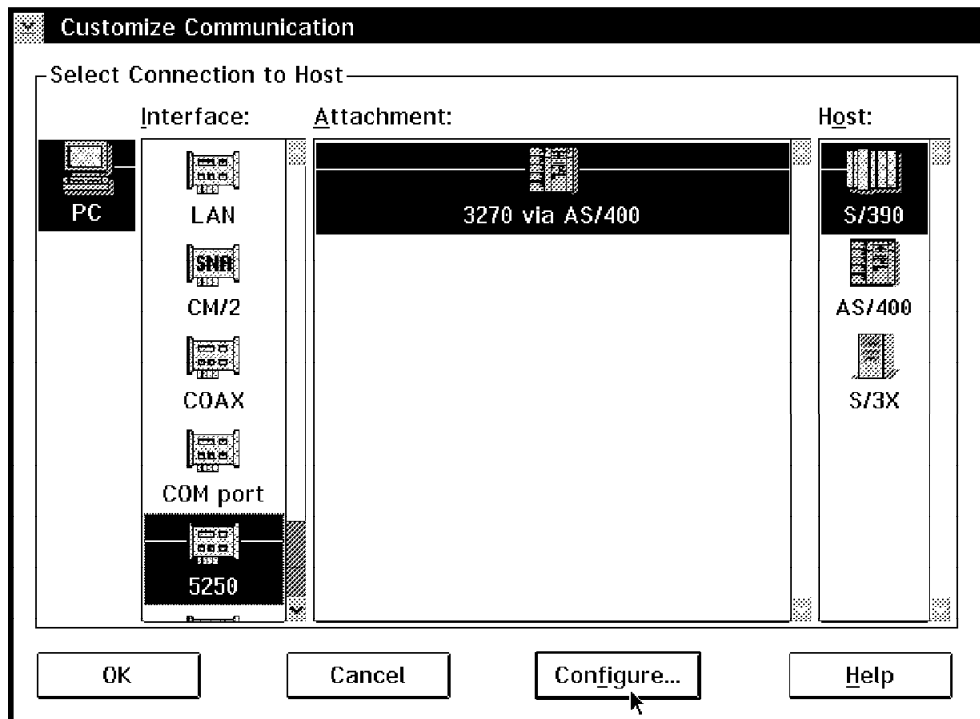


Figure 201. Customize Communication - 5250 Adapter - TDLC via AS/400 - OS/2, Windows 3.1

In the Customize Communication window, select **5250** for the adapter. TDLC via AS/400 (for Windows 3.1) or 3270 via AS/400 (for OS/2) will automatically be selected for the adapter/attachment, as it is the only choice for the 5250 adapter. To customize the unique twinaxial attachment parameters, click on **Configure...** in the Customize Communication window shown in Figure 201 on page 180 to get the Customize Communication-3270 Host window, and then, click on **Configure Link...** in the Customize Communication-3270 Host window to get the Twinaxial Attachment window shown in Figure 202.

Figure 202. Twinaxial Attachment - AS/400 3270 Pass-Through - OS/2, Windows 3.1

In the window displayed in Figure 202, specify the TDLC station address, the PIU size and the fully qualified CP name. The TDLC station address can range from 0 to 6 and has to be unique (see 7.1, “AS/400 3270 Pass-Through via Twinaxial Attachment (TDL)” on page 179). The PIU size has to match the AS/400 and the S/3x0 host VTAM and/or NCP definitions. See 7.1, “AS/400 3270 Pass-Through via Twinaxial Attachment (TDL)” on page 179 for an explanation of the fully qualified CP name.

After you set up the parameters, click on **OK** until you finish the configuration.

7.2 Twinax Data Link Control (APPC)

PC400 V4.1 can communicate to an AS/400 host via a twinax connection.

An APPC connection requires a statement added to your CONFIG.SYS file under OS/2, and a statement added to your WIN.INI file under Windows. This statement is a **DEVICE=** statement that loads the device driver for your 5250 emulation adapter.

The device statement should look like the one shown below under OS/2.

```
DEVICE=C:\PCOMOS2\PCSTDLC.SYS
```

Figure 203. Statement Added in CONFIG.SYS File - OS/2

Under Windows your SYSTEM.INI will be updated with the following line.

```
device=C:\PCOMWIN\Vtd1cd.386
```

Figure 204. Lines Added to SYSTEM.INI File - Windows 3.1

Starting a new configuration requires that you open your Personal Communication folder and double-click on **Start/Configure Session**. You will be presented with a Welcome screen. Click on **OK** to continue.

The next window that appears is the **Customize Communication** window where your connection choice should be made.

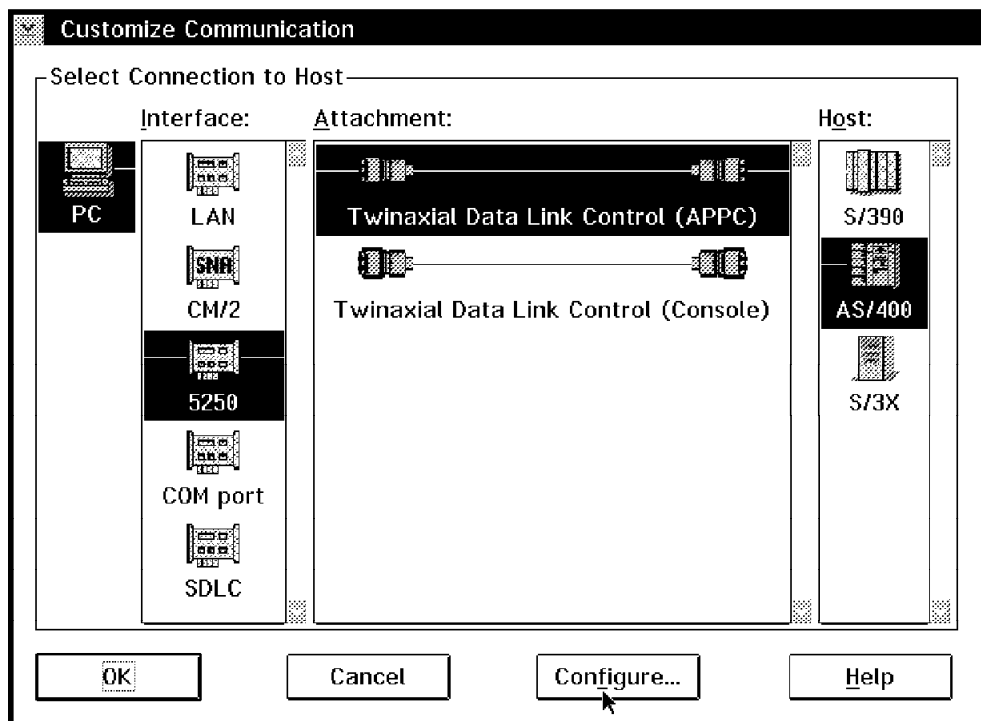


Figure 205. Customize Communication - Windows 3.1, OS/2

In the PC400 V4.1 the Customize Communication panel, shown in Figure 205, choose:

- **5250** for Adapter (Windows 3.1) / Interface (OS/2)
- **Twinaxial Data Link Control (APPC)** for Attachment and
- **AS/400** for Host.

Click on **Configure...** to continue to the next window called Customize Communication - 5250 Host, shown in Figure 206 on page 183.

Notice that PC400 V4.1 can also connect to an AS/400 via Twinaxial Data Link Control (Console) and via PC Support/400 Router (for Windows 3.1 only, see Figure 213 on page 188). For more details about the Twinaxial Data Link Control (Console) refer to 7.3, "Twinax Data Link Control (Console)" on page 186. For more details about the PC Support/400 Router connection, refer to 7.4, "Twinax PC Support/400 Router for Windows 3.1" on page 188.

Customize Communication - 5250 Host

Session Parameters

Screen Size: 24x80 [Advanced...]

Session Type: ☒ Display ☐ Printer ☐ Router

Host Code-Page: 037 United States

System Location Name: USIBMRA RALYAS4A

PC Location Name: USIBMRA WT05019

Workstation ID:

Router-Status Icon: ☒ Show ☐ Hide

User Profile: Configure User Profile...

Link Parameters - Twinaxial Data Link Control (APPC)

Link Parameters: Configure Link...

OK Cancel Help

Figure 206. Customize Communication - 5250 Host - OS/2, Windows 3.1

The Customize Communication - 5250 Host panel contains three fields in the Session Parameters box which you must customize for PC400 V4.1 Twinax connection. These fields are: System Location Name, PC Location Name and Workstation ID.

The values placed in the System Location Name are unique and must exactly match the fields configured in the AS/400 definitions, unless stated otherwise.

Although your network administrator should give you the information required to configure the fields in the PC400 V4.1 panels, we will briefly describe each and how to obtain the necessary information from the AS/400 host.

System Location Name:

This is a concatenation of two AS/400 configuration fields: namely the network ID and the local control point name fields. Typically the network ID is APPN and the local control point name is the AS/400 serial number. However, we recommend the network administrator confirm both the network ID and the local control point name by issuing the AS/400 DSPNETA command, as shown in Figure 207 on page 184. In our example the network ID is USIBMRA and the local control point name is RALYAS4A.

Display Network Attributes		System: RALYAS4B
Current system name	:	RALYAS4B
Pending system name	:	
Local network ID	:	USIBMRA
Local control point name	:	RALYAS4B
Default local location	:	RALYAS4B
Default mode	:	BLANK
APPN node type	:	*NETNODE
Data compression	:	*NONE
Intermediate data compression	:	*NONE
Maximum number of intermediate sessions	:	200
Route addition resistance	:	128
Server network ID/control point name	:	*LCLNETID *ANY

Figure 207. DSPNETA Display - AS/400

Figure 207 is the display where you can find the network ID and the local control point name.

PC Location Name:

The first is the remote network ID, the same as the network ID from the system location name or it could be the name of the network that you are directly connected to. The second is the local PC name, the name you have chosen for your workstation. This name may be anything you choose.

Workstation ID:

This field is optional unless the Device Description statement in the AS/400 virtual device descriptor specifies a name. To view the virtual device descriptor issue the AS/400 WRKDEVD command, type a 5 next to the desired virtual device descriptor and press Enter.

From the Customize Communication - 5250 Host panel (see Figure 206 on page 183), click on **Configure Link...** to get the Twinaxial Attachment (APPC) panel shown in Figure 208.

Twinaxial Attachment (APPC)

TDLC Station Address:

PIU Size:

Communication Trace: ☒ On ☐ Off

Figure 208. Configure Link - 5250 - OS/2, Windows 3.1

In the Twinaxial Attachment (APPC) panel there are two fields where a value is required.

TDLC Station Address

The TDLC Station Address is the number of the device your workstation is on a physical twinaxial line from a string of seven. Your AS/400 Administrator will give you this information.

The TDLC Station Address must be a value from 0-6.

PIU Size The PIU Size must be equal to or smaller than the Maximum Frame Size statement in the AS/400 line descriptor. PC400 V4.1 supports values ranging from 521 to 4105 for a PIU size. Greater PIU sizes generally provide better performance and should be used if the line error rate is low.

In Figure 208 on page 184 click on **AT-Bus Adapter** to get the panel in Figure 209.

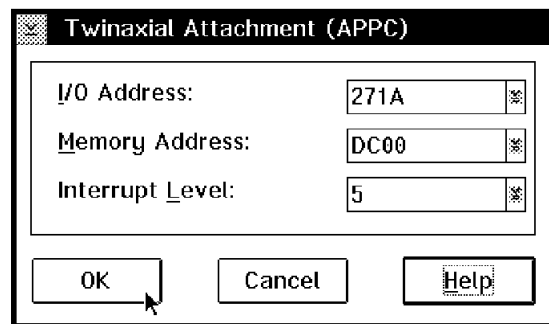


Figure 209. AT-Bus Adapter Panel - OS/2, Windows 3.1

In Figure 209 there are three fields that you can change. These parameters are used when you are connecting a PC to an AS/400 through an AT-bus emulation adapter. They are not used for micro-channel PCs or PCs that use PCMCIA cards. The following is a description of each field:

- I/O Address

If you are using the Enhanced 5250 Emulation Adapter (AT-bus), you must set the I/O-mapped command address of the adapter with the I/O address switch assembly on the card and, in the Twinaxial Dialog-box, you must set the same address.

- Memory Address

The Enhanced 5250 Emulation Adapter has 8K bytes of RAM and you must set the starting address for this. Be careful that the address does not conflict with the address of other adapters or software. The Enhanced 5250 Emulation adapter usually uses address DC00 but you can use AUTOMATIC and the Personal Communications device driver will search for an available address.

- Interrupt Level

You must set an interrupt level from 3 through 7, again it must not conflict with the level set for other devices. The default for the Enhanced 5250 Emulation adapter is 5.

The values that you set for these fields are stored in the PCSTDLC.DAT file.

If no other changes are required, you can press **OK** on all open windows to exit the PC400 V4.1 TWINAX configuration process.

7.3 Twinax Data Link Control (Console)

The following configuration allows you to have a connection with an AS/400 in the same way as a native console, over the same medium (twinax), thus allowing full console functions.

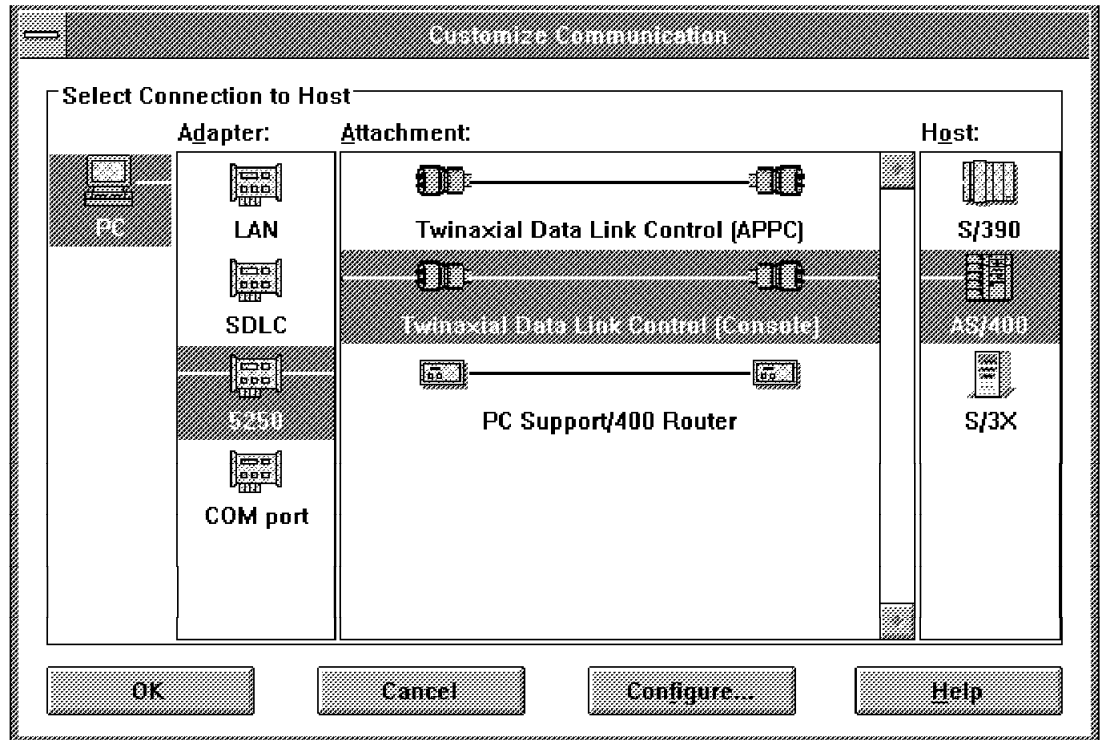


Figure 210. Customize Communication Window - OS/2 and Windows 3.1

Choose your configuration as follows:

- 5250 for the adapter (Windows 3.1) / Interface (OS/2)
- Twinaxial Data Link Control (Console)
- AS/400 for the host

Click on **Configure...** after making your choice. On the next window, called Customize Communication - 5250 Host, you can change Screen size and Host Code-Page in the Session Parameters box. Click on **Configure Link...** to get the Twinaxial Attachment (Console) panel shown in Figure 211.

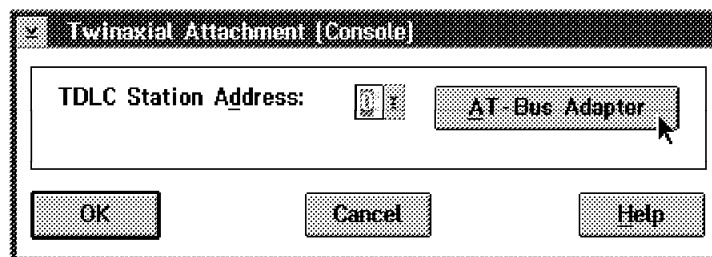


Figure 211. Twinaxial Attachment (Console) - OS/2 and Windows 3.1

In Figure 211 on page 186 you can change your TDLC station address. You must get the TDLC station address from your AS/400 administrator because this value depends on which number you are in a string on seven devices (0-6) on the same physical line.

Click on **AT-Bus Adapter** when using OS/2 or click on **Advanced** when using Windows 3.1 to get the AT-Bus Adapter panel. On that window you can change your I/O Address, Memory Address and Interrupt Level. (See Figure 209 on page 185).

Click on **OK** when completed. Close all open windows by clicking on **OK**. Save your configuration and create an icon (see "Save Configuration and Create Icons" on page 158).

7.3.1 Twinax Data Link Control (Console) to S/3X

This configuration is for the older System 3X (for instance, S/36). The complete installation for this configuration is exactly the same as 7.3, "Twinax Data Link Control (Console)" on page 186. The only difference is the Customize Communications window where you choose the following format:

- **5250** for Adapter (Windows 3.1)/Interface (OS/2),
- **Twinaxial Data Link Control (Console)** for Attachment and
- **S/3X** for Host.

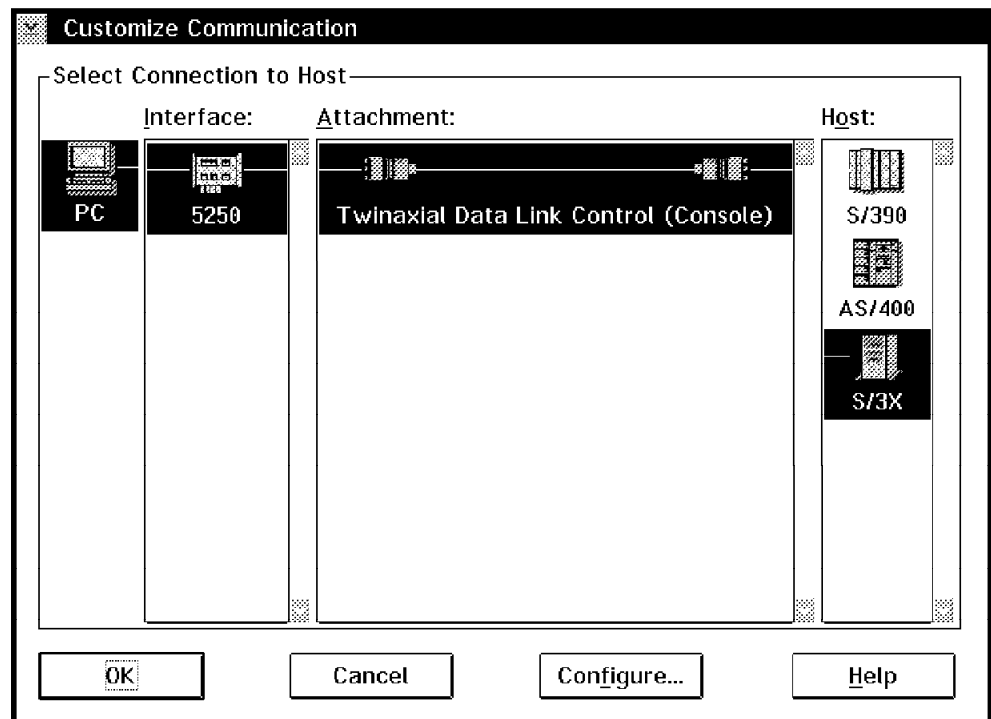


Figure 212. Customize Communication for System 3X - OS/2 and Windows 3.1

Follow the configuration process in 7.3, "Twinax Data Link Control (Console)" on page 186 to create your Twinaxial Data Link Control (Console) configuration to a System 3X.

7.4 Twinax PC Support/400 Router for Windows 3.1

PC400 V4.1 for Windows 3.1 provides the ability to share an existing PC Support/400 router link to an AS/400. In this environment, PC Support/400 starts and manages the Twinax link. Instead of communicating directly with the AS/400, PC400 V4.1 for Windows 3.1 exchanges data with the PC Support/400 which in turn communicates with the AS/400. As a result, configuring PC400 V4.1 for Windows 3.1 is relatively simple, requiring only the AS/400 System Name.

This configuration is not available under OS/2.

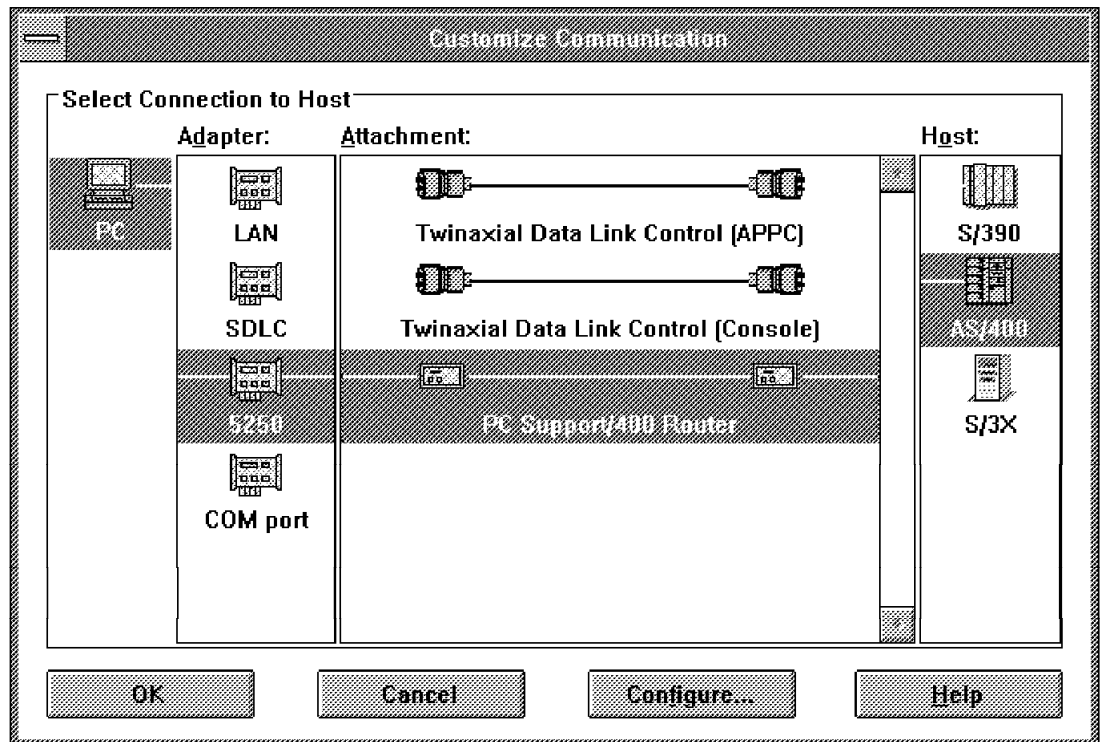


Figure 213. Customize Communication - PC Support/400 - Windows 3.1

In the PC400 V4.1 for Windows 3.1 Customize Communication window, shown in Figure 213, choose :

- **5250** for Adapter,
- **PC Support/400 Router** for Attachment and
- **AS/400** for Host.

Notice that PC400 V4.1 can connect to an AS/400 via Twinaxial Data Link Control (APPC), Twinaxial Data Link Control (Console) and PC Support/400 Router. For more details about:

- Twinaxial Data Link Control (APPC) refer to 7.2, "Twinax Data Link Control (APPC)" on page 181.
- Twinaxial Data Link Control (Console) refer to 7.3, "Twinax Data Link Control (Console)" on page 186.

Click on **Configure...** to continue to the next window called Customize Communication - 5250 Host.

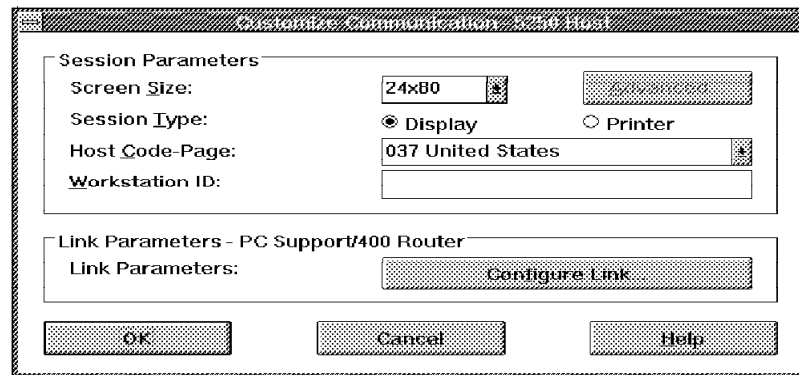


Figure 214. Customize Communication - 5250 Host - Windows 3.1

Although your network administrator should give you the information required to configure the Workstation ID field on the Customize Communication - 5250 Host panel (see Figure 214) we will briefly describe the field and how to obtain the necessary information from the AS/400 host.

Workstation ID This field is optional unless the Device Description statement in the AS/400 virtual device descriptor specifies a name.

To view the virtual device descriptor issue the AS/400 WRKDEVD command, type a 5 next to the desired virtual device descriptor and press Enter.

Click on **Configure Link...** to get the PC Support/400 Router panel shown in Figure 215.

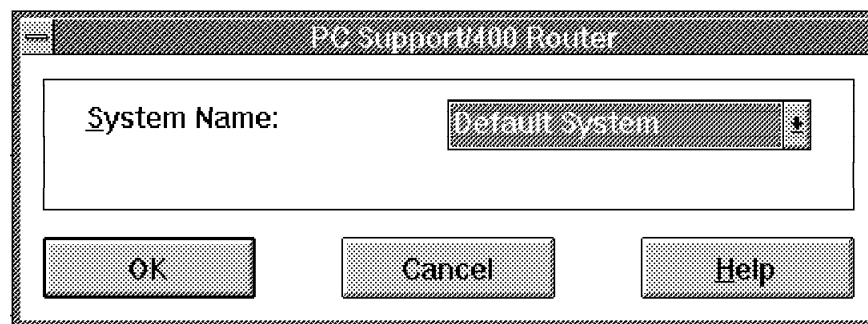


Figure 215. PC Support/400 Router - Windows 3.1

The System Name (see Figure 215) is the only field you must configure and it is set to Default System.

In this case, PC Support/400 will connect PC400 V4.1 to its default system. However, if more than one system exists in the network, you may want to select another system name using the pull-down arrow. After selecting the system name, click on **OK** as required to exit to the previous screen or to end the configuration process.

Chapter 8. The PCOMM V4.1 Gateway

This chapter describes PCOMM V4.1 when it is used as a gateway. The gateway function is only supported in PCOMM V4.1 for DOS (full-function mode). It is not available in other environments.

When configured as a gateway, PCOMM V4.1 provides other workstations on the same logical LAN as the gateway with access to a host system.

PCOMM V4.1 can act as a gateway for other workstations on a:

- Token-ring network
- IBM PC network (Base or Broadband)
- Ethernet network
- FDDI network

PCOMM V4.1 workstations on an Ethernet network can also communicate via an 8209 LAN Bridge to a PCOMM V4.1 gateway on a token-ring.

The PCOMM V4.1 gateway connects to an S/370 host using the following protocols:

- LAN IEEE 802.2
- SDLC
- X.25
- SNA DFT

Only a single host attachment type is supported. The gateway cannot be connected to more than one host. The gateway is not supported over a non-SNA DFT connection.

Up to a maximum of 253 sessions (display and/or print sessions) are supported via LAN IEEE 802.2, SDLC, or X.25 protocols; five sessions are supported through an SNA DFT gateway.

The sessions may be:

- Preallocated to an individual workstation
- Pooled for use by any workstation
- A combination of preallocated and pooled sessions

The number of physical workstations supported simultaneously through the gateway is limited by the amount of memory available on the network adapter. Refer to the *IBM Local Area Network Technical Reference Manual* SC30-3383 to calculate the number of individual workstations supported by each network adapter.

PC/3270 V4.1 for DOS full-function mode may be configured as a dedicated gateway or as a gateway with local LU sessions. These local LU sessions are allocated in the same manner as for workstations and reduce the remaining number of sessions available to workstations.

8.1 Gateway Operation

When the gateway is connected to an S/370 host via LAN 802.2, SDLC, or X.25, the gateway appears to the host as a single SNA PU type 2.0 node with up to 253 LUs attached. The gateway maps the single host PU definition to multiple type 2.0 PUs connected via the network and maintains the SSCP-LU sessions with the host when the LU is not allocated to a workstation.

When connected via SNA DFT, the gateway appears as a DFT device with up to five sessions associated with it. In this configuration the 3x74 control unit manages the SSCP-PU session with the host and maps the SSCP-LU session control commands (ACTLU and DACTLU) to control unit status commands in the adapter buffer. The gateway maintains the SSCP-LU sessions with the host when the LU is not allocated to, and active on, a workstation.

The gateway appears to its downstream workstations as an SNA PU type 4 communications controller. It simulates the PU and LU activation and deactivation function of a host SSCP in order to establish and maintain SSCP-PU and SSCP-LU sessions with the downstream workstations. The gateway generates and sends the ACTPU, DACTPU, ACTLU and DACTLU to the workstation as necessary to maintain consistency of the status between the host and workstation. Once the SSCP-PU and SSCP-LU sessions have been established with the workstation, all data flowing on the SSCP-LU and LU-LU sessions is passed through the gateway transparently.

8.2 SDDL U Consideration

SDDL U provides the ability to add new or additional dependent LUs to the network without interruptions to other users on the network. This feature provides the ability to dynamically create dependent LUs on predefined PUs and allows end users to replace, upgrade or move dependent LUs on the network without interruption to any other user on the network. It accomplishes these changes without intervention of the system programming or operation staff.

An LU is allocated to a network station by the gateway - and by VTAM to the gateway - on the basis of a product set ID (PSID) and SNA LOCADDR, which the network station sends to the gateway when it establishes its SNA connection. VTAM responds by allocating an appropriate LU, which the gateway then allocates to the network station.

In a PCOMM V4.1 gateway, SDDL U support is valid for all connections upstream to the host except DFT (coaxial connection). SDDL U is supported by PCOMM V4.1 workstations (except for DOS entry-level mode) and will be used when they are connected to a PCOMM V4.1 gateway if the gateway is using the SDDL U function.

- The above SDDL U capability is supported by PCOMM V4.1 workstations and gateways by:
 1. Accepting a format-1 ACTPU (activate PU), which signals that NMVTs (network management vector transport), required in VTAM, which contains the PSID (product set ID), should be sent (on the SSCP-PU session) to the SSCP whenever an LU powers on.

2. A PCOMM V4.1 network station will use LOCADDRs 02 to 09, in that sequence, by default. However, if you re-arrange the LU addresses in the Advanced Options for Network Stations panel, it will use the addresses that you specify. For example, if you specify that session C is to use LU address 0A, it will be connected to LU address 0A in the gateway or in VTAM (not to its default address, 04).
 3. Sending an unsolicited NMVT to VTAM when an LU powers on.
- The PCOMM V4.1 workstation implementation:
 - For CUT and SNA-DFT connectivities, nothing will be done by PCOMM V4.1 since the connected 3x74 control units carry out everything pertaining to this SDDL.
 - For the Home3270 and non-SNA DFT attachments, SDDL will not be supported by PCOMM V4.1.

The PSID will contain such things as the device's local address, machine type and model number.

SDDL capability is available for the connectivities which carry SNA requests and responses. The configuration question to use the SDDL feature is on the Gateway Information panel (Figure 219 on page 196).

Notes:

1. If the SDDL feature is in use, all network station LUs that are downstream from a gateway are classified into predefined LU pools which correspond to specific product set IDs (PSIDs); for this reason, the pool-ID option in the gateway configuration panels is removed.
2. If you select the SDDL option in a gateway configuration, all the downstream network stations *must* have SDDL capability. This means that previous versions of PC/3270 *must* be upgraded to Personal Communications Version 3.0 and that many other emulation programs cannot be used as network stations.

8.3 Gateway Status Utility

Whenever a PCOMM V4.1 gateway is loaded, the gateway status utility is also initialized. The gateway status utility allows the gateway administrator to:

- view the link message log,
- view the status of sessions,
- and to terminate the gateway.

Note that if you have local session(s) configured at the gateway, they cannot be removed from memory by the Ctrl+End key sequence, and can only be terminated, along with the gateway, using the gateway status utility.

The information provided by the gateway status utility to each session allocated to the gateway is formatted to contain the information applicable to each workstation, followed by the next PUID and so on. Information consists of the PUID, the PU state and network adapter address, followed by the workstation LU address, the gateway LU address, and the current state of each LU entry found in the LU session table.

8.4 Changing CONFIG.SYS for a PCOMM V4.1 Gateway

In a configuration where all communication on the token-ring was via 802.2 protocol, and there were no other LAN applications on the gateway machine, the NetBIOS device driver DXMT0MOD.SYS would not be necessary. This is because a PCOMM V4.1 gateway would open the token-ring adapter on loading with enough resources (SAPs and link stations) for its own requirements.

In our configuration we do not require the NetBIOS interface, but have included it in the CONFIG.SYS as an example. This means that we *must* ensure that sufficient resources for the gateway are made available by using the ES (extra SAPs) and EST (extra link stations) parameters. PCOMM V4.1 requires one SAP, and at least one extra link station should be configured for every downstream workstation using 802.2 protocol (plus one for your upstream link if your host connection is via the LAN).

For Example: You have a PCOMM V4.1 gateway with 50 LUs Each workstation needs two LU sessions to access the gateway simultaneously The EST parameter *must* match these 25 workstations (EST=25). In our example, we will have just five workstations (Figure 216).

Note that although we have a downstream PC 3270 Emulation Program V3.05 network station, it is using an 802.2 upstream link, so we do not need the NetBIOS interface on the gateway.

```
DEVICE=C:\DOS\ANSI.SYS
DEVICE=C:\LSP\DXMAOMOD.SYS
DEVICE=C:\LSP\DXMCOMOD.SYS 400000032257
DEVICE=C:\LSP\DXMTOMOD.SYS ES=1 EST=5
SHELL=C:\DOS\COMMAND.COM /P /E:256
LASTDRIVE=E
BUFFERS=20
FILES=32
FCBS=16,8
```

Figure 216. Sample CONFIG.SYS File for PCOMM V4.1 Gateway

Note that we have given the gateway an LAA. This now becomes the destination address for all the downstream workstations.

If you have an Ethernet network refer to the relevant configuration of the CONFIG.SYS and the PROTOCOL.INI files. Add the LAA for the gateway station and increase the EST parameter to match the number of network stations that access the gateway. Refer to 5.8, "Ethernet Attachment to OS/2 CM/2 Gateway" on page 116 for detailed information about configuring the LSP to support the Ethernet network and your installed adapter. The PCOMM V4.1 gateway customization is the same as the gateway configuration for a token-ring network, and is explained later in this chapter.

8.5 Configuring a PCOMM V4.1 Gateway

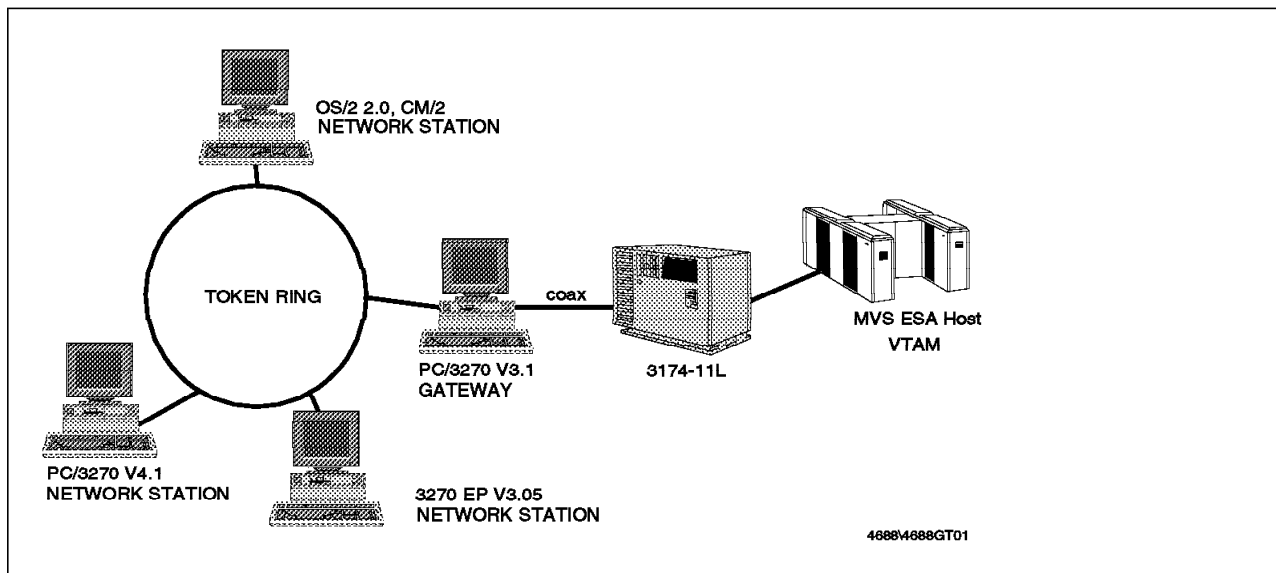


Figure 217. PCOMM V4.1 Configured as a Gateway

In this connectivity example, the gateway is connected via a DFT connection to a 3174-11L, channel-attached to an S/370 host. The LAN is token-ring, but could also have been an IBM PC network, Ethernet or an FDDI network.

Configuring a PCOMM V4.1 gateway consists of two parts: configuring the upstream link to the host and configuring the downstream links to the network stations.

Configuration starts on the Choose Configuration panel, when **Gateway** is selected in the Type of configuration field.

```

Choose Configuration                                     More: -+
-----
Press F10 to change the choice.

Type of configuration . . . . . ⚡[Gateway    ]
Advanced link options . . . . . ⚡[No  ]
+-----+
| More than one LAN or communications adapter |
| More than one type of host connection      |
| Connection to more than one gateway        |
| X.25 connection                           |
+-----+
Use expanded memory . . . . . ⚡[No  ]
Use a Task Swapper . . . . . ⚡[No    ]
Update CONFIG.SYS . . . . . ⚡[No  ]

F1=Help  F3=Exit  F7=Backward  F8=Forward  F9=Prev choice  F10=Next choice

```

Figure 218. Choose Configuration Panel - PCOMM V4.1 Gateway - for DOS (Full-Function Mode)

Notes:

1. There is no point in responding Yes to the Advanced link options field. This option is not relevant when configuring a gateway.
2. You would only want to use extended/expanded memory when configuring a non-dedicated gateway; that is, when there are local sessions or DOS applications being used on the gateway machine. The gateway part of the PCOMM V4.1 code does not make use of expanded memory.
3. The use of any non-dedicated gateway should be carefully considered. If the user on the non-dedicated gateway inadvertently powers off the gateway machine, or the gateway machine hangs as a result of the user's activity, then all network stations using that gateway will be affected.
4. Note that the gateway does not support the DOS 5.0 Task Swapper or PCOMM V4.1 PCSSWAP function.

```

----- Gateway Information ----- More: -+
-----
Enter the required information.

Gateway name . . . . . [GATE1 ]

Time-out period for termination (seconds) . . [030]

Size of Gateway log (kilobytes) . . . . . [02]

Use SDDL U feature . . . . . $[No ]

F1=Help F3=Exit F7=Backward F8=Forward
```

Figure 219. Gateway Information Panel - PCOMM V4.1 Gateway - for DOS (Full-Function Mode)

You can use any name you want for the gateway; it is not critical. The name may be used to identify the gateway as a control point on the network when alerts are sent to NetView on the host.

For the SDDL U feature: select **Yes** if you have ACF/VTAM V3R4.1 (MVS) or V3R4 (VM) installed on your host system and you want to dynamically create or reconfigure dependent LUs on your host system.

Take the defaults on the other two options.

```

----- Host Attachment Types ----- More: -+
-----
Press F10 to change the choice.

Host attachment will be by:

Synchronous Data Link Control (SDLC) . . . $[No ]

LAN via 802.2 protocol . . . . . $[No ]

CCITT X.25 Network (X.25) . . . . . $[No ]

Distributed Function Terminal (DFT) . . . $[Yes]

F1=Help F3=Exit F7=Backward F8=Forward F9=Prev choice F10=Next choice
```

Figure 220. Host Attachment Types Panel - PCOMM V4.1 Gateway - for DOS (Full-Function Mode)

Note that fewer host attachment types are available to the gateway than when configuring a network station. The gateway is not supported for a 3174 Peer Communication, NetBIOS or asynchronous host attachment.

In our example we have an SNA DFT connection to the host. Whichever host attachment you are using, the configuration parameters for the host attachment (Block ID, PUID, destination address, etc.) are similar to those you would configure for a workstation, although it is likely that you will have more LU sessions defined at the host. For further details on these parameters, please refer to the relevant chapter for your attachment type.

```

----- Host DFT Attachment ----- More: -+
-----
Press F10 to change the choice.

Host name . . . . . HOST1

Adapter number . . . . . ⚡[0]

Number of host sessions . . . . . [5]

F1=Help  F3=Exit  F7=Backward  F8=Forward  F9=Prev Choice  F10=Next Choice

```

Figure 221. Host DFT Attachment Panel - PCOMM V4.1 Gateway - for DOS (Full-Function Mode)

Unlike the network station, the gateway supports only one 3270 adapter card, so a maximum of five host sessions (for a DFT connection) is available to the network stations.

```

----- Host Profile for Gateway ----- More: -+
-----
Press F9 or F10 to change the LU type.

Host name . . . . . HOST1

LT number      LU type      Pool
at Gateway
01      ⚡[Local      ]      [ ]
02      ⚡[Preallocated]      [ ]
03      ⚡[Pooled      ]      [01]
04      ⚡[Pooled      ]      [01]
05      ⚡[Pooled      ]      [01]
          ⚡[          ]      [ ]
          ⚡[          ]      [ ]
          ⚡[          ]      [ ]
          ⚡[          ]      [ ]
          ⚡[          ]      [ ]

Page select: 01 of 01  Enter a page number and press F2 to display it.

F1=Help  F2=Page  F3=Exit  F7=Bkwd  F8=Forward  F9=Prev Choice  F10=Next Choice

```

Figure 222. Host Profile for Gateway Panel - PCOMM V4.1 Gateway - for DOS (Full-Function Mode)

At this point we are defining each logical terminal and what it will be used for. The LT number at Gateway relates to the logical terminals assigned to the 3174 port in question 117 of the 3174 customization (see Figure 31 on page 41).

We have only five sessions to define here. If one of the other attachment types is selected, up to 253 sessions may need to be defined. For other attachment types, LU address at Gateway instead of LT number at Gateway are shown. These relate directly to VTAM or NCP LOCADDR entries.

Each PCOMM V4.1 session can be one of four types:

Local A local session is used on the gateway machine itself; that is, the gateway is non-dedicated. The gateway could have up a maximum of eight local sessions. In our example, our DFT gateway will have a maximum of five sessions.

Preallocated A preallocated session will always be used by a specific network station on the LAN. This would almost certainly be the case for a workstation with a printer; you would want to assign to a specific session to the printer. Sessions are allocated to specific workstations on the Network Station Profile panel.

Pooled Pooled sessions are allocated to workstations on a first-come first-served basis. Multiple pools can be set up and can be useful when trying to share equally a limited number of sessions among a large number of workstations.

Unused A session that is not going to be used, either locally or on any workstation on the LAN.

In our example, we have defined one local session on the gateway, one preallocated session, and the remaining three sessions in a single pool.

It is a good idea to configure a local session, especially when you first set up a gateway. This allows you to check that the upstream host link is active, especially if the downstream stations do not connect for any reason.

The next two panels (not shown here) in the configuration process, relate to the local LU addresses, keyboard and code pages options for the local session we have defined at the gateway. When completed, we will arrive at the Downstream-Connection Options of configuring the PCOMM V4.1 gateway.

More: -+

Enter the required information.

	Adapter 0:	Adapter 1:
Number of network stations	[003]	[000]
Maximum PIU size	[1929]	[0265]
Number of buffers in SAP buffer pool .	[008]	[008]

F1=Help F3=Exit F7=Backward F8=Forward

Figure 223. Downstream-Connection Options Panel - PCOMM V4.1 Gateway - for DOS (Full-Function Mode)

Note that it is possible to have two downstream links. The two adapter configurations are independent of one another. The gateway could be serving two separate LANs if the necessary adapters concurrently supported by your workstation hardware are installed.

Alternatively, you could have two similar adapters connected to the same LAN. Since each workstation downstream of the gateway requires one linkstation, and since each adapter has a limit to the number of linkstations it can support, depending on the amount of adapter memory, having two adapters in the gateway would allow a greater number of workstations to use the gateway concurrently.

On the Downstream-Connection Options panel, the Number of network stations is the number of *concurrently active* workstations. The Maximum PIU size is the largest PIU size that will be used by any of the attached network stations. Using a larger PIU size will generally improve performance. However, smaller PIU sizes will save workstation memory, as a number of buffers, each of the PIU sizes, are maintained there. The PIU size of 1929 is a good compromise between performance and memory usage on the workstations. These buffers, known as the SAP buffer pools, are used to receive data frames from the network.

On the gateway, the default number of buffers in the pool is eight. For gateways with very large numbers of network stations, however, this number may need to be increased, but bear in mind that a larger number of buffers will require additional memory on the gateway. Insufficient buffers may cause a bottleneck, which can be confirmed by running the PCSMON trace utility on the downstream link. Ideally the PIU size for the upstream host link should be the same as for the downstream links.

8.6 Network Station Profiles

The number and type of sessions which each network station receives is dictated by a network station profile. The gateway recognizes each network station by its PUID, and assigns the relevant profile.

More: -+

Default Network-Station Profile

Press F10 to change the choice.

Allow network stations to connect
using this default profile . . . ⚡[Yes]

PIU size [1929]

LU address at network station	Session type	Pool ID
02	⚡[Pooled]	[01]
03	⚡[Pooled]	[01]
04	⚡[Unused]	[]
05	⚡[Unused]	[]
06	⚡[Unused]	[]
07	⚡[Unused]	[]
08	⚡[Unused]	[]
09	⚡[Unused]	[]

F1=Help F3=Exit F6=File F7=Bkwd **F8=Fwd** F9=Prev choice F10=Next choice

Figure 224. Default Network-Station Profile Panel - for various Workstations

Changing the Default Network-Station Profile is optional. It is used for connection requests where a match of PUID to network station profile is not found. This means that any downstream station that has the gateway as its destination address will be given access, and allocated the LUs that are defined in the default profile.

If you say **No** to Allow network stations to connect using this profile, the default profile will be deleted; you *must* then enter a unique profile for each station connecting to the gateway.

The use of the default network profile can greatly reduce the workload of a network administrator if there are multiple users on the LAN with similar or identical host requirements. On the other hand, from a network management standpoint, it is better to use a specific profile and preallocated LUs for each network station. With specific profile and preallocated LU assignment, a host system network manager can trace a PU or LU all the way to the user without the user having to know the session ID.

You can use a combination of default and specific profiles, allowing some network stations to use the default profile and other network stations to use specific profiles.

Note: A print session always needs to be a preallocated session.

Since the PIU size in our example has been set at a value of 1929 bytes, that means that PC 3270 Emulation Program V3.05 stations will not be able to use this profile, as a PC 3270 Emulation Program V3.05 network station can only use a PIU size of 265 bytes.

In our example configuration, we have three network stations communicating via the gateway: a PCOMM V4.1 workstation, a PC 3270 Emulation Program V3.0 workstation and an OS/2 EE V1.3 workstation. We will define a network station profile for each of them (although we could have made use of the default network station profile if necessary).

More: -+

Specific Network-Station Profile

Enter the required information.

Physical Unit ID	[90001]	PIU size	[1929]
Name (optional)	[PC3270S1]	Adapter address (optional)	[]

LU address at network station	Session type	LU address/ LT number at gateway	Pool ID
02	⚡[Preallocated]	[02]	[]
03	⚡[Pooled]	[]	[01]
04	⚡[Unused]	[]	[]
05	⚡[Unused]	[]	[]
06	⚡[Unused]	[]	[]
07	⚡[Unused]	[]	[]
08	⚡[Unused]	[]	[]
09	⚡[Unused]	[]	[]

Mode [Validate this profile] Physical Unit ID for search: []

F1=Help **F2=Mode** F3=Exit F6=File F7=Bkwd **F8=Fwd** F9=Prev choice F10=Next choice

Figure 225. Specific Network-Station Profile Panel - for a PCOMM V4.1 Workstation

For the PCOMM V4.1 workstation we have assigned two sessions. One of these is the preallocated session (LT 02) from the Host Profile for Gateway panel (Figure 222 on page 197). The other is a session from the 01 pool. A PCOMM V4.1 network station could have up to eight sessions through a single gateway or through several gateways. In our example, the DFT gateway only supports five sessions.

Note that we have assigned a PUID. This can be any value we like, but *must* be matched by the PUID specified in the configuration of the PCOMM V4.1 network station itself. For more details on configuring the network station, see 5.7, “Network Station Token-Ring Attachment to PCOMM V4.1 Gateway” on page 114.

We have matched the PIU size here with the largest size that we allowed in the Downstream-Connection Options panel. The PIU size shown here should also match the PIU size you define in your PCOMM V4.1 network station configuration. Generally, having the largest possible PIU size will improve throughput, provided it is matched all the way to the host.

It is a good idea to validate each profile when you have created it by using the Mode option on this panel. To do this press F2, which will take the cursor to the mode field, then press F2 again to carry out the validation. There are various other mode options such as searching for specific profiles and copying from one profile to another. These can be very useful when you have a large number of network profiles to manage.

More: -+

Specific Network-Station Profile

Enter the required information.

Physical Unit ID [90002]		PIU size [1929]	
Name (optional) [OS2CMS2]		Adapter address (optional) []	

LU address at network station	Session type	LU address/ LT number at gateway	Pool ID
02	⌘[Pooled]	[]	[01]
03	⌘[Pooled]	[]	[01]
04	⌘[Pooled]	[]	[01]
05	⌘[Unused]	[]	[]
06	⌘[Unused]	[]	[]
07	⌘[Unused]	[]	[]
08	⌘[Unused]	[]	[]
09	⌘[Unused]	[]	[]

Mode [Validate this profile] Physical Unit ID for search: []

F1=Help **F2=Mode** F3=Exit F6=File F7=Bkwd **F8=Fwd** F9=Prev choice F10=Next choice

Figure 226. Specific Network-Station Profile Panel - for an OS/2 Communication Manager Workstation

For the OS/2 Communication Manager network station we have assigned three pooled sessions. An OS/2 workstation can support up to five sessions via a LAN connection.

The local node ID for the OS/2 Communications Manager SNA network definitions in the SNA Base Profile or the Local Node Characteristics *must* match the PUID in this network station profile. If there is no match, then the OS/2 workstation will receive the default network station profile if there is one.

The Destination Address in the OS/2 Communications Manager 3270 Emulation Profile Token-Ring Link Information *must* match the active address of the gateway's adapter.

More: -+

Specific Network-Station Profile

Enter the required information.

Physical Unit ID [90003] **PIU size** [0265]

Name (optional) [EMULV3S3] Adapter address (optional) []

LU address at network station	Session type	LU address/ LT number at gateway	Pool ID
02	↓[Pooled]	[]	[01]
03	↓[Unused]	[]	[]
04	↓[Unused]	[]	[]
05	↓[Unused]	[]	[]
06	↓[Unused]	[]	[]
07	↓[Unused]	[]	[]
08	↓[Unused]	[]	[]
09	↓[Unused]	[]	[]

Mode [Validate this profile] Physical Unit ID for search: []

F1=Help **F2=Mode** F3=Exit **F6=File** F7=Bkwd F8=Fwd F9=Prev choice F10=Next choice

Figure 227. Specific Network-Station Profile Panel - for a PC 3270 Emulation Program V3.05 Workstation

The IBM PC 3270 Emulation Program V3.05 only supports one screen session and one printer session, so only one pooled session (LU 02) has been allocated here. (LU 03 could have been a preallocated printer LU if one was available.)

The PIU size *must* be 265 bytes, as PC 3270 Emulation Program V3.05's PIU size is fixed at this value.

When configuring the PC 3270 Emulation Program V3.05 to communicate via a PCOMM V4.1 gateway:

- A *stand-alone workstation* (not network station) *must* be configured. This uses an 802.2 link.
- The SDLC station address *must* be set to 04, which is actually the SAP of the PCOMM V4.1 gateway.
- The PUID *must* match the PUID specified in the network station profile configured at the gateway. If there is no match, then the PC 3270 Emulation Program V3.05 workstation will use the default network profile, if the provided PIU size in the default profile is 265 bytes.

8.7 Using Pooled Sessions

Pooled sessions are allocated on a first-come first-served basis. If a workstation is assigned one or more pooled sessions then, at a minimum, one session *must* be available from any assigned pool(s) before the workstation can be connected. For the remaining sessions, the workstation will be placed on a queue of workstations waiting for sessions from the pool(s).

When another workstation with a session from the pool disconnects from the gateway, either by powering off or by removing PCOMM V4.1 from memory. The queue is checked before the session is returned to the pool. If a session request is pending, the gateway will dynamically reallocate the session to the first workstation in the queue. If the queue is empty, the session is placed back in the pool.

In our example, with one local session on the gateway, two sessions on the PCOMM V4.1 workstation, three on the OS/2 workstation and one on the PC 3270 Emulation Program V3.0 workstation, we have over-committed our five available sessions.

Let us assume that the gateway is active, with its one local session, and the PC 3270 Emulation Program V3.0 workstation is started first. This takes one of the pooled sessions, leaving two available.

If the OS/2 workstation were to start next, it would require three pooled sessions. Since only two sessions are available, the OS/2 workstation would take those two and be at the top of the queue for the next available pooled session.

If the PCOMM V4.1 workstation then starts, it will get its preallocated session, but join the queue for its second (pooled) session.

If the PC 3270 Emulation Program V3.0 workstation then terminated its connection, the pooled session would be released, and the OS/2 workstation would then get its third session. If the 3270 Emulation Program V3.0 workstation were then to restart, it would be unable to get a session at all (until the OS/2 workstation terminated its connection).

Note that if a station is defined with two pooled sessions and two sessions are available, both sessions will be removed from the pool, even if one is never used. Similarly, if both sessions are used at first and one session is later terminated, the terminated session will not be returned to the pool. Both the sessions are returned to the pool only when the station disconnects from the gateway.

Part 4. WAN Connections

This fourth part of the document describes the WAN connections, which can be done by using the Personal Communications family of products in a wide area network environment.

- Synchronous Data Link Control (SDLC)
 - APPC3270 via SDLC
- X.25
- CM/2 via LUA

Chapter 9. SDLC Connection

PCOMM Version 4.1 can connect with a host via SDLC and will support up to a maximum of eight DOS (full-function mode) or twenty-six Windows 3.1 or OS/2 sessions when configured as a network station.

- A PC/3270 SDLC connection can be made to:
 - A 37XX communications controller:
 - Under DOS (full-function mode), Windows 3.1 and OS/2 (see 9.1, “Configuring PCOMM V4.1 for an SDLC Connection” on page 208)
 - Using APPC3270 via SDLC
 - Under Windows 3.1 (see 9.6, “APPC3270 via SDLC for Windows 3.1” on page 219)
 - Under OS/2 (see 9.7, “APPC3270 via SDLC for OS/2” on page 222)
 - An AS/400
 - Using SDLC via AS/400 under Windows 3.1 and OS/2 (see 9.5, “SDLC AS/400 Support” on page 215)
- A PC400 V4.1 SDLC connection can be made to an AS/400:
 - Under Windows 3.1 and OS/2 (see 9.9, “Configuring PC400 V4.1 for an SDLC Connection” on page 225).
 - Via the IBM PC Support/400 router environment (Windows 3.1). See 9.11, “Configuring PC400 V4.1 for Windows 3.1 for PC Support/400 Router” on page 231.

In a PC, XT, AT or non-Micro Channel PS/2, either an SDLC Communications Adapter or an Multiprotocol Communication Adapter (MPCA) is required.

Personal Communications’ SDLC attachment supports the ISA-bus IBM Multiprotocol Communications Adapter with the following restrictions:

- Only one ISA-bus MPCA card can be installed
- The AT-bus SDLC adapter and ISA-bus MPCA adapter cannot co-exist
- The MPCA must be configured in the power-on default mode (Mode 4); the mode gives the adapter the same appearance as the AT-bus SDLC adapter. No other SDLC mode can be used.

You must configure it as follows: I/O Port address 3F0-3F8, IRQ 3 & 4, and Mode 4 (MPCA only).

In a Micro Channel PS/2, the Multiprotocol Adapter/A is required. Up to two Multiprotocol Adapter/As can be installed in a single PS/2, which gives the capability for PCOMM V4.1 to communicate across two SDLC lines to two separate hosts simultaneously.

SDLC connection supports both leased lines and switched lines up to 19.2 Kbps. SDLC autodialing and the Automatic Dialing facility allow predefinition of phone numbers and phone lists to help aide in the setup of dialing connections.

9.1 Configuring PCOMM V4.1 for an SDLC Connection

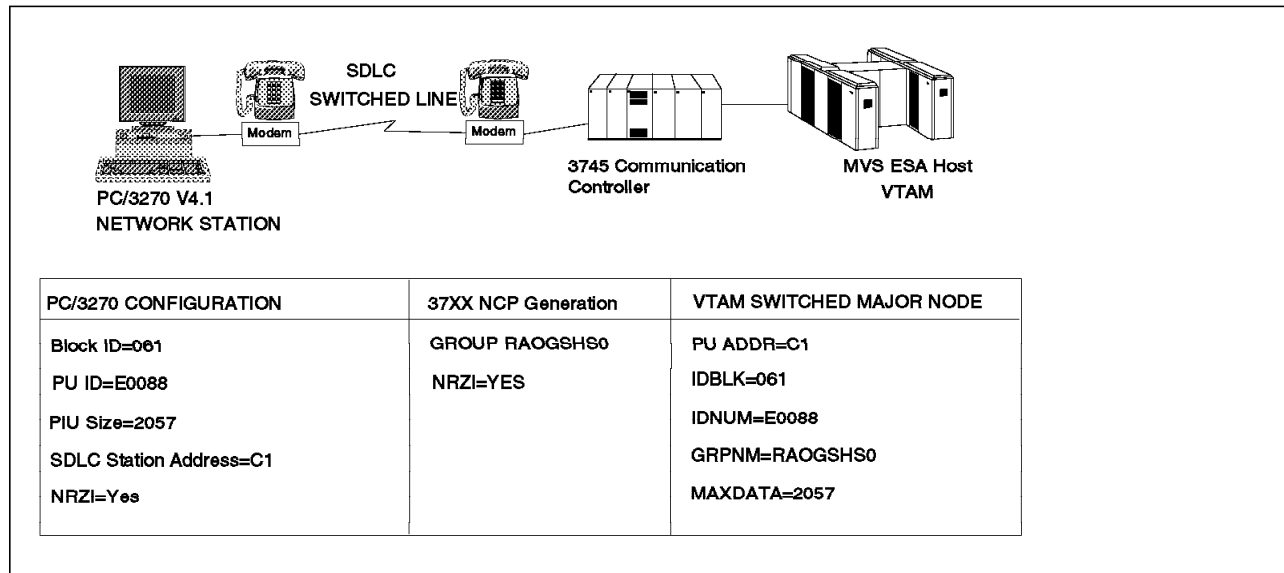


Figure 228. Switched SDLC Connection

PCOMM V4.1 can communicate to a host via either a switched SDLC connection, as shown in Figure 228, or via leased (non-switched) SDLC connection, as shown in Figure 229. For a switched SDLC connection, you can have the dialing process automated by the modem (hardware auto-dialing) or by the V.25bis Auto-dialing support (see 9.12, "CCITT V.25bis Auto-Dialing for SDLC" on page 233) available under Windows 3.1 and OS/2.

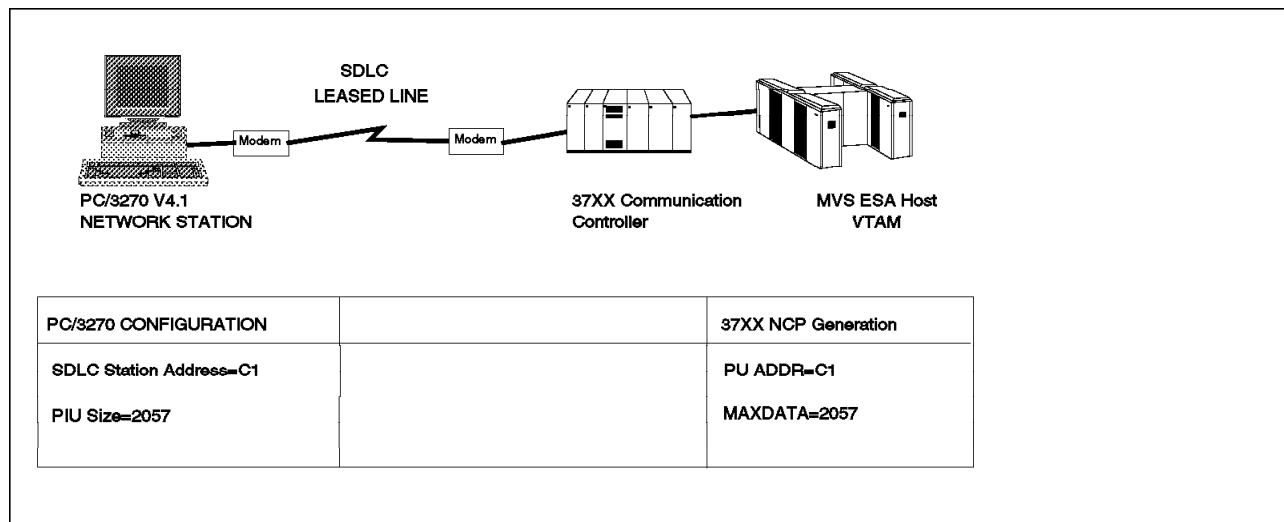


Figure 229. Leased SDLC Connection

Although configuring either type of connection (switched or leased) is similar at the workstation end, host definitions for the two types of line are very different. In both cases the host sees the workstation as an SNA physical unit type 2.0 (PU T2.0) with multiple associated logical units (LUs).

In the host definitions:

- For a switched line, a VTAM switched major node definition is required at the host which defines the PU and all its associated LUs. The NCP definition on the 37xx Communication Controller contains a definition of the line itself.
- For a leased line, however, definition of the line, the PU and all its LUs are contained in the NCP definition.

In this connectivity scenario, a PCOMM V4.1 workstation is connected via a switched SDLC line to a 37xx Communication Controller, and then to an S/370 host. The PCOMM V4.1 workstation will have eight sessions to the S/370 host.

For this example, we need to do the following:

- Configure the PCOMM V4.1 workstation to connect via the SDLC switched line.
- Set up the modem for synchronous communication.
- Define the switched link in the 37xx NCP definition.
- Define the PCOMM V4.1 workstation as a PU with eight LUs in a switched major node in VTAM.

We will also give a sample NCP definition to represent a non-switched link to a PCOMM V4.1 workstation.

Note: Not all of the required configuration, customization or definition screens will be shown; only those that are significant to the example or are unique to a specific product are included.

Attachment Types	More: --+
Enter the number of sessions you want to use.	
Total number of sessions for:	
Distributed Function Terminal (DFT)	[0]
LAN via 802.2 protocol	[0]
LAN via NetBIOS	[0]
LAN via TCP/IP (Telnet 3270 Attachment)	[0]
LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment)	[0]
3174 Peer Communication	[0]
Synchronous Data Link Control (SDLC)	[8]
Asynchronous Data Link Control (ASYNCH) (for attachment to a Series/1 SNA gateway only)	[0]
CCITT X.25 Network (X.25)	[0]
F1=Help F3=Exit F7=Backward F8=Forward	

Figure 230. Attachment Types Panel - SDLC Attachment - for DOS (Full-Function Mode)

For this connectivity example we have selected eight sessions - the maximum number available for a stand-alone DOS (full-function mode) workstation.

The DOS (full-function mode) Advanced Options for SDLC Attachment panel (see Figure 231) shows you the SDLC attachment parameters for the DOS (Full-Function Mode), which must match their related host parameters.

Advanced Options for SDLC Attachment, part I		More: -+
Press F10 to change the choice.		
Total number of sessions	8	
Adapter number	↓[0]	
Number of sessions for this adapter	↓[8]	
Line type	↓[Switched]	
SDLC station address	[C1]	
PIU size	[2057]	
F1=Help F3=Exit F7=Backward F8=Forward F9=Prev choice F10=Next choice		

Figure 231 (Part 1 of 2). Advanced Options for SDLC Attachment Panel - for DOS (Full-Function Mode)

Advanced Options for SDLC Attachment, part II		More: -+
Press F10 to change the choice.		
NRZI encoding	↓[Yes]	
Half-speed backup	↓[No]	
Continuous carrier	↓[No]	
Physical Unit ID . . . (only switched line)	[E0088]	
Block ID (only switched line)	[061]	
Answer-tone generation (only switched line)	↓[No]	
F1=Help F3=Exit F7=Backward F8=Forward F9=Prev choice F10=Next choice		

Figure 231 (Part 2 of 2). Advanced Options for SDLC Attachment Panel - for DOS (Full-Function Mode)

SDLC station address (C1), PIU size (2057), Physical Unit ID (E00088), and Block ID (061) must match the ADDR, MAXDATA, IDNUM, and IDBLK parameters respectively of the VTAM switched major node for SDLC switched connection (see Figure 234 on page 213).

NRZI encoding (Yes) must match the NRZI parameter on the NCP switched Line definition (see Figure 235 on page 214).

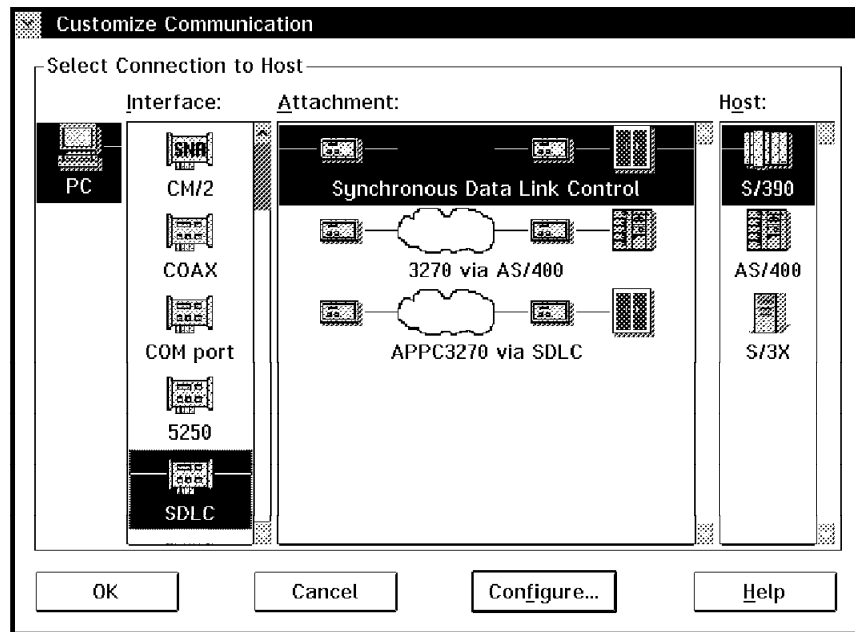


Figure 232. Customize Communication Window - SDLC Attachment - Windows 3.1, OS/2

In PCOMM V4.1 for Windows 3.1 or in PCOMM V4.1 for OS/2 Customize Communication window, shown in Figure 232, choose:

- SDLC for the adapter (Windows 3.1) / interface (OS/2)
- Synchronous Data Link Control for the attachment
- S/390 for the host

Click on **Synchronous Data Link Control** to get the SDLC Attachment panel shown in Figure 233.

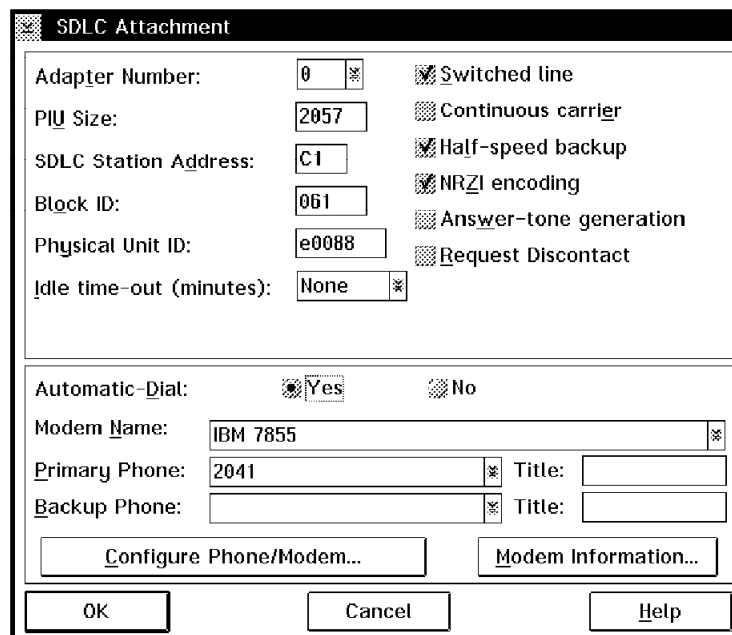


Figure 233. SDLC Link Parameters Window - SDLC Attachment - Windows 3.1, OS/2

For a switched line, select **Switched** for the Line type field in Figure 231 on page 210 for DOS (full-function mode). In Windows 3.1 or OS/2, enable the **Switched line** box in Figure 233

For a switched line, the Block ID and PUID *must* match the IDBLK and IDNUM values in the VTAM switched major node definition. For non-switched connections these values are not used and are ignored.

The PIU size for switched connections *must* match the MAXDATA value on the VTAM switched major node definition. For non-switched connections it *must* match the MAXDATA value in the PU definition in the NCP definition. PCOMM V4.1 supports values ranging from 265 to 2057 for PIU size. Greater PIU sizes generally provide better performance and should be used if the line error rate is low.

SDLC station address *must* match the PU Address (ADDR) in the VTAM switched major node definition, or in the NCP definition for the non-switched link.

SDLC station address (C1), PIU size (2057), Physical Unit ID (E00088), and Block ID (061) must match the ADDR, MAXDATA, IDNUM, and IDBLK parameters respectively of the VTAM switched major node for SDLC switched connection (see Figure 233 on page 211 and Figure 234 on page 213).

Half-speed backup indicates that your modem can change to half speed if the communication at full speed is unsatisfactory. This is valid only if half-speed backup is supported by your modem. Select **Yes** if half-speed backup is required and your modem supports it.

The other options here (NRZI encoding, Continuous carrier, Answer-tone generation and Request Disconnect) are all related to the capabilities of the modem being used. The line definition in the NCP definition will contain an NRZI statement, which *must* be matched by your NRZI encoding option. If Request Disconnect is selected in Windows 3.1 and OS/2, PCOMM V4.1 sends the request for disconnect to the SSCP when you disconnect (closing the PCOMM V4.1 Workstation) from the host.

The Automatic-Dial facility field shown in Figure 233 on page 211 allows the use of V.25bis Auto-dialing support if you select **V.25bis**. See 9.12, "CCITT V.25bis Auto-Dialing for SDLC" on page 233 for details.

Note that we do not have to customize eight *WorkStations* if there are no differences. We can include the same customized WorkStation eight times in the Batch-Program Facility.

9.2 VTAM Definitions for PCOMM V4.1 Workstation

Figure 234 shows the switched major node in VTAM to define the PCOMM V4.1 workstation over the switched connection.

*				*
*	VTAM SWITCHED MAJOR NODE FOR SDLC SWITCHED CONNECTION			*
*				*

E24SW	VBUILD	MAXGRP=5,	REQUIRED	X
		MAXNO=12,	REQUIRED	X
		TYPE=SWNET	REQUIRED	
E24PS88	PU	ADDR=C1,	SDLC STATION ADDRESS	X
		IDBLK=061,	PC/3270 WKSTN	X
		IDNUM=E0088,		X
		DISCNT=NO,		X
		MAXOUT=4,		X
		MAXDATA=2057,		X
		MAXPATH=2,		X
		PASSLIM=1,		X
		PUTYPE=2		
E24PATH	PATH	CALL=INOUT		X
		GRPNM=RAOGSHS0,		X
		GID=1,		X
		PID=1		
E24L8800	LU	LOCADDR=2,	3270 TERMINAL MODEL 2	X
		VPACING=7,		X
		PACING=7,		X
		DLOGMOD=D4C32XX3,		X
		USSTAB=US327X		
E24L8801	LU	LOCADDR=3,	3270 TERMINAL MODEL 3	X
		LOGAPPL=RAPAN,		X
		VPACING=7,		X
		PACING=7,		X
		DLOGMOD=D4C32XX3,		X
		USSTAB=US327X		
:				
E24L8807	LU	LOCADDR=9,	3270 TERMINAL MODEL 4	X
		VPACING=7,		X
		PACING=7,		X
		DLOGMOD=D4C32XX3,		X
		USSTAB=US327X		

Figure 234. VTAM Switched Major Node Definition for SDLC Switched Connection

9.3 37xx NCP Switched Line Definition

This is just part of an NCP definition showing statements for a switched SDLC line. Note that the GROUP address matches the GRPNM parameter in the VTAM switched major node definition. This ties the VTAM definition to the correct line in the NCP definition.

```

*****
*
*          SNA SWITCHED LINE GROUP
*
*****
RAOGSHSO GROUP LNCTL=SDLC,                                X
                  DIAL=YES,                                  X
                  NEWSYNC=NO,                                X
                  NRZI=YES,                                  X
                  PAUSE=1,                                    X
                  RETRIES=(7,4,5)    7 RETRY PER SECOND FOR 5 TIMES
*****
RAOL0025 LINE ADDRESS=(25,HALF),  PHONE NUMBER  850-2401      X
                  NPACOLL=YES,                                  X
                  OWNER=SA5,          (V) VTAM                  X
                  CLOCKNG=EXT,                                  X
                  DUPLEX=HALF,                                  X
                  RETRIES=(5,4,24),                              X
                  SPEED=2400,                                    X
                  ANSWER=ON,          (V) VTAM                  X
                  CALL=INOUT,        (V) VTAM                  X
                  ISTATUS=ACTIVE      (V) VTAM                  X
RAOP13  PU PUTYPE=(1,2),                                         X
                  XID=YES
RAOL0026 LINE ADDRESS=(26,HALF),  PHONE NUMBER                  X
                  NPACOLL=YES,                                  X
                  OWNER=RAK,          (V) VTAM                  X
                  CLOCKNG=EXT,                                  X
                  DUPLEX=HALF,                                  X
                  SPEED=2400,                                    X
                  ANSWER=ON,          (V) VTAM                  X
                  CALL=INOUT,        (V) VTAM                  X
                  ISTATUS=INACTIVE   (V) VTAM                  X
RAOP14  PU PUTYPE=(1,2)

```

Figure 235. NCP Definitions - SDLC Switched Connection

9.4 37xx NCP Non-Switched Line Definition

The following section, taken from the same NCP definition, shows the definition of a non-switched line, with PU and LU definitions.

```
*****
*
*          LINE MACRO SPECIFICATION      SDLC LINK 000
*
*****
RAOL0000 LINE ADDRESS=(000,FULL),
          ANS=CONTINUE,
          ISTATUS=ACTIVE,
          MAXPU=4,
          SERVLIM=10,
          SPEED=9600,
          SRT=(,64)
          SERVICE MAXLIST=4
*****
RAOP1E  PU ADDR=C1,
          MAXDATA=2057,
          MAXOUT=7,
          PACING=7,
          ANS=CONTINUE,
          PASSLIM=7,
          PUTYPE=2,
          RETRIES=(,1,4),
          MODETAB=ISTINCLM,
          DLOGMOD=D4C32XX3,
          USSTAB=US327X,
          DISCNT=(NO),
          ISTATUS=ACTIVE,
          VPACING=8
          PC/3270 WORKSTATION
RAOT1E01 LU LOCADDR=2
RAOT1E02 LU LOCADDR=3
RAOT1E03 LU LOCADDR=4
RAOT1E04 LU LOCADDR=5
RAOT1E05 LU LOCADDR=6
RAOT1E06 LU LOCADDR=7
RAOT1E07 LU LOCADDR=8
RAOT1E08 LU LOCADDR=9
```

Figure 236. NCP Definition - SDLC Non-Switched Line

9.5 SDLC AS/400 Support

PCOMM V4.1 for Windows 3.1 and PCOMM V4.1 for OS/2 can connect to AS/400 via SDLC, using the 3270 Pass-Through feature of the AS/400. The PCOMM V4.1 customization is quite similar, and the differences are pointed out here.

9.5.1 Configuring PCOMM V4.1 for AS/400 Pass-Through via SDLC

In the Customize Communication panel shown in Figure 237, select **SDLC via AS/400** (Windows 3.1) or **3270 via AS/400** (OS/2) for Attachment, **S/390** for Host and click on **3270 via AS/400** to get the SDLC Attachment panel shown in Figure 238.

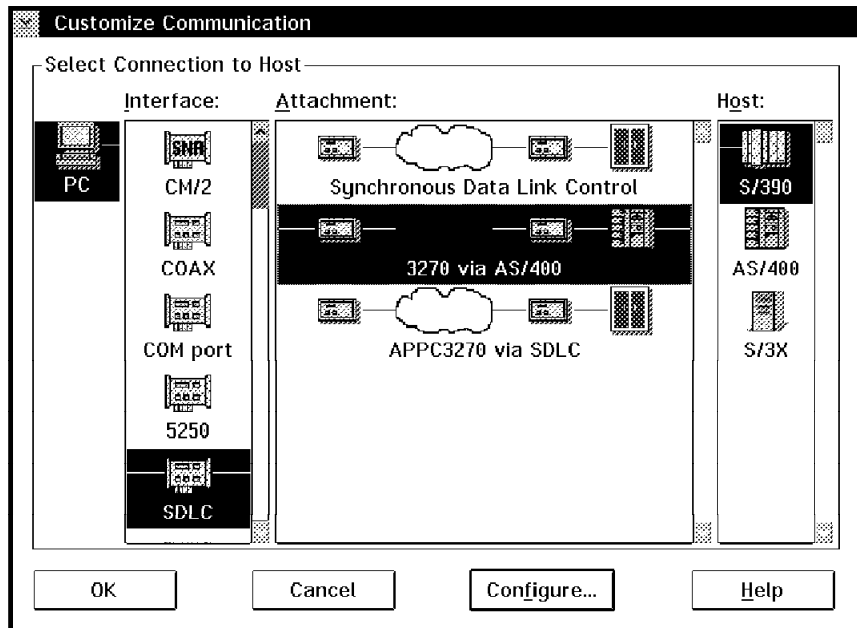


Figure 237. Customize Communication - AS/400 SDLC Attachment - Windows 3.1, OS/2

In the SDLC Attachment window shown in Figure 238, you don't have the Block ID and Physical Unit ID fields, but the Fully Qualified CP Name field.

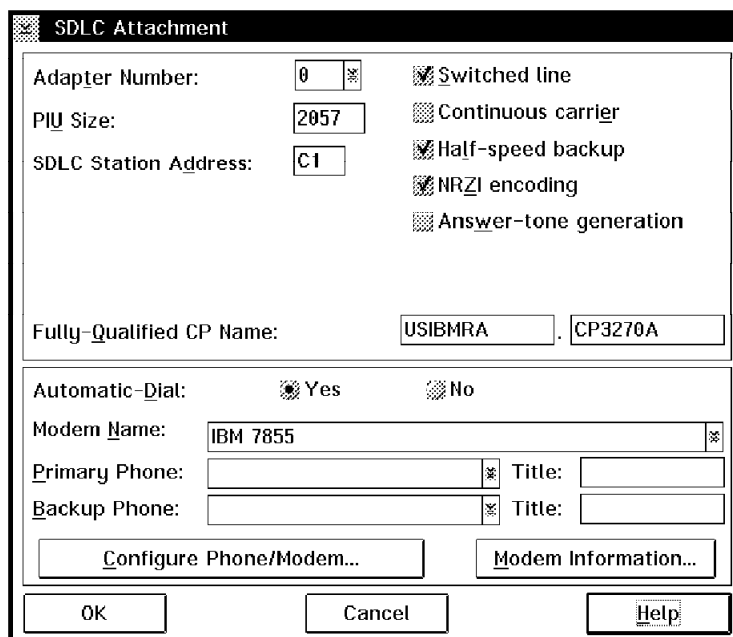


Figure 238. SDLC Attachment to AS/400 - Windows 3.1, OS/2

The PCOMM V4.1 workstation connects to the AS/400 as a LEN (low entry node) node. The Fully Qualified CP Name defines your PC as a control point and must be unique in the network. It is made up of the Network ID and the CP Name.

Network ID This is the name of the network (local area and/or wide area) to which your PC and the AS/400 are attached. The default is APPN.

CP Name This is the name by which your PC is known in the network.

These definitions will be provided by your network administrator. We will cover the definitions we used for the connection to network in the following section.

9.5.2 VTAM/NCP Definitions for AS/400

```

RAOL0020 LINE ADDRESS=(020,HALF), TRANSMIT AND RECEIVE ADDRESSES **
      NPACOLL=YES, NPA**
      ANS=CONTINUE, DON'T BREAK CROSS DOMAIN SESSIONS **
      ISTATUS=ACTIVE, **
      DUPLEX=(FULL), REQUEST TO SEND ALWAYS UP **
      ETRATIO=30, DEFAULT **
      LPDATS=LPDA1, **
      MAXPU=9, ALLOW NO MORE THAN 9 PUS ON LINE **
      SERVLIM=2, **
      SRT=(,64), **
      SPEED=(4800) LINE SPEED IS 4800 BPS
      NGFTXT='AS/400A' 0491000
***** 0492000
* SERVICE MACRO SPECIFICATION FOR SDLC (LINE 020) * 0494000
***** 0496000
      SERVICE ORDER=(RAOP1B), **
      MAXLIST=9
***** 0505000
* PU AND LU DEFINITIONS OF AS/400A TO SUPPORT DEPENDENT 0506000
* AND INDEPENDENT LUS 0507000
***** 0802601
RAOP1B PU ADDR=C4, *
      ISTATUS=ACTIVE, (V) VTAM ONLY *
      XID=YES
      STATOPT='AS/400A' 08030410
***** 08031609
RAOT1B89 LU LOCADDR=137, X'89' 3270 EMULATION FOR SNAPST *
      MODETAB=MTGS3X, *
      USSTAB=US327X, *
      ISTATUS=ACTIVE

```

Figure 239. VTAM Definitions

9.5.3 AS/400 Definitions (RALYAS4A) for the Upstream Link

```

/* SDLC Line Definition Upstream to VTAM at RALYAS4A */

CRTLINS DLC LIND(RAOL0020) RSRNAME(LIN071) ROLE(*SEC) +
  EXCHID(*SYSGEN) NRZI(*YES) DUPLEX(*HALF) +
  TEXT('SNA lease line to Subarea 24')

CRTCTHST CTLD(RAOP1B) LINKTYPE(*SDLC) APPN(*YES) +
  LINE(RAOL0020) RMTNETID(USIBMRA) RMTCPNAME(RAK) +
  STNADR(C4) CPSSN(*NO) NODETYPE(*LENNODE) +
  TEXT('SNA controller to Subarea 24')

CRTDEVS NPT DEVD(RAOT1B89) SNPTCLS(*UP) +
  LOCADR(89) CTL(RAOP1B) +
  SNPTDEV(CP3270A)
  TEXT('SNPT Device for PC/3270 T2.0 to Host')

. . .

```

Figure 240. AS/400 Definitions for the Upstream Link

9.5.4 AS/400 Definitions (RALYAS4A) for the Downstream PCOMM V4.1 Link

```
/* SDLC Line Definition Downstream to PC/3270 at RALYAS4A */

      CRTLNSDLC LIND(CP3270A) RSRNAME(LIN061) ROLE(*PRI) +
      EXCHID(*SYSGEN) NRZI(*YES) DUPLEX(*HALF) +
      TEXT('PC/3270 line with T2.0 non-APPN for SNPT')

      CRTCTLAPPC CTLD(CP3270A) LINKTYPE(*SDLC) APPN(*NO) +
      TYPE(3174) LINE(CP3270A) RMTNETID(USIBMRA) +
      RMTCPNAME(CP3270A) EXCHID(06104001)
      ROLE(*SEC) STNADR(89) +
      TEXT('PCOMM V4.1 CTL with T2.0 non-APPN for SNPT')

      CRTDEVSP DEVD(CP3270A) DEVCLS(*SNPT) TYPE(3277) +
      MODEL(0) LOCADR(02) CTL(CP3270A) +
      SNPTDEV(RAOT1B89)
      TEXT('PCOMM V4.1 DEV with T2.0 non-APPN for SNPT')

      . . .
```

Figure 241. AS/400 Definitions for the Downstream PCOMM V4.1 Link

Operation

In order to activate the current scenario, you need to perform the following steps:

1. Vary on the lines RAOL0020 and CP3270A on the AS/400.

When we display the configuration status with the command WRKCFGSTS *LIN CP3270A on RALYAS4A, we will see the following:

```
Work with Configuration Status                                06/06/92
Position to . . . . . Starting characters
Type options, press Enter.
1=Vary on 2=Vary off 5=Work with job 8=Work with description
9=Display mode status ...
Opt Description      Status      -----Job-----
CP3270A             ACTIVE
CP3270A             VARY ON PENDING
CP3270A             VARY ON PENDING
```

Figure 242. Configuration Status of RALYAS4A

2. Perform IML on the PCOMM V4.1 using the customized diskette. As soon as we see the sign-on screen on the terminal attached to the PCOMM V4.1, the configuration status will appear as:

```
Work with Configuration Status                                06/06/92
Position to . . . . . Starting characters
Type options, press Enter.
1=Vary on 2=Vary off 5=Work with job 8=Work with description
9=Display mode status ...
Opt Description      Status      -----Job-----
CP3270A             ACTIVE
CP3270A             ACTIVE
CP3270A             VARIED ON
```

Figure 243. Configuration Status of RALYAS4A

3. The user will see the device status change to ACTIVE, as soon as we log on to the VTAM application.

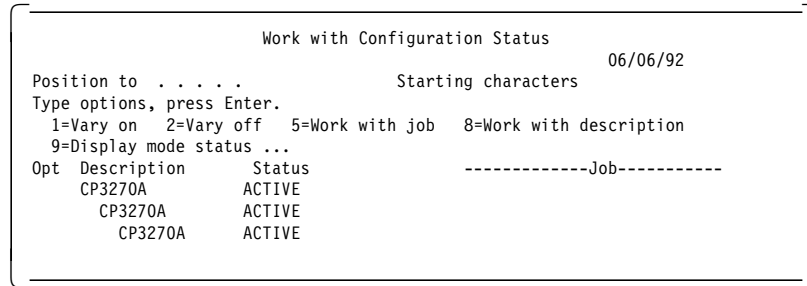


Figure 244. Configuration Status of RALYAS4A

9.6 APPC3270 via SDLC for Windows 3.1

PCOMM Version 4.1 for Windows 3.1 provides APPN end node support for workstations. APPC3270 via SDLC is one of four APPC3270 connection types, the others being APPC via LAN, Twinax and SNA-over-Async.

The steps you take to configure an APPC3270 via SDLC connection are similar to configuring the switched/non-switched SDLC (see 9.1, "Configuring PCOMM V4.1 for an SDLC Connection" on page 208) and V.25bis (see 9.12, "CCITT V.25bis Auto-Dialing for SDLC" on page 233) parameters discussed in this chapter. In addition to configuring the parameters that define the SDLC link, you must configure the APPC parameters. We will only discuss configuring the APPC portion of the connection in this section.

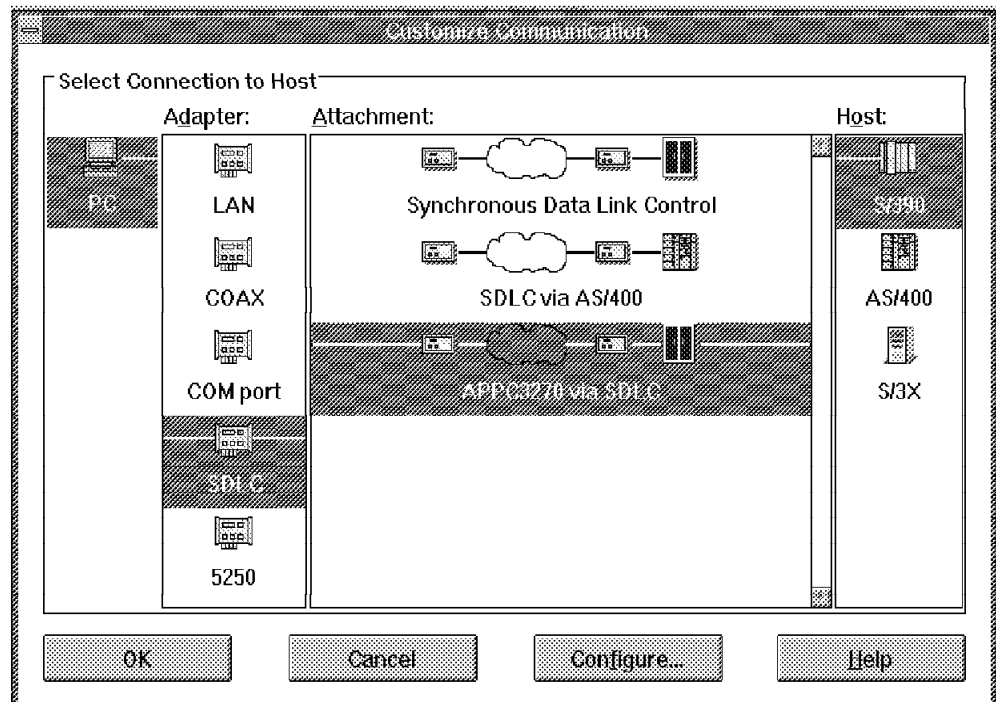


Figure 245. Customize Communication - APPC3270 via SDLC - Windows 3.1

In the PCOMM V4.1 for Windows 3.1 Customize Communication panel, shown in Figure 245 on page 219 choose:

- SDLC for the adapter
- APPC3270 via SDLC for the attachment
- S/390 for the host

Click on **Configure...** to continue.

The screenshot shows the 'Customize Communication - 3270 Host' dialog box. It is divided into three sections: 'Session Parameters', 'Graphics Parameters', and 'Link Parameters - APPC3270 via SDLC'.
 - **Session Parameters:** Contains fields for 'Screen Size' (24x80), 'Session Type' (radio buttons for Display and Printer, with Display selected), 'Host Code-Page' (037 United States), 'Fully Qualified Partner LU Name' (USIBMRA and RAK3270D), 'Fully Qualified Local LU Name' (USIBMRA and WTR05179), and 'Mode Name' (#INTER).
 - **Graphics Parameters:** Contains 'Enable Host Graphics' (radio buttons for Yes and No, with Yes selected) and a 'Configure Graphics...' button.
 - **Link Parameters - APPC3270 via SDLC:** Contains a 'Link Parameters:' label and a 'Configure Link...' button.
 At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Help'.

Figure 246. Customize Communication - 3270 Host - Windows 3.1

You must configure the Fully Qualified Partner LU Name and the Fully Qualified Local LU Name fields (see Figure 246) with the names of the networks and applications that are defined on their respective systems.

Fully Qualified Partner LU Name: The concatenated name of the target APPC application comprising its network ID and APL name.

Fully Qualified Local LU Name: The concatenated name of the local workstation APPC application comprising its network ID and LU name.

Mode Name: The default is #INTER which comes standard on most APPN platforms. You should change the Mode Name: only if so directed by your network administrator.

For this example, we configure a workstation with an LU name as WTR05179 to communicate with a target APPC application named RAK3270D. In our case, both the target and local APPC applications reside on the same system, therefore, we use the same Network ID (USIBMRA) for both. If the target and local APPC applications reside on different systems, then we would have a different network ID for the target and workstation APPC applications. These definitions will be provided by your network administrator.

From the Customize Communication - 3270 Host panel, select **Configure Link...** (see Figure 246).

Figure 247. Configure Link - APPC3270 via SDLC - Windows 3.1

You will notice that the SDLC Attachment panel for APPC3270 via SDLC (see Figure 247) is very similar to the SDLC Attachment panel (see Figure 233 on page 211) except for the addition of the Fully Qualified CP Name field. Unlike the Fully Qualified Partner LU Name and the Fully Qualified Local LU Name fields which describe the APPC applications, the Fully Qualified CP Name defines your workstation as a control point and must be unique in the network. It is made up of the network ID and the CP name.

Network ID This is the name of the network to which your workstation and S/390 host are attached. The default is APPN.

CP Name The workstation PU name in the VTAM definition.

These definitions will be provided by your network administrator. In our example, the network ID is USIBMRA and the CP name for our workstation is WTR05179. You must enter the network ID and the CP name for your workstation in the two fields respectively.

Once you are sure that all the link parameters and the Fully Qualified CP Name fields are correct, you can click **OK** to return to the Customize Communication - 3270 Host panel.

If you haven't already done so, please refer to the applicable sections before exiting the APPC3270 configuration process:

- 9.1, "Configuring PCOMM V4.1 for an SDLC Connection" on page 208
- 9.12.3, "Customizing PCOMM V4.1 with V.25bis Support" on page 233

9.7 APPC3270 via SDLC for OS/2

PCOMM Version 4.1 for OS/2 provides APPN LEN node support for workstations. APPC3270 via SDLC is one of four APPC3270 connection types, the others being APPC via LAN, Twinax and SNA-over-Async.

The steps you take to configure an APPC3270 via SDLC connection are similar to configuring the switched/non-switched SDLC and V.25bis parameters discussed earlier in this chapter. In addition to configuring the parameters that define the SDLC link, you must configure the APPC parameters. Please refer to 9.1, "Configuring PCOMM V4.1 for an SDLC Connection" on page 208 for instructions to configure the actual SDLC link and 9.12.3, "Customizing PCOMM V4.1 with V.25bis Support" on page 233 for configuring the Automatic Dial Facilities.

We will only discuss configuring the APPC portion of the connection in this section.

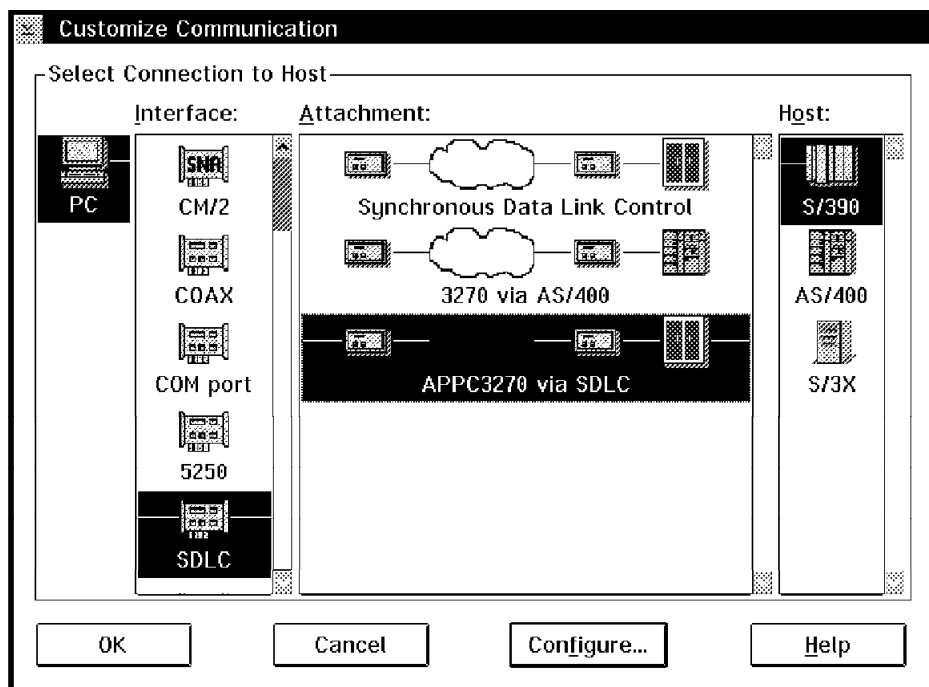


Figure 248. Customize Communication - APPC3270 via SDLC - OS/2

In the PCOMM V4.1 for OS/2 Customize Communication panel, shown in Figure 248, choose:

- SDLC for the interface
- APPC3270 via SDLC for the attachment
- S/390 for the host

Click on **Configure...** to get the Customize Communication - 3270 Host panel shown in Figure 249 on page 223.

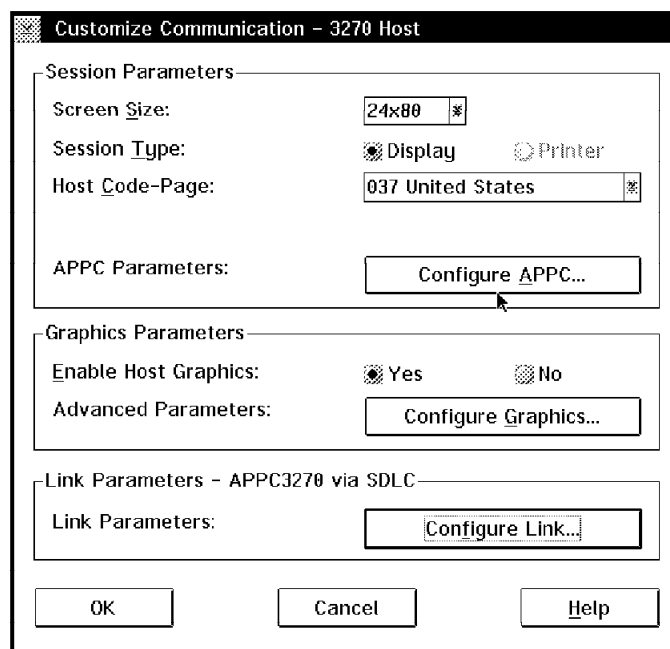


Figure 249. SDLC Link & APPC Parameters - APPC3270 via SDLC - OS/2

Select **Configure APPC...** in the **APPC Parameters** field as shown in Figure 249.

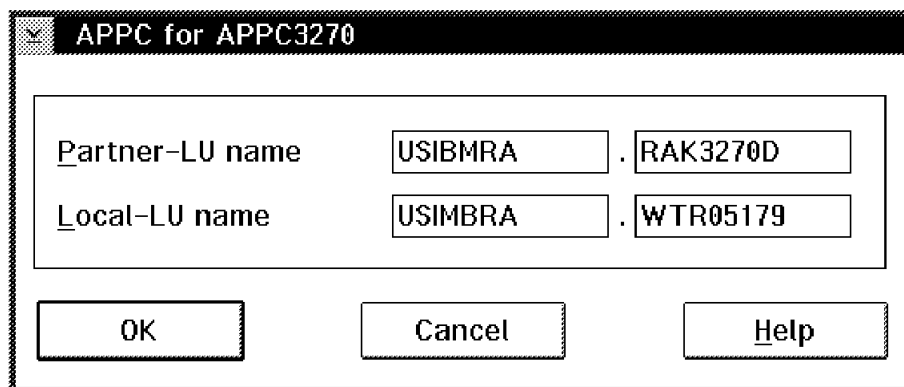


Figure 250. Configure APPC - APPC3270 via SDLC - OS/2

You must configure the Partner-LU Name and the Local-LU Name fields with the names of the networks and applications that are defined on their respective systems (see Figure 250).

Partner-LU Name: The concatenated name of the target APPC application comprising its network ID and LU name.

Local-LU Name: The concatenated name of the local workstation APPC application comprising its network ID and LU name.

For this example, we configure a workstation with an LU name as WTR05179 to communicate with a target APPC application named RAK3270D. In our case, both the target and local APPC applications reside on the same system, therefore, we use the same network ID (USIBMRA) for both. If the target and local APPC applications reside on separate systems, then we would have a different network ID for the target and workstation APPC applications. These definitions will be provided by your network administrator.

Once the Partner-LU Name and Local-LU Name name fields are properly configured, we click **OK** to return to the Customize Communication - 3270 Host panel. We then click on **Configure Link...** (see Figure 249 on page 223) to get the SDLC Attachment panel.

Figure 251. Configure Link - APPC3270 via SDLC - OS/2

You will notice that the SDLC Attachment panel for APPC3270 via SDLC (see Figure 251) is very similar to the SDLC Attachment panel (see Figure 233 on page 211) except for the addition of the Fully Qualified CP Name field. Unlike the Partner-LU Name and the Local-LU Name fields which describe the APPC applications, the Fully Qualified CP Name defines your workstation as a control point and *must* be unique in the network. It is made up of the network ID and the CP name.

Network ID This is the name of the network to which your workstation and S/390 host are attached. The default is APPN.

CP Name The workstation PU name in the VTAM definition.

These definitions will be provided by your network administrator. In our example, the network ID is USIBMRA and the CP name for our workstation is WTR05179. You must enter the network ID and the CP name for your workstation in the two fields respectively.

Once you are sure that the all the link parameters and the Fully Qualified CP Name fields are correct, you can click **OK** to return to the Customize Communication - 3270 Host panel.

9.8 37xx NCP PU Definition for an APPC3270 Workstation

The VTAM V4.2 Application Suite provides the APPC3270D server application. The following section, taken from our NCP definition, shows the PU and LU definitions for our APPC3270 workstation.

Note: The XID=YES statement below is necessary to allow APPC3270 (LU6.2) support.

```

*****
WTR05179 PU ADDR=C1,                      APPC3270D APPLICATION      X
          MAXDATA=265,                      X
          MAXOUT=7,                          X
          PACING=0,                          X
          PASSLIM=254,                       X
          PUTYPE=2,                          X
          RETRIES=(,4,5),                     X
          MODETAB=ISTINCLM,                   X
          DLOGMOD=D4C32XX3,                   X
          USSTAB=US327X,                      X
          DISCNT=(NO),                        X
          ISTATUS=ACTIVE,                     X
          VPACING=0,                          X
          XID=YES
WTR05179 LU LOCADDR=0

```

Figure 252. APPC3270 NCP Definition - SDLC Non-Switched Line

9.9 Configuring PC400 V4.1 for an SDLC Connection

PC400 V4.1 can communicate to an AS/400 host via either a switched SDLC connection or via a leased (non-switched) SDLC connection. For a switched SDLC connection, you can have the dialing process automated by the modem (hardware auto-dialing) or by the V.25bis Auto-dialing support available under Windows 3.1 and OS/2 (see 9.12, "CCITT V.25bis Auto-Dialing for SDLC" on page 233).

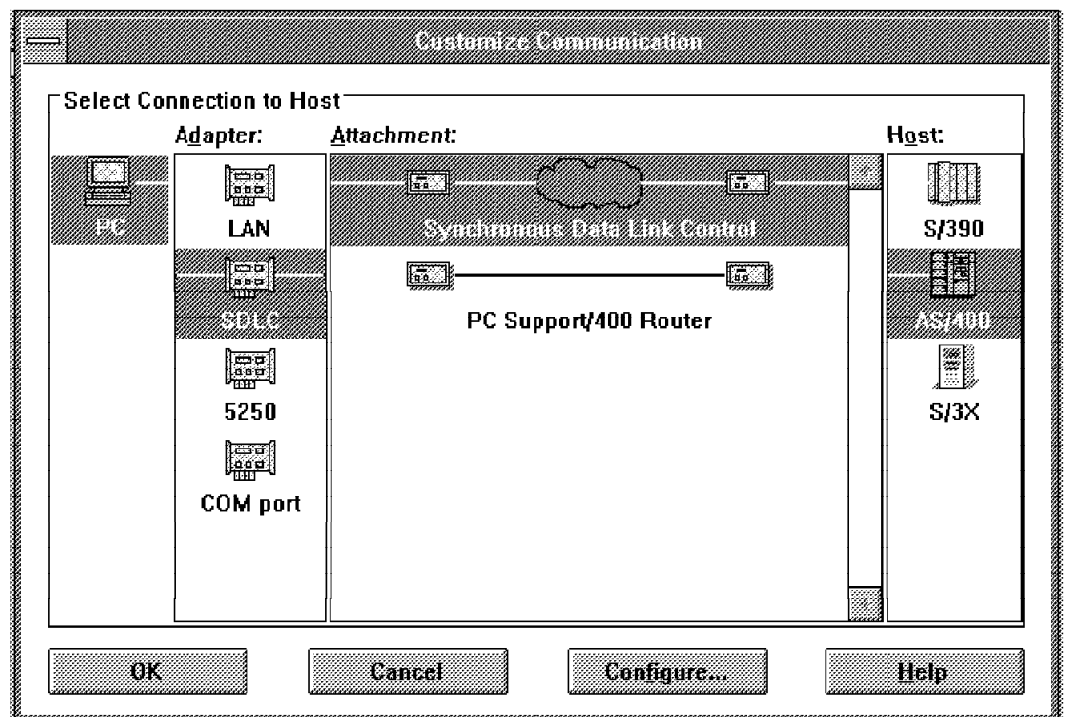


Figure 253. Customize Communication - Windows 3.1

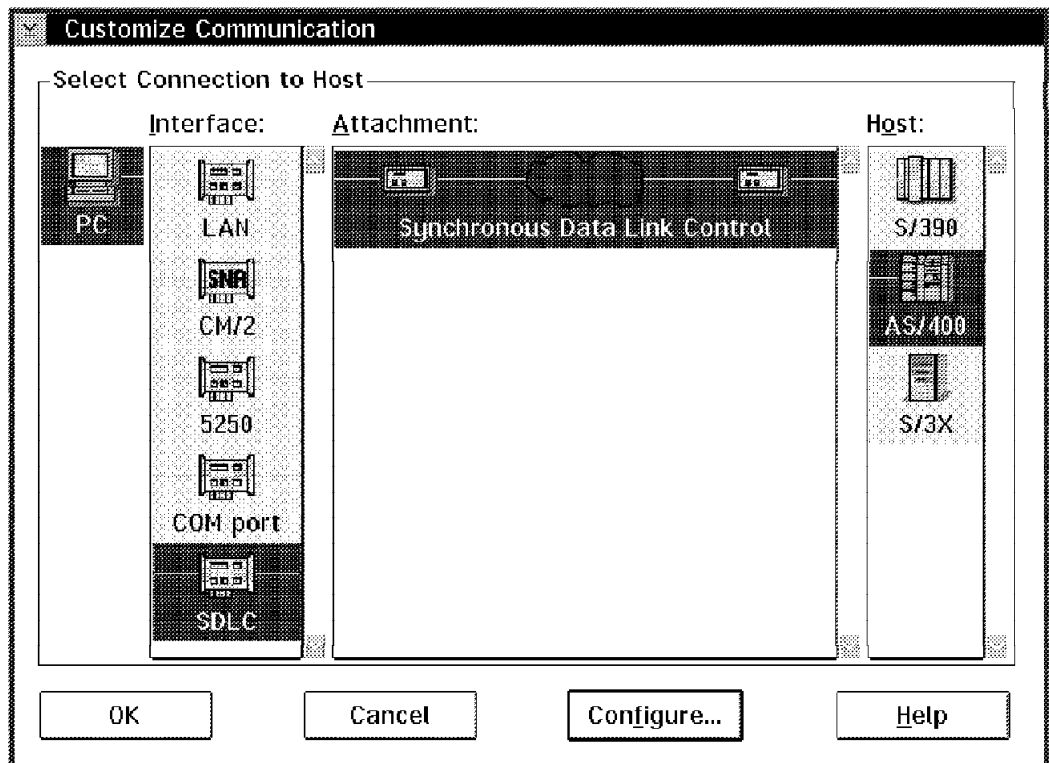


Figure 254. Customize Communication - OS/2

In the PC400 V4.1 Customize Communication panel shown in Figure 253 on page 225 (Windows 3.1) or Figure 254 (OS/2), choose:

- SDLC for the adapter/interface
- Synchronous Data Link Control for the attachment
- AS/400 for the host

Click on **Configure...** to get the Customize Communication - 5250 panel shown in Figure 255 on page 227.

Note that PC400 V4.1 for Windows 3.1 can also connect via the PC Support/400 Router (see Figure 253 on page 225). For more details about the PC Support/400 Router connection, refer to 9.11, "Configuring PC400 V4.1 for Windows 3.1 for PC Support/400 Router" on page 231.

Although your network administrator should give you the information required to configure the fields in the PC400 V4.1 panels that follow, we will briefly describe each and how to obtain the necessary information from the AS/400 host.

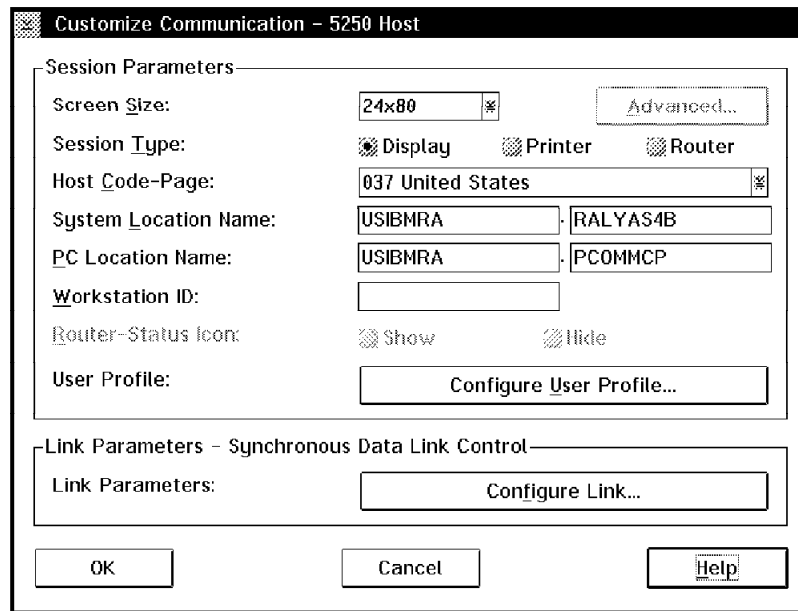


Figure 255. Customize Communication - 5250 Host - Windows 3.1, OS/2

The Customize Communication - 5250 Host panel (see Figure 255) contains three fields that you must customize for a PC400 V4.1 SDLC connection. The values placed in the PC400 V4.1 configuration fields are unique and *must* exactly match the fields configured in the AS/400 definitions, unless stated otherwise.

System Location Name: This is a concatenation of two AS/400 configuration fields; namely the network ID and the local control point name fields. Typically the network ID is APPN and the local control point name is the AS/400 serial number, however, we recommend the network administrator confirm both the network ID and the local control point name by issuing the AS/400 DSPNETA command.

In our example, the network ID and local control point name for our AS/400 are USIBMRA and RALYAS4B respectively (see Figure 257 on page 229).

PC Location Name: This is a concatenation of two fields from the AS/400 virtual controller definition. The first is the remote network ID and the second is the remote control point name. Both can be obtained by issuing the AS/400 WRKCTLD command, typing a 5 next to the desired controller description and pressing Enter.

In our example, the remote network ID and remote control point name for our AS/400 are USIBMRA and PCOMMCP (see Figure 260 on page 230).

NOTE: If the controller description does not contain both the remote network ID and the remote control point name, insure the AS/400 virtual controller definition has the category of controller set to APPC.

Workstation ID: This field is optional.

From the Customize Communication - 5250 Host panel, click on **Configure Link** (see Figure 255 on page 227) to get the SDLC Attachment panel shown in Figure 256.

The image shows a Windows 3.1 dialog box titled "SDLC Attachment". It contains several configuration options:

- Adapter Number:** A text box with "0" and a small icon.
- PIU Size:** A text box with "265".
- SDLC Station Address:** A text box with "C1".
- Options (checkboxes):**
 - ☐ Switched line
 - ☐ Continuous carrier
 - ☒ Half-speed backup
 - ☒ NRZI encoding
 - ☐ Answer-tone generation
- Automatic-Dial:** Radio buttons for ☒ Yes and ☐ No.
- Modem Name:** A text box with "IBM 7855".
- Primary Phone:** A text box.
- Backup Phone:** A text box.
- Title:** Two text boxes, one for Primary Phone and one for Backup Phone.
- Buttons:** "Configure Phone/Modem...", "Modem Information...", "OK", "Cancel", and "Help".

Figure 256. Configure Link - 5250 SDLC - Windows 3.1, OS/2

Please refer to Figure 256 for the following configuration options.

The PIU size must be equal to or smaller than the Maximum Frame Size statement in the AS/400 line descriptor (see Figure 258 on page 229). PC400 V4.1 supports PIU size values ranging from 265 to 2057. Greater PIU sizes generally provide better performance and should be used if the line error rate is low.

The SDLC station address *must* match the Station Address in the AS/400 controller descriptor (see Figure 260 on page 230).

Half-speed backup indicates that your modem can change to half speed if the communication at full speed is unsatisfactory. This is valid only if half-speed backup is supported by your modem.

The other options here (NRZI encoding, Continuous carrier, Answer-tone generation and Request Disconnect) are all related to the capabilities of the modem being used. The line definition in the AS/400 line descriptor contains an NRZI statement which *must* be matched by your NRZI encoding option (see Figure 258 on page 229).

Once you are sure that all the link and Automatic Dial facility (if applicable) parameters are correct, click on **OK** to return to the Customize Communication - 5250 Host panel.

If no other changes are required, you can click on **OK** twice to exit the PC400 V4.1 SDLC configuration process.

9.10 AS/400 SDLC Leased Line Definitions

1. To display the AS/400 network attributes shown in Figure 257, issue DSPNETA on the AS/400 console command line.

```

                                Display Network Attributes
                                System:  RALYAS4B
Current system name . . . . . : RALYAS4B
  Pending system name . . . . . :
Local network ID . . . . . : USIBMRA
Local control point name . . . . . : RALYAS4B
Default local location . . . . . : RALYAS4B
Default mode . . . . . : BLANK
APPN node type . . . . . : *NETNODE
Data compression . . . . . : *NONE
Intermediate data compression . . . . . : *NONE
Maximum number of intermediate sessions . . . . . : 200
Route addition resistance . . . . . : 128
Server network ID/control point name . . . . . : *LCLNETID  *ANY

```

Figure 257. DSPNETA -SDLC Leased Configuration - AS/400

2. To create the AS/400 line descriptor shown in Figure 258 and Figure 259 on page 230, from the AS/400 command line, type CRTLINSDLC and then press PF4.

```

                                Create Line Desc (SDLC) (CRTLINSDLC)

Type choices, press Enter.

Line description . . . . . > PCOMMSDLCL      Name
Resource names . . . . . > LIN021           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
Switched network backup . . . . . *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...
Maximum frame size . . . . . 265          265, 521, 1033, 2057
Duplex . . . . . *HALF                      *HALF, *FULL
Inactivity timer . . . . . 300               *NOMAX, 150-4200 (0.1 sec)
Poll response delay . . . . . 0              0-2048 (0.0001 seconds)
                                           More...

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

```

Figure 258. CRTLINSDLC (Screen 1 of 2) - SDLC Leased Configuration - AS/400

```

                                Create Line Desc (SDLC) (CRTLINS DLC)

Type choices, press Enter.

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
Text 'description' . . . . . PCOMM SDLC leased line

                                Additional Parameters

Attached nonswitched ctls . . . Name
      + for more values
Modem data rate select . . . *FULL      *FULL, *HALF
Error threshold level . . . *OFF        *OFF, *MIN, *MED, *MAX
Modulus . . . . . 8          8, 128
Maximum outstanding frames . . 7          1-28
More...

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

```

Figure 259. CRTLINS DLC (Screen 2 of 2) - SDLC Leased Configuration - AS/400

3. To create the AS/400 controller descriptor shown in Figure 260 and Figure 261 on page 231 from the AS/400 command line, type CRTCTLAPPC and then press PF4.

```

                                Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Controller description . . . . . > PCOMMSDLCCL  Name
Link type . . . . . > *SDLC          *ANYNW, *FAX, *FR, *IDLC...
Online at IPL . . . . . *YES          *YES, *NO
Switched connection . . . . . *NO          *NO, *YES
Switched network backup . . . . *NO          *NO, *YES
APPN-capable . . . . . *YES          *YES, *NO
Attached nonswitched line . . . > PCOMMSDLCCL  Name
Maximum frame size . . . . . *LINKTYPE  265-16393, 256, 265, 512...
Remote network identifier . . . > USIBMRA     Name, *NETATR, *NONE, *ANY
Remote control point . . . . . > PCOMMCP      Name, *ANY
Exchange identifier . . . . . 00000000-FFFFFFF
Data link role . . . . . *NEG          *NEG, *PRI, *SEC
Station address . . . . . 01          00-FE
APPN CP session support . . . . *YES          *YES, *NO
APPN node type . . . . . *LENNODE      *ENDNODE, *LENNODE...
APPN transmission group number 1          1-20, *CALC
More...

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

```

Figure 260. CRTCTLAPPC (Screen 1 of 2) - SDLC Leased Configuration - AS/400

Create Ctl Desc (APPC) (CRTCTLAPPC)

Type choices, press Enter.

Autocreate device	*ALL	*ALL, *NONE
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'	PCOMM SDLC Leased	

Additional Parameters

Attached devices	Name	
+ for more values		
Character code	*EBCDIC	*EBCDIC, *ASCII
SSCP identifier		000000000001-FFFFFFFFFFFF
IDLC window size	*LIND	1-31, *LIND
IDLC frame retry	*LIND	0-100, *LIND

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

More...

Figure 261. CRTCTLAPPC (Screen 2 of 2) - SDLC Leased Configuration - AS/400

NOTE: The device descriptor is automatically created by the AS/400.

9.11 Configuring PC400 V4.1 for Windows 3.1 for PC Support/400 Router

PC400 V4.1 for Windows 3.1 provides the ability to share an existing PC Support/400 router link to an AS/400. In this environment, PC Support/400 starts and manages the SDLC link. Instead of communicating directly with the AS/400, PC400 V4.1 for Windows 3.1 exchanges data with the PC Support/400 which in turn communicates with the AS/400. As a result, configuring PC400 V4.1 for Windows 3.1 is relatively simple, requiring only the AS/400 System Name.

Customize Communication

Select Connection to Host

Adapter:	Attachment:	Host:
PC	Synchronous Data Link Control	S/390
LAN	PC Support/400 Router	AS/400
SDLC		S/3X
5250		
COM port		

OK Cancel Configure... Help

Figure 262. Customize Communication - PC Support/400 - Windows 3.1

In the PC400 V4.1 for Windows 3.1 Customize Communication window, shown in Figure 262, choose:

- **SDLC** for Adapter
- **PC Support/400 Router** for Attachment
- **AS/400** for Host

Click on **Configure...** to get the Customize Communication - 5250 Host shown in Figure 263.

Although your network administrator should give you the information required to configure the fields in the PC400 V4.1 panels that follow, we will briefly describe each and how to obtain the necessary information from the AS/400 host.

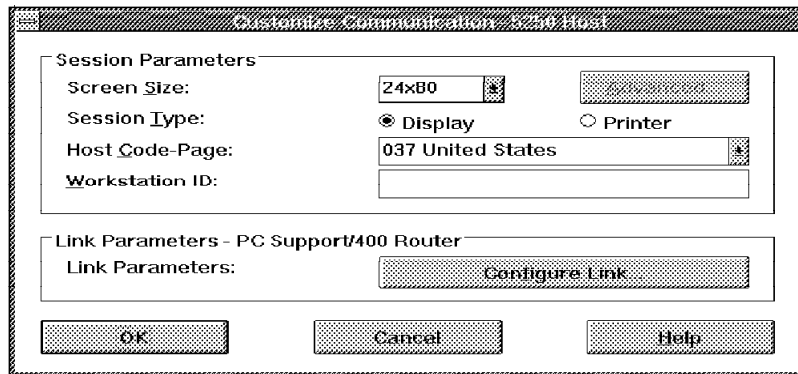


Figure 263. Customize Communication - 5250 Host - Windows 3.1

The Workstation ID field (see Figure 263) is the only field on the Customize Communication - 5250 Host panel that you might want to configure, but this field is optional. Choose **Configure Link...** to get the PC Support/400 Router panel.

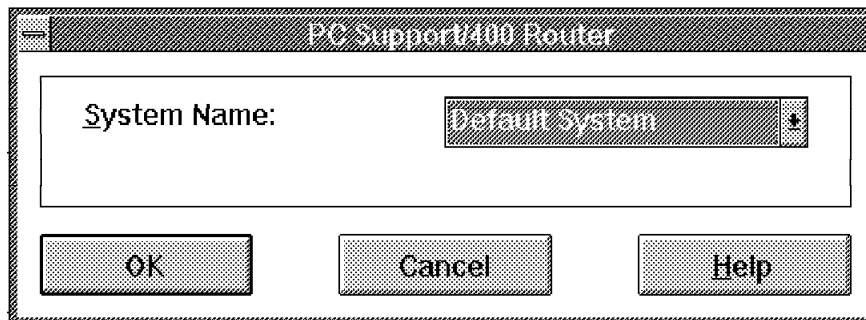


Figure 264. PC Support/400 Router - Windows 3.1

The System Name (see Figure 264) is the only field you must configure and it is set to Default System. In this case, PC Support/400 will connect PC400 V4.1 to its default system, however, if more than one system exists in the network, you may want to select another system name using the pull-down arrow. After selecting the system name, click on **OK** as required to exit to the previous screen or to end the configuration process.

9.12 CCITT V.25bis Auto-Dialing for SDLC

PCOMM V4.1 supports CCITT V.25bis automatic dialing for SDLC connection under Windows 3.1 and OS/2 (see 9.12.3, "Customizing PCOMM V4.1 with V.25bis Support"). V.25bis commands are used to establish data connections over public switched telephone network. The user interface of dialing resembles that of asynchronous communications.

9.12.1 V.25bis Commands

<i>Table 8. V.25 Commands</i>		
Command	Description	PCOMM V4.1 Support
CRN	Call request with number provided	Yes
CRS	Call Request with memory address provided	Yes
CRI	Call request with identification number	Yes
PRN	Program normal	No
RLN	Request list of stored number	No
RLD	Request list of delayed call number	No
DIC	Disregard incoming call	No
CIC	Connect incoming call	No

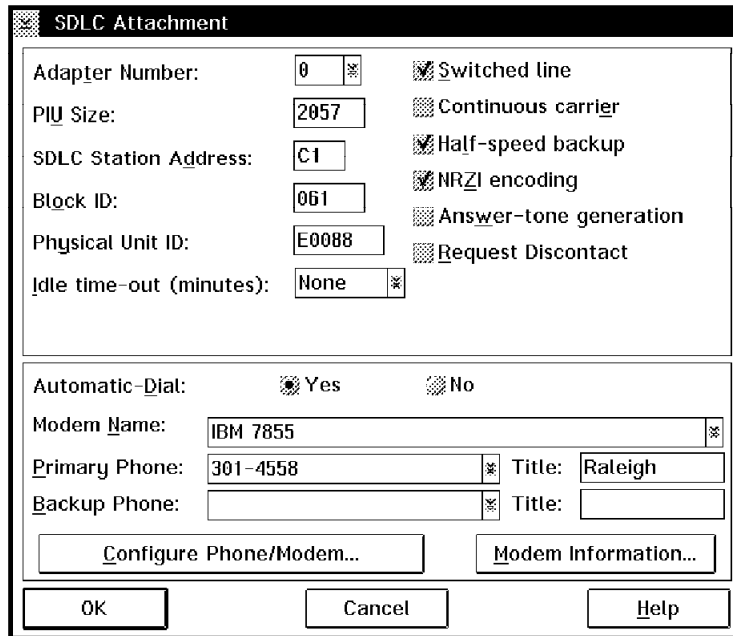
9.12.2 V.25bis Responses

<i>Table 9. V.25 Responses</i>		
Response	Description	PCOMM V4.1 Support
INC	Incoming call	
INV	Invalid	Yes
VAL	Valid	Yes
LSN	List of stored number	No
LSD	List of delayed call	No
DLC	Delayed call	No
CFI	Call failure	Yes
CNX	Call connecting	Yes

9.12.3 Customizing PCOMM V4.1 with V.25bis Support

The new V.25bis Auto-dialing support is available under Windows 3.1 and OS/2 for either PC/3270 SDLC, APPC3270 via SDLC or PC/400 SDLC connectivities. You are able to customize the V.25bis feature in a few steps. Click on **Communication** in the menu bar of your host session window and then click on **Configure...** in the displayed pull-down menu to get the window shown in Figure 232 on page 211. Choose the desired connectivity, either PC/3270 SDLC (S/390), APPC3270 via SDLC (S/390) or PC/400 SDLC (AS/400).

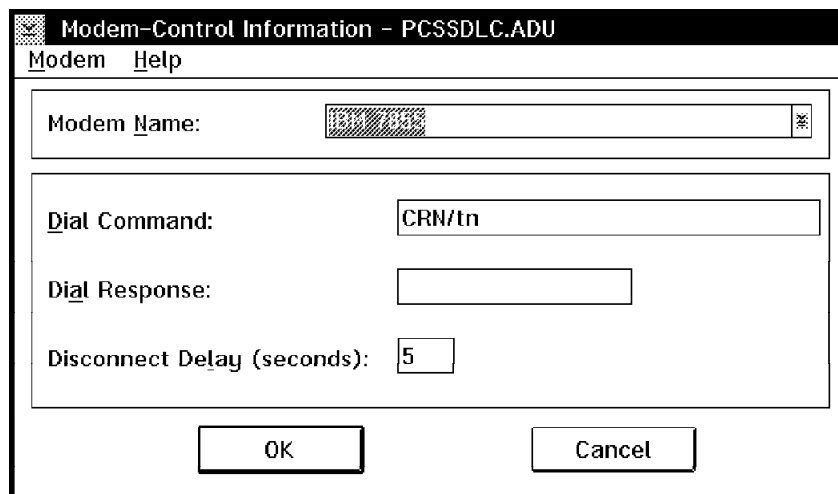
Click on **Configure...** from the Customize Communication window to get either the Customize Communication - 3270 Host or the Customize Communication - 5250 Host window (depending on which you are configuring). Then click on **Configure Link...** to get the SDLC Attachment window (Figure 265). For Automatic-Dial, choose **YES** to get an expanded SDLC Attachment window.



The SDLC Attachment dialog box is divided into two main sections. The top section contains fields for Adapter Number (0), PIU Size (2057), SDLC Station Address (C1), Block ID (061), Physical Unit ID (E0088), and Idle time-out (minutes) (None). To the right of these fields are several checked options: Switched line, Continuous carrier, Half-speed backup, NRZI encoding, Answer-tone generation, and Request Disconnect. The bottom section is for Automatic-Dial settings, with 'Yes' selected. It includes fields for Modem Name (IBM 7855), Primary Phone (301-4558), Backup Phone, and Title (Raleigh). At the bottom of this section are buttons for 'Configure Phone/Modem...' and 'Modem Information...'. The very bottom of the dialog has 'OK', 'Cancel', and 'Help' buttons.

Figure 265. SDLC Attachment V.25bis - Windows 3.1, OS/2

The Automatic Dial facility (see Figure 265) provides the Configure Phone/Modem and the Modem Information buttons that you can use to customize phone numbers and modem entries. You can also select a modem name and phone numbers by using the pull-down arrows, or by typing a phone number and title directly into the phone number and title fields. Click on the **Modem Information** button to bring up the Modem-Control Information - PCSSDLC.ADU panel.



The Modem-Control Information - PCSSDLC.ADU dialog box has a title bar with a menu icon and 'Modem-Control Information - PCSSDLC.ADU'. Below the title bar is a menu bar with 'Modem' and 'Help'. The main area contains a 'Modem Name' field with a pull-down arrow. Below this are three fields: 'Dial Command' (CRN/tn), 'Dial Response' (empty), and 'Disconnect Delay (seconds)' (5). At the bottom are 'OK' and 'Cancel' buttons.

Figure 266. Modem-Control Information - PCSSDLC.ADU - OS/2

From the Modem-Control Information - PCSSDLC.ADU panel (see Figure 266 on page 234) you can select an existing modem from the Modem Name: pull-down or change the dial command, dial response or disconnect delay by editing the Dial Command, Dial Response or Disconnect Delay (seconds) fields respectively. The menu bar provides a Modem button which allows you to Add Copy or Delete a modem definition. If your modem does not appear in the supported modem list it may still work, however, please check with the modem documentation or manufacturer for suggested dial command and dial response strings. Once you are satisfied with the modem information, click **OK** to return to the Automatic Dial: facility panel. From the Automatic Dial facility (see Figure 265 on page 234) select **Configure Phone/Modem**

Figure 267. Configure Phone/Modem - PCSSDLC.ADU - OS/2

From the Configure Phone/Modem - PCSSDLC.ADU panel (see Figure 267) you can select an existing phone from the Phone Name: pulldown and type a description (optional) of the phone number in the Title: field. You can modify other modem parameters fields such as Bits per Character/Parity:, Redial Count: or Response Time (seconds):. The menu bar provides the **Mode** option which allows you to Add or Delete a phone number entry. Once you are satisfied with the phone information, you may click on **File** in the menu bar for save choices or you may click on **OK** to return to the Automatic Dial: facility panel. If you have not already saved the phone information in the Configure Phone/Modem - PCSSDLC.ADU panel, you will be prompted to save the changes as you return to the Automatic Dial: facility panel.

9.12.4 PCOMM V4.1 V.25bis Restrictions

PCOMM V4.1 has the following restrictions:

- It supports SDLC auto dial function with Multiprotocol Communication Adapter/III or IV or compatible adapters. SDLC auto dial cannot be invoked from EHLLAPI/DDE.
- CRN, CRS and CRI are the only commands supported.

9.12.5 Special Considerations for a PCOMM Version 4.1 SDLC Connection

Pay special attention to the following SDLC configurations:

- Performance consideration

PCOMM V4.1's SDLC connection supports line-speeds up to 19,200 bps, but the usable speed depends on the version of the adapter and the capability of the processor. If your SDLC connection fails at the line-speed you chose, try a slower speed.

- SDLC connections using two Multiprotocol Adapters/A

Up to two adapters may be installed in a PS/2 system, except where this is precluded by a hardware conflict with other adapters.

The primary adapter should be configured as SDLC_1 and should use arbitration level_1. The alternate adapter should be configured as SDLC_2 and should use arbitration level_7.

- Performance enhancement if low speed (for DOS (full-function mode))

If you want to get the appearance of faster response time, add the option `-update` to the PCSDOS statement in the PC3270.BAT file. This is not documented and not supported (and in fact does not work if you specify EMS support). Adding this will cause PC/3270 to update the screen after each block of text is received, rather than waiting for the entire screen to be received. This will result in the screen being painted in "chunks" of text, thus reducing the time from pressing the Enter key until you see the first character on the screen. This is quite dramatic at 1200 and 2400 bps.

This is what the statement will look like:

```
C:\PC3270\PCSDOS 2 a=24*80 b=24*80 -update -gs -ns -f -ef %CMGR.QUIET%
```

- SDLC in EMS configurations (for DOS (full-function mode))

The recommended maximum line speed is 9600 bps. If problems exist at 9600 bps, try a slower speed. The supported line speed depends on the PC configuration actually used.

If you *must* use an SDLC connection at 9600 bps or 19.2 Kbps in an EMS configuration, load PCSSDLC.EXE into conventional memory. To do this, before starting PCOMM V4.1 with the configuration file name (for example, PC3270.BAT), set the following environment variable:

```
SET PCSSDLC.EXE=NONEMS
```

You can add the statement to the beginning of PC3270.BAT but it will be deleted if you later run INSTALL or CONFIG and save the configuration again.

- SDLC communication and using the task swapper function (for DOS (full-function mode))

The installation of the task swapper function provided with PCOMM V4.1 for DOS (full-function mode) to support the DOS 5.0 Task Swapper (DOSSWAP) or the PCSSWAP to swap PCOMM V4.1 out from memory, requires a data-link-control memory-management program. PCOMM V4.1 for DOS (full-function mode) will add the following line to your CONFIG.SYS file at installation or reconfiguration time to keep the SDLC communication link, if selected.

```
DEVICE=C:\PC3270\PCSSDLC.SYS
```

- If PCSSDLC.EXE is added in PCSTSR.BAT (Windows 3.1)

PCSSDLC.EXE is added only if the following conditions are satisfied:

- Microsoft Windows V3.1 is running in standard mode.
- SDLC card such as IBM Multiprotocol Adapter/A is installed on your system.

This DOS TSR program allows you to make a connection to the host via SDLC in Microsoft Windows V3.1 standard mode environment. The configuration procedure will add the following line to PCSTSR.BAT file. Use PCSWIN.BAT to start Microsoft Windows V3.1 instead of WIN.

```
C:\PCSWIN\PCSPOLL.EXE /B=XX
C:\PCSWIN\PCSSDLC.EXE
```

Note: PCSSDLC.EXE is not added in PCSTSR.BAT when Windows is running in enhanced mode.

If you have upgraded Personal Communications Version 2.0 to Version 3.0, PCSSDLC.EXE is added only when PC/3270 V2.0 is configured for the connection via SDLC and Microsoft Windows V3.1 is running in standard mode.

- Memory confusion when trying to use two SDLC connections (Windows 3.1)

To avoid confusion when you try to make two SDLC connections using two adapter cards, PCSSDLC.EXE is installed with two instances (for DATA and STACK) for the SDLC Protocol Machines as default. If you always make one SDLC connection, you can save about 1250 bytes of memory (below 640) by doing the following:

- When you use Windows standard mode or you install PCSSDLC.EXE module as a TSR program before Windows startup, even for the Windows enhanced mode, (the latter usage is not recommended) pass the argument into this module. If you use PCSWIN.BAT, modify the module named PCSTSR.BAT by using an editing tool such as NotePad.

```
C:\PCSWIN\PCSSDLC.EXE /n=1
```

- Otherwise, when you use Windows enhanced mode and do not install PCSSDLC.EXE before Windows startup, add the keyname and value in the SDLC section of your WorkStation profile (c:\pcswin\private*.WS) by using an editing tool such as NotePad:

```
[SDLC]
:
NumOfInstances=1          <= to be added
:
```

- Restriction on interrupt sharing (Windows 3.1)

PCOMM V4.1 SDLC connection uses Interrupt Level-3 (IRQ3) and Level-4 (IRQ4) for the H/W control.

The *Windows DDK (Device Driver Kit)* mentions, that in Windows enhanced mode, the Virtual Machine Manager (strictly speaking, VPICD) controls IRQ lines such as GLOBAL or LOCAL depending on the state of Interrupt Controller's IMR (Interrupt Mask Register) at Windows startup.

- If IRQ3 or IRQ4 is regarded as GLOBAL, which means that some device driver or TSR module uses these IRQ lines before Windows startup, opening the DOS box might cause the SDLC connection to go down because Personal Communications only resides in the System-VM of Windows and doesn't always receive this interrupt. Then we recommend you not open both IRQ3 and IRQ4 before Windows startup when you use SDLC connection.
- However, if you want to use a device driver or a TSR module which opens IRQ3 or IRQ4, and if you also want to use Windows DOS Box there is another way, such as installing an SDLC protocol handler as a TSR before Windows startup. The way to install it is just to execute PCSSDLC.EXE from the DOS command prompt. You can build a batch file to execute it as in Windows standard mode. This usage is not recommended, because the DMA operation sometimes causes a micro channel bus timeout error at the switching time between DOS and System-VM depending on machine type. This more often occurs for high-performance machines (33 MHz, 50 MHz, etc.) due to the conflict with the Windows VDMAD (virtual device for DMA).

It is strongly recommended that you don't use a device driver or a TSR using IRQ3 or IRQ4 and the DOS box of Windows enhanced mode at the same time.

- Coexistence with the SoundBlaster adapter

If you want to use the ISA-bus MPCA adapter and the SoundBlaster adapter on the same PC, you must configure the adapters as follows:

1. Configure the ISA-bus MPCA adapter as the second such adapter by setting its jumpers as follows:

	P3	P2	P1
1	0	0	0
2	0-+	0-+	0-+
3	0-+	0-+	0-+

2. Set the adapter number in the Personal Communications SDLC configuration to 1 (that is, the second adapter - the first adapter would be 0).

3. Configure the SoundBlaster:

I/O Address: Other than 3A0-3AF
 IRQ : Other than IRQ 3,4
 DMA : Other than DMA 1

4. Make sure that no other cards conflict with the MPCA (I/O address, IRQ and DMA).

Chapter 10. X.25 Connection

PCOMM V4.1 for DOS (full-function mode) allows a PS/2 workstation to be attached via an X.25 packet switching data network to an S/370 host. For this X.25 connection, be aware of the following considerations:

- The PS/2 requires an IBM X.25 Interface Coprocessor/2 adapter.
- To support the adapter, the following additional software is also required:
 - IBM X.25 Coprocessor Support Program
 - IBM Realtime Interface Coprocessor (RTIC) DOS Support V1.01 or higher, which is the prerequisite for the X.25 Coprocessor Support Program.
- The X.25 adapter is only available for PS/2s with micro channel architecture.
- PCOMM V4.1 supports X.25 communication only in the DOS (full-function mode).

Note: The X.25 communication is also supported for PCOMM V4.1 for OS/2 with the OS/2 Access feature, RouteXpander or CM/2.

- Both switched virtual circuits (SVCs) and permanent virtual circuits (PVCs) are supported. With SVCs, only outgoing connections are supported.
- The maximum number of sessions available on a stand-alone workstation via X.25 is eight.

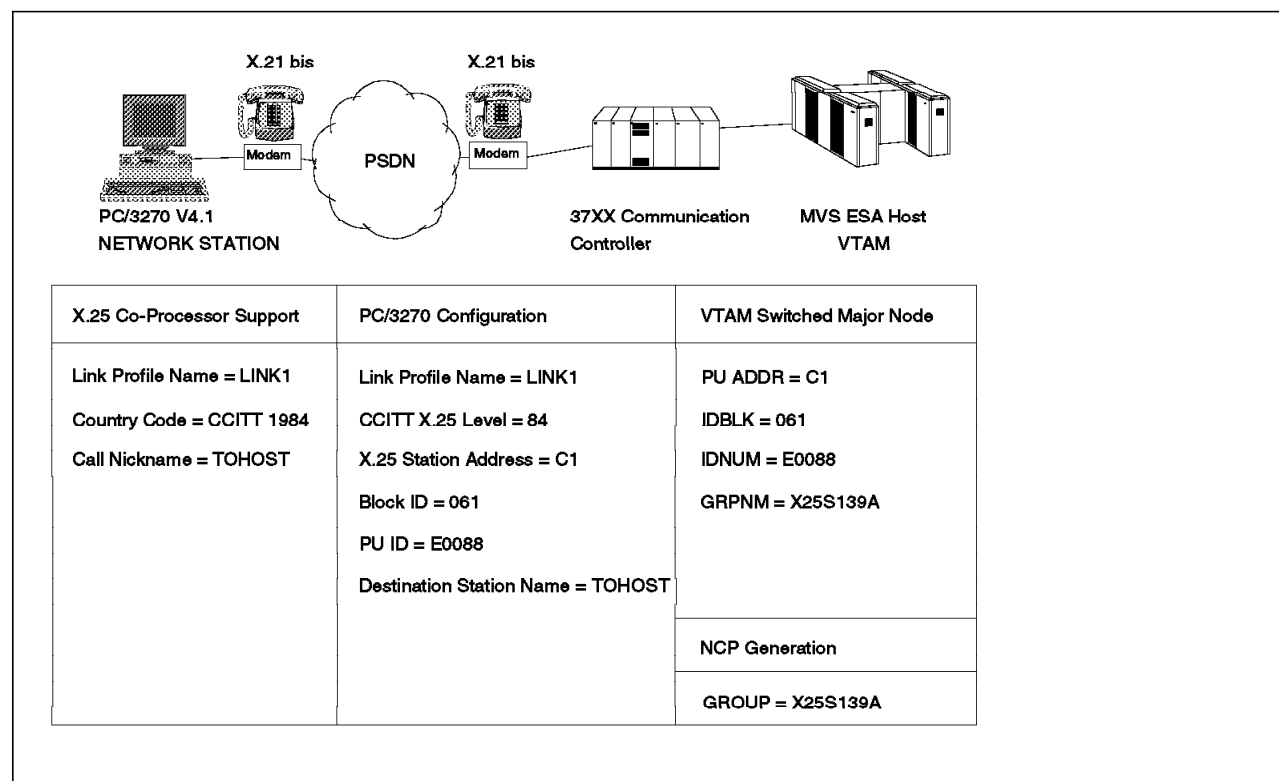


Figure 268. X.25 Connection to 37xx Communication Controller

In this connectivity scenario, a PCOMM V4.1 workstation is connected to an X.25 packet switching data network (PSDN). On the other side of the PSDN is a 37xx Communication Controller with NCP packet switching interface (NPSI) software running on top of NCP. The 37xx is channel-attached to an S/370 host. The PCOMM V4.1 workstation will have a single session, over an SVC, to the 37xx and then to the S/370 host.

For this example, we need to do the following:

- Configure the X.25 Coprocessor Support Program in the workstation for the X.25 attachment. Note that we do not configure the RTIC DOS Support V1.01 or higher.
- Configure the PCOMM V4.1 in the workstation for the X.25 attachment.
- Define the X.25 attachment in the 37xx NCP.
- Define the PCOMM V4.1 workstation as a switched major node in VTAM.

Note: Not all of the required configuration, customization or definition panels will be shown; only those that are significant to the example are included.

10.1 Configuring the X.25 Coprocessor Support Program

Installing the X.25 Coprocessor Support Program is straightforward. With the program diskette in drive A, type A:XINSTALL from the C:\> prompt. This installation routine will not only install the X.25 Coprocessor Support Program, but will also prompt you to insert the RTIC DOS Support program diskette and the X.25 Interface Coprocessor option diskette into drive A in order to copy necessary files.

The X.25 Coprocessor Support Program *must* then be configured. From the C:\X25 subdirectory created during installation, load the GQKCONF.EXE configuration program. This will display the menu shown in Figure 269.

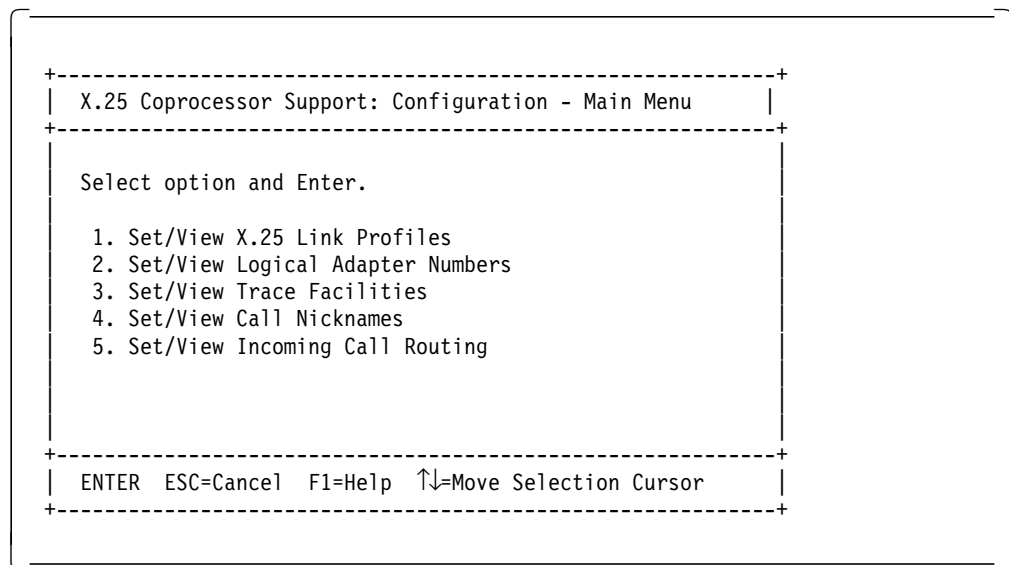
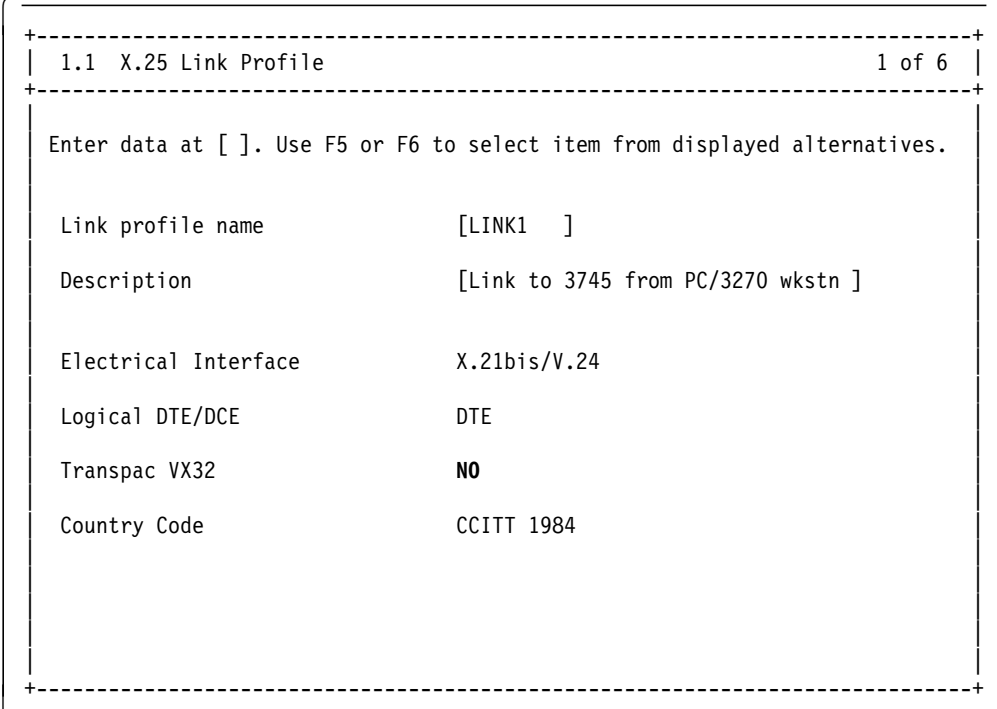


Figure 269. X.25 Coprocessor Support Configuration - Main Menu

The first task is to configure an X.25 Link Profile, using option 1, Set/View X.25 Link Profiles, on the main menu.



```
+-----+
| 1.1 X.25 Link Profile                                     1 of 6 |
+-----+
| Enter data at [ ]. Use F5 or F6 to select item from displayed alternatives. |
|                                                                              |
| Link profile name           [LINK1  ] |
| Description                  [Link to 3745 from PC/3270 wkstn ] |
| Electrical Interface        X.21bis/V.24 |
| Logical DTE/DCE             DTE |
| Transpac VX32                NO |
| Country Code                 CCITT 1984 |
|                                                                              |
+-----+
```

Figure 270. X.25 Configuration - X.25 Link Profile Panel

- The Link profile name can be anything you want. It will be used as the Link profile name when we configure PCOMM V4.1
- When configuring for PCOMM V4.1 the Transpac VX32 option *must* be set to NO. (In our test we were actually using VX32 modems, but if YES was selected in this field, PCOMM V4.1 would return an Invalid Link Type error message.)
- Although the X.25 Coprocessor Support Program supports many different values for Country Code, PCOMM V4.1 will *only* accept CCITT 1980 or CCITT 1984 in this field. You *must* select one of these two values that is appropriate to your network connection.

Note that for an SVC, leaving the values in the following five panels as default will generally allow a working PCOMM V4.1 connection. You will, however, need to make certain changes if you require a PVC connection.

Having created the X.25 link profile, the next step is to make the profile active by assigning it to an adapter, using option 2, Set/View Logical Adapter Numbers, on the main menu.

X.25 Coprocessor Sup	
Select option and Enter	Link Option Files (.PRF)
1. Set/View X.25 Lin 2. Set/View Logical 3. Set/View Trace Fa 4. Set/View Call Nic 5. Set/View Incoming	TEST2 TOHOST 0 LINK1
ENTER ESC=Cancel F1	
	Esc=Cancel F1=Help F3=Save F5=Allocate Adapter F6=Erase ↑↓=Move Selection Cursor

Figure 271. X.25 Configuration - Set Logical Adapter Numbers Panel

As we only have one X.25 adapter, we assign our new link profile LINK1 to adapter 0. The 0 in front of the link profile name indicates this assignment.

The next step is to set up a Call Nickname for the connection to the host, using option 4, Set/View Call Nicknames, on the main menu.

4 Call Nicknames	
Enter data at []. Use F5 or F6 to select item from displayed alternatives.	
Call Nickname	[TOHOST]
Description	[Dial Number of 3745]
Link Profile Name	[]
Address	[3106123456]
Address Extension	[]
Request reverse charging	NO
ENTER ESC=Cancel F1=Help F4=List Call Nicknames F7=Backward F10=Check and File =Move Selection Cursor	

Figure 272. X.25 Configuration - Call Nicknames Panel

On the Call Nicknames panel:

- The call nickname can be any name you want. It will be used as your Destination station name when we configure PCOMM V4.1.
- The link profile name does not need to be entered unless there is more than one X.25 adapter installed.
- The address is the telephone number of the host (3745 in our example) to which you wish to make a connection.

For some networks, it may be necessary to set up a second call nickname, with the address field being the telephone number of your own workstation. This would be used by the host as a check when only calls from certain telephone numbers are allowed.

The X.25 Coprocessor Support Program configuration is now complete.

Note that there is an option on the main menu (Figure 269 on page 240) for configuring trace facilities. We did not configure this option in our example, but this would be necessary if trace facilities were required. There is also an option for setting incoming call routing. Incoming calls are not supported by PCOMM V4.1.

For full details on configuring the X.25 Co-Processor Support Program, please refer to the *IBM X.25 Coprocessor Support Program User's Guide*.

10.2 Configuring PCOMM V4.1 for X.25 Connection

Attachment Types More: -+

Enter the number of sessions you want to use.

Total number of sessions for:

Distributed Function Terminal (DFT)	[0]
LAN via 802.2 protocol	[0]
LAN via NetBIOS	[0]
LAN via TCP/IP (Telnet 3270 Attachment)	[0]
LAN via IPX/SPX (NetWare-for-SAA Gateway Attachment)	[0]
3174 Peer Communication	[0]
Synchronous Data Link Control (SDLC)	[0]
Asynchronous Data Link Control (ASYNCH)	[0]
(for attachment to a Series/1 SNA gateway only)	
CCITT X.25 Network (X.25)	[1]

F1=Help F3=Exit F7=Backward F8=Forward

Figure 273. Attachment Types Panel - X.25 Connection - for DOS (Full-Function Mode)

Note that the X.25 connection can be configured only if Advanced link options has been selected on the Choose Configuration panel. We indicate our need for one X.25 session by entering 1 in the CCITT X.25 Network (X.25) field on the Attachment Types window.

Advanced Options for X.25 Attachment, part I		More: -->

Press F10 to change choice.		
Total number of sessions	1	
CCITT X.25 Level	↓[84]	
X.25 support program trace name . .	[]	
Number of sessions for this link .	↓[1]	
X.25 station address	[C1]	
Link-profile name	[LINK1]	
F1=Help F3=Exit F7=Backward F8=Forward F9=Prev Choice F10=Next Choice		

Figure 274. (Part 1 of 2). Advanced Options for X.25 Attachment Panel - for DOS (Full-Function Mode)

Pressing F8 will bring us to the Advanced Options for X.25 Attachment, part I panel. The following explains the fields on this panel:

CCITT X.25 Level

Selection is the CCITT X.25 recommendation level that is used on the packet switching data network to which the PCOMM V4.1 workstation will connect. There are only two options: 80 or 84. These represent the CCITT 1980 or 1984 recommendations and *must* match the value selected in the Country Code field in the X.25 Co-Processor Support Program configuration (see Figure 270 on page 241.)

X.25 support program trace name

Specifies the name of the file to be used by the IBM X.25 Coprocessor Support Program to trace X.25 packets/frames. In our example we have not specified a trace name so tracing is not performed. If tracing is required, this name *must* match the Trace entry name defined in the X.25 Co-Processor Support Program.

Number of sessions for this link

Selection is the number of sessions that will be connected through the adapter link specified in the Link-profile name field of this panel.

X.25 station address

This parameter *must* match the PU address (ADDR) in the VTAM switched major node definition for an SVC connection, or in the NCP definition for a PVC connection.

Link-profile name

This entry *must* match the Link profile name defined in the X.25 Co-Processor Support Program.

On completion of the Advanced Options for X.25 Attachment, part I panel, pressing F8 will take us to the Advanced Options for X.25 Attachment, part II panel.

Advanced Options for X.25 Attachment, part II

More: -+

Enter the required information.

PVC logical channel number

[]

Block ID

[061]

Physical Unit ID

[E0088]

Destination station name

[TOHOST]

Own station name

[]

F1=Help

F3=Exit

F7=Backward

F8=Forward

Figure 275. (Part 2 of 2). Advanced Options for X.25 Attachment Panel - for DOS (Full-Function Mode)

The following explains the fields on the Part II panel:

PVC logical channel number

Since we are configuring an SVC connection, no value is required in this field.

Block ID and Physical Unit ID

These must match the values for IDBLK and IDNUM respectively in the VTAM switched major node definition.

Destination station name

This must match the call nickname for the X.25 connection previously set up in the X.25 Co-Processor Support Program (see Figure 272 on page 242).

Own station name

This name is only required on certain networks where a host has been configured to only accept calls from certain telephone numbers. In this case, a second call nickname *must* be entered here, set up with the address (telephone number) of your own workstation.

Note: The *Personal Communications/3270 Version 2.0 Installation Guide* incorrectly states that you *must* provide at least your Own station name. The destination station name *must* always be provided.

10.3 VTAM Definitions for PCOMM V4.1 Workstation

```
*****
*
*          VTAM SWITCHED MAJOR NODE FOR X.25 PC/3270 TEST
*
*****
SWX25B  VBUILD MAXGRP=5,
              MAXNO=12,
              TYPE=SWNET
X25PUB  PU ADDR=C1,
              IDBLK=061,
              IDNUM=E0088,
              DISCNT=YES,
              MAXDATA=265,
              MAXOUT=7,
              PASSLIM=7,
              MODETAB=AMODETAB,
              MAXPATH=1,
              VPACING=0,
              PUTYPE=2,
              SSCPFM=USSSCS,
              DLOGMOD=M2SDLCQ,
              USSTAB=US327X
X25PATHB PATH DIALNO=310612345678901,
              GRPNM=X25S139A,
              GID=1,
              PID=1
X25LUB1  LU  LOCADDR=2
X25LUB2  LU  LOCADDR=3
X25LUB3  LU  LOCADDR=4
X25LUB4  LU  LOCADDR=5
```

Figure 276. VTAM Switched Major Node Definition for X.25 Connection

This VTAM switched major node definition defines the PCOMM V4.1 workstation as a single SNA PU T2.0 with four associated logical units, although only one session has been configured in the workstation.

10.4 NCP Definitions for X.25 Connection

The definitions shown in this section are just part of a much larger NCP definition; we will show parameters relevant to our PCOMM V4.1 configuration.

An OPTIONS macro *must* be included for the new definition (NEWDFN=YES). The USERGEN=X25NPSI statement shows that the X.25 NPSI (NCP packet switching interface) is going to be used to automatically define part of this definition.

```

*****
*
*          OPTIONS DEFINITION STATEMENT
*
*****

NCP OPT  OPTIONS NEWDEFN=(YES,ECHO,NOSUPP),USERGEN=(X25NPSI,FNMNDFGN)

```

Figure 277. NCP Definitions for X.25 SVC - Options Definition Statement

The actual definition of the line is generated automatically by NPSI. Note that the GROUP matches the GRPNM parameter specified in the VTAM switched major node. No parameters in the NCP definition need to match parameters in the PCOMM V4.1 configuration.

```

*****
*
*          NCP DEFINITIONS FOR X.25 SVC
*
*****
* GENERATED BY X25NPSI
*
X25S139A GROUP DIAL=YES, X
                LEVEL2=BALNAVL2, X
                LEVEL3=BALNAVL3, X
                LEVEL5=NCP, X
                LINEADD=NONE, X
                COMPTAD=NO, X
                COMPOWN=YES, X
                COMPSWP=NO, X
                COMPACB=NO, X
                LINEAUT=YES, X
                LNCTL=SDLC, X
                NPACOLL=NO, X
                TIMER=(BALNATER,,BALNATST,BALNATLS), X
                TYPE=NCP, X
                USERID=(5688035,BALSBOT,NORECMS), X
                XIO=(BALNAVXL,BALNAVXS,BALNAVXI,BALNAVXK)
* GENERATED BY X25NPSI
XL139008 LINE CALL=INOUT, X
                UACB=XA139008
* GENERATED BY X25NPSI
XP139008 PU ANS=CONT, X
                PUTYPE=(1,2)
* GENERATED BY X25NPSI
XL139007 LINE CALL=INOUT, X
                UACB=XA139007
* GENERATED BY X25NPSI
XP139007 PU ANS=CONT, X
                PUTYPE=(1,2)

```

Figure 278. NCP Definitions for X.25 SVC - Options Definition Statement

10.5 Loading and Using PCOMM V4.1 for an X.25 Connection

To operate an X.25 connection from a PCOMM V4.1 workstation successfully, be aware of the following considerations:

- Before loading the X.25 Co-Processor Support Program, you *must* copy the file X25.PRM from the subdirectory containing the PCOMM V4.1 code into the X.25 subdirectory.
- Before loading PCOMM V4.1, the X.25 Co-Processor Support Program *must* be started with the command:

```
X25 X25.PRM
```

- To load successfully, the batch file starting PCOMM V4.1 *must* reside in the same subdirectory as certain files from the X.25 Co-Processor Support Program. Copy the batch file into the C:\X25 subdirectory.
- Unlike configurations for other connection types, when configured for X.25 connection, PCOMM V4.1 *cannot* be removed from memory by the Ctrl+End key sequence. To remove both PCOMM V4.1 and the X.25 Co-Processor Support Program from memory, use the following command from the C:\X25 subdirectory:

```
X25 TERM
```

Chapter 11. CM/2 via LUA Connection

PCOMM 4.1 for OS/2, in conjunction with OS/2 Access Feature, provides you the opportunity to communicate in environments not natively available under PCOMM 4.1 for OS/2, namely ISDN and X.25, as well as more traditional connectivities, such as token-ring, coax and twinax. OS/2 Access Feature handles the SNA and DLC responsibilities while PCOMM V4.1 for OS/2 . provides presentation management API support and conversational client/access API support via the following interfaces:

- *LUA3270 via CM/2* (see 11.3, "Configuring LUA3270 via CM/2 Sessions" on page 253).
- *APPC3270 via CM/2* (see 11.4, "Configuring APPC3270 via CM/2 Sessions" on page 255).
- *5250 via CM/2* (see 11.5, "Configuring 5250 via CM/2 Sessions" on page 257).

11.1 OS/2 Access Feature

OS/2 Access Feature provides additional connectivity and APIs for Personal Communications 4.1 for OS/2 users. Personal Communications V4.0 for OS/2 introduced LUA3270 via CM/2 and APPC3270 via CM/2 for users who had Communication Manager/2 installed on their workstations. With the introduction of the OS/2 Access Feature, you can take advantage of the additional connectivities without having to obtain CM/2 separately. OS/2 Access Feature provides APPC, CPI-C, LUA and ACDI API support as well as ISDN and X.25, token-ring, Ethernet, PC Network, twinaxial, asynchronous, SDLC, IDLC, GDLC, Anynet, and DLUS using Anynet. The Frame-Relay or ATM environments are also available if you configure OS/2 Access Feature for Token-ring and then install the Route Expander or ATM drivers.

For a complete OS/2 Access Feature installation and configuration information or a list supported communication adapters, please refer to the online documentation provided with OS/2 Access Feature and read the *Tell Me About OS/2 Access Feature* document packaged with PCOMM V4.1 for OS/2.

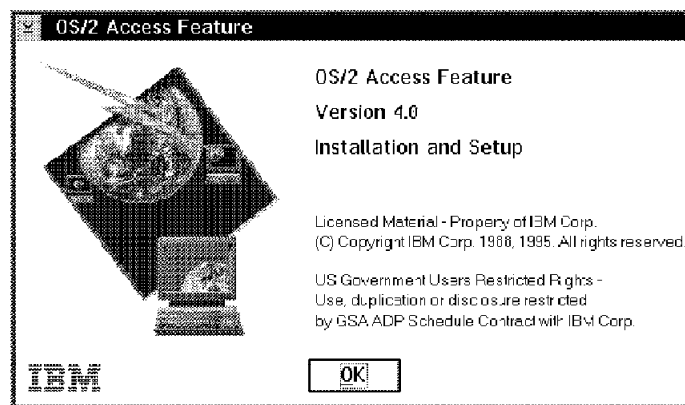


Figure 279. OS/2 Access Feature Installation and Setup - OS/2 Access Feature

OS/2 Access Feature Setup and Installation

We recommend that you install OS/2 Access Feature prior to installing PCOMM Version 4.1, especially if you have been using Communications Manager/2 on the workstation. The reason for this is that OS/2 Access Feature will look for existing CM/2 configuration files and convert them for use by PCOMM 4.1 for OS/2. In addition, OS/2 Access Feature will be aware of the installed communication adapters and/or their drivers. This will help reduce the instances of conflicts developing between OS/2 Access Feature and PCOMM 4.1 for OS/2.

For the most part, users familiar with the setup and installation of Communications Manager/2 will be comfortable installing OS/2 Access Feature. OS/2 Access Feature setup and installation steps is included in the ITSO redbook *Personal Communications V4.1 DOS, Windows, and OS/2 Implementation Guide*, SG24-4681.

11.2 Configuring SNA CM/2 via LUA Sessions

Assuming you have installed the OS/2 Access Feature in your workstation, open an OS/2 window and type C:\CMSETUP and press Enter or if you are configuring a session from your LUA3270 via CM/2 panel click on **Configure LU Definitions** (see Figure 285 on page 254) to get the Communications Manager Setup panel shown in Figure 280.

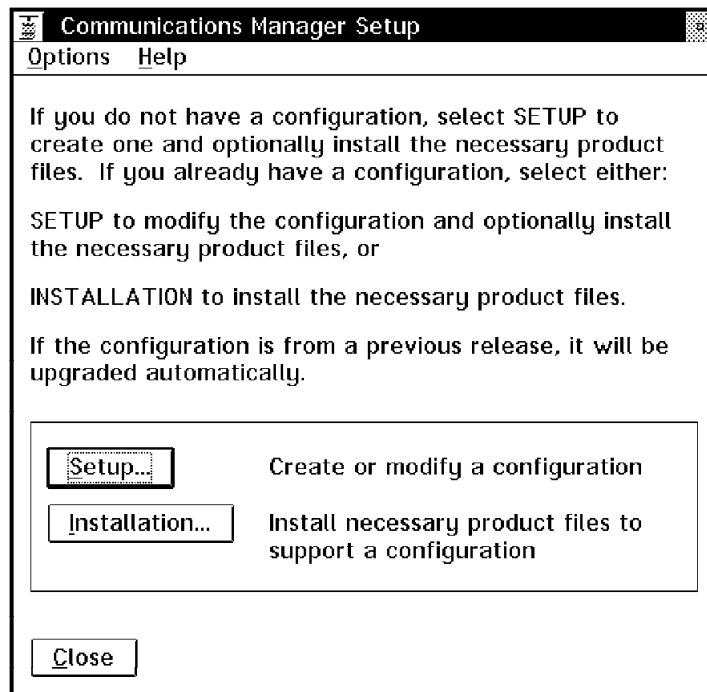


Figure 280. Communication Manager Setup - OS/2 Access Feature

From the Communication Manager Setup panel (see Figure 280), select **Setup** to get the Open Configuration panel shown in Figure 281 on page 251.

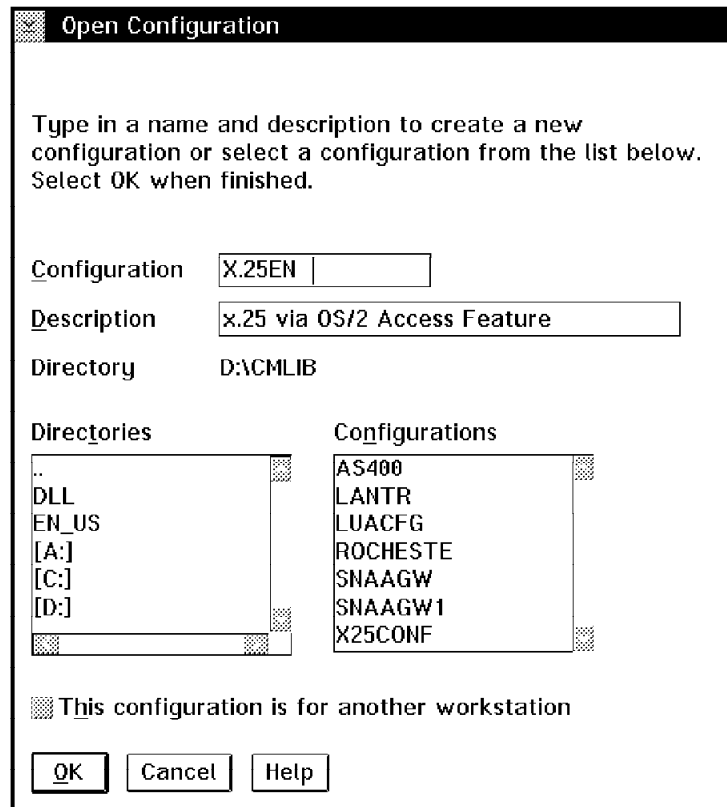


Figure 281. Open Configuration - OS/2 Access Feature

From the Open Configuration panel (see Figure 281), type the name and description of the configuration you wish to use or select one from a drive and directory.

Configuration Specify the name of the configuration you wish to use either by typing a name in this field or by selecting an existing configuration. If CM/2 had been installed previously, you may want to use an existing configuration. By using the Directories and Configurations windows, you can select an existing directory and configuration.

Description You may enter a few words to describe the configuration (optional).

Directories If you have been using CM/2 previously, you can use this window to change drives and subdirectories to locate an existing configuration.

Configurations If a configuration exists on the drive or subdirectory in the Directories window, the name will appear here.

Check the **This configuration is for another workstation** button if you are creating a configuration on one workstation but intend to use the configuration on another workstation. During the configuration of some connectivities, OS/2 Access Feature may attempt to locate or query the communication adapter. If the adapter is not found, OS/2 Access Feature may tell you the adapter is not found and to install the adapter before continuing. If you check **This configuration is for another workstation**, OS/2 Access Feature will not try to locate or query the adapter.

We entered X25EN for our configuration name, typed a brief description of the configuration and clicked on **OK** to get the Communications Manager Configuration Definition panel shown in Figure 282 on page 252.

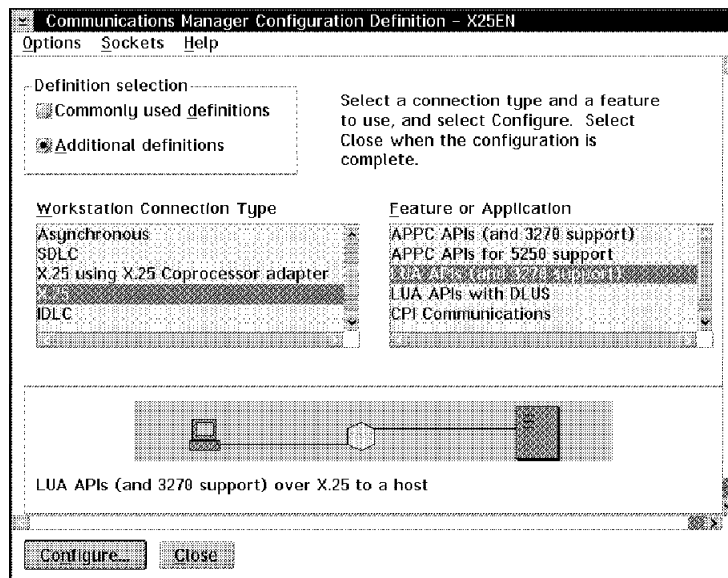


Figure 282. Communications Manager Configuration Definition - X25EN - OS/2 Access Feature

From the Communications Manager Configuration Definition panel, select the type of configuration you want to use. The Definition selection box contains the Commonly used definitions (default) and the Additional definitions buttons.

Commonly used definitions The most frequently used configurations are listed in the Communications Definitions window. If the configuration type you want is not listed here, as is the case of an X.25 connection, click on **Additional definitions**.

Additional definitions Clicking on the **Additional definition** button replaces the Communications Definitions window with the Workstation Connection type and the Feature or Application window.

The Workstation Connection type window lists additional connectivity types including Token-ring, Ethernet, PC Network, Twinaxial, Asynchronous, SDLC, X.25, IDLC, GDLC, Anynet, and DLUS using Anynet.

The Feature or Application box provides LUA API, CPI-C and ACDI redirection support.

The Communications Manager Configuration Definition panel provides two other buttons, Options and Sockets. The Options button allows you to choose additional configuration options, such as verify configuration. Unless you have experience configuring CM/2, we recommend you do not use the advanced options unless necessary to configure multiple connectivities, etc. The Sockets button is used for configuring sockets for Anynet.

For our example, we want to configure an X.25 connection, therefore, we select **Additional definitions**, highlight **X.25** and **LUA APIs (and 3270 support)** and click on **Configure...** to continue the configuration.

At this point, the configuration panels will vary depending on the connectivity you have chosen. Once you have filled in the connectivity panels, you will click on **Close** to return to the Communication Manager Configuration Definition panel (see Figure 282 on page 252).

For more information about the rest of the configuration panels that are not shown here you can use the HELP panels. These panels contain detailed information and it is strongly recommended that you read each panel as you go through the configuration for the the first time.

11.3 Configuring LUA3270 via CM/2 Sessions

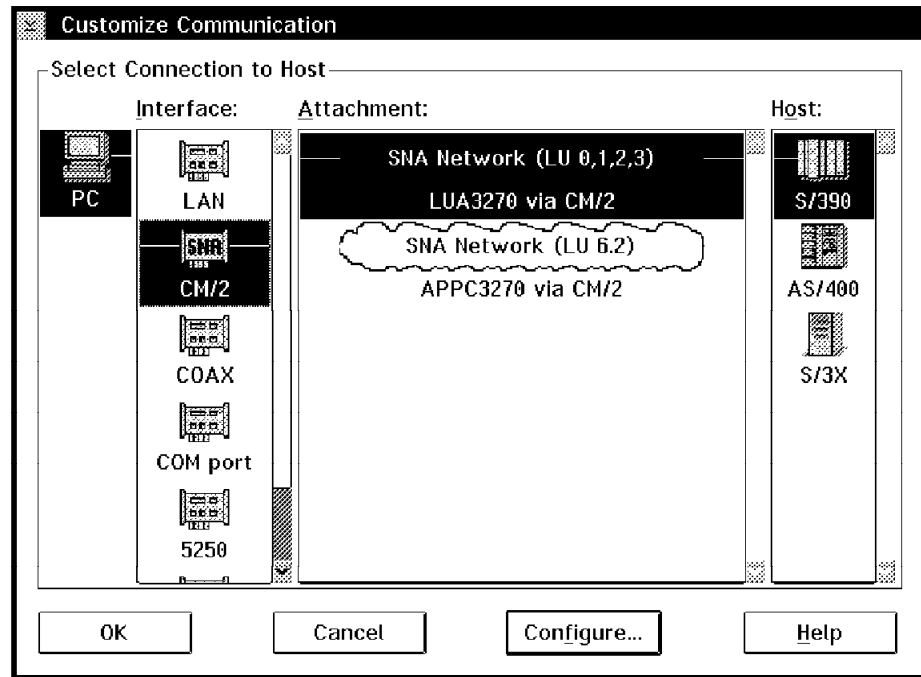


Figure 283. Customize Communication - LUA3270 via CM/2

In the PCOMM 4.1 for OS/2 Customize Communication window, shown in Figure 283, choose:

- CM/2 under Interface
- LUA3270 via CM/2 under Attachment
- S/390 under Host

Click on **Configure...** to get the Customize Communication - 3270 Host panel shown in Figure 284 on page 254.

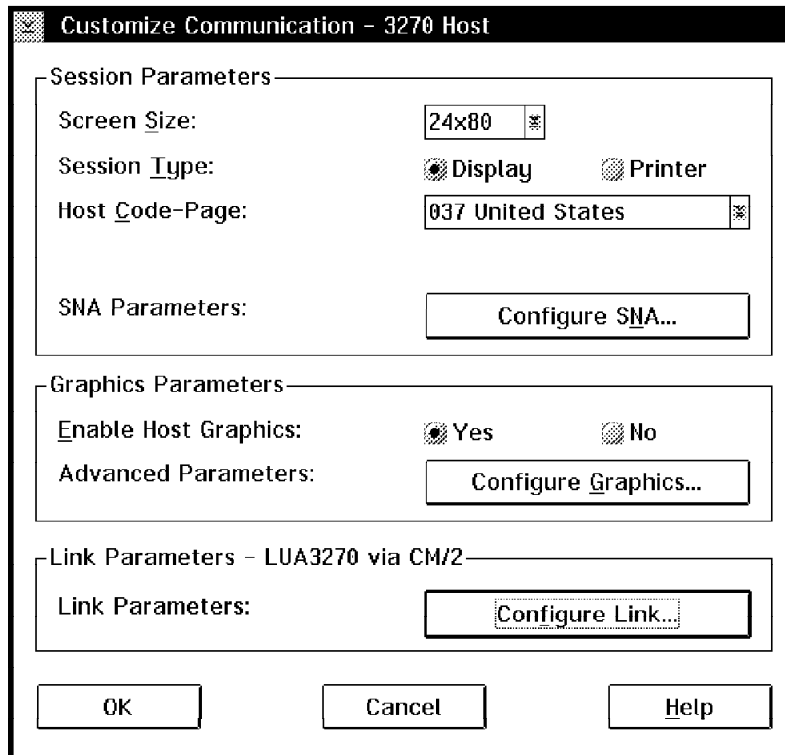


Figure 284. Customize Communication - 3270 Host - LUA3270 via CM/2

From the Customize Communication - 3270 Host window, select **Configure Link...** (see Figure 285).

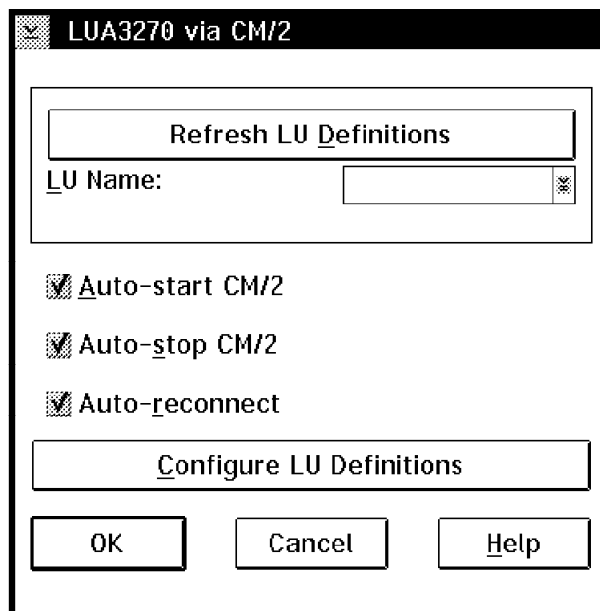


Figure 285. LUA3270 via CM/2 panel

Click on **Configure LU Definition** to get the Communication Manager Setup panel (see Figure 280 on page 250) to create or modify a configuration.

Note: LUA uses the traditional host PU/LU definitions for 3270 devices. From a host perspective, there is absolutely no difference in the definitions or in the flow. The secondary LU is owned by the OS/2 Access Feature. However, the OS/2 Access Feature passes all of the flow to PCOMM V4.1 for OS/2 for interpretation and responses. OS/2 Access Feature views PCOMM V4.1 for OS/2 as a standard application.

Because LUA uses standard dependent LU protocols, it has the limitations of subarea networking. This often means that the PU and LU definitions are statically defined. Note, however, that subarea networking has also evolved significantly over the recent years. Dynamic definitions are now often used by more recent versions of VTAM.

In addition, VTAM 4.2 allows a site to fully use the Dependent LU Server/Requester (DLU S/R) facility. Basically, DLU S/R allows the dependent LU, such as LU2(3270), to flow over an APPN network. This is done by encapsulating the SSCP-PU and SSCP-LU sessions in LU6.2. The LU-LU sessions flow natively through the APPN network (FID2).

11.4 Configuring APPC3270 via CM/2 Sessions

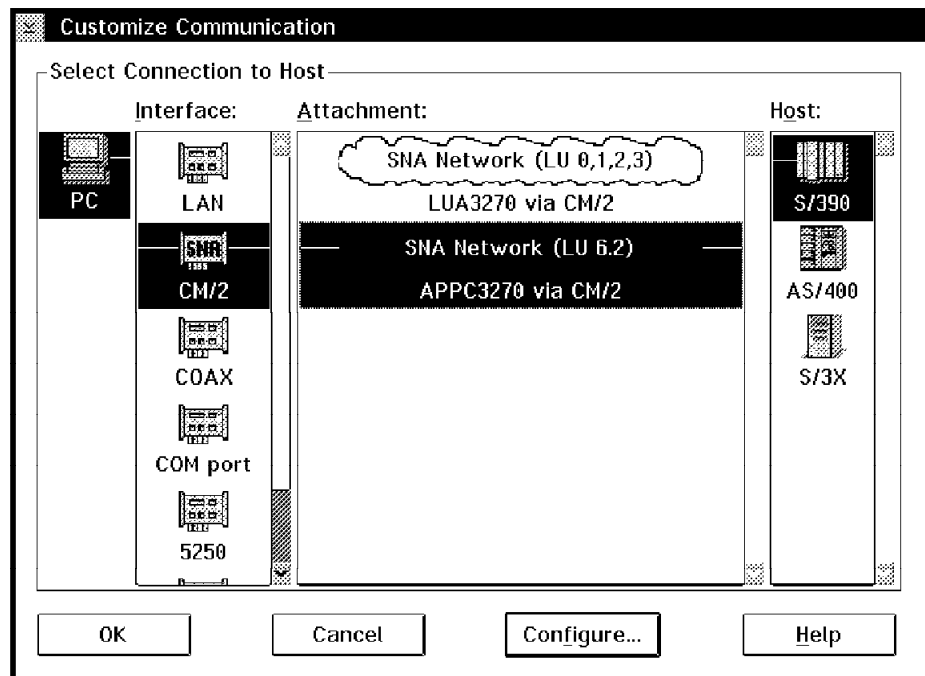


Figure 286. LUA3270 via CM/2

In the PCOMM 4.1 for OS/2 Customize Communication window, choose:

- CM/2 for Interface
- APPC3270 via CM/2 for Attachment
- S/390 for Host

Click on **Configure...** to get the Customize Communication - 3270 Host panel shown in Figure 287 on page 256.

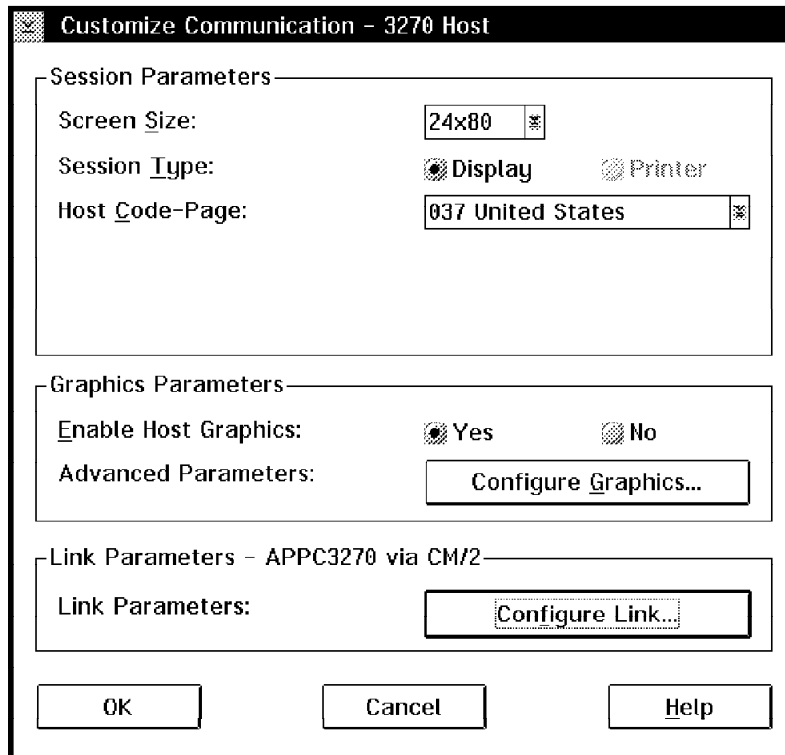


Figure 287. Customize Communication - APPC3270 via CM/2

From the Customize Communication - 3270 Host window, select **Configure Link...**

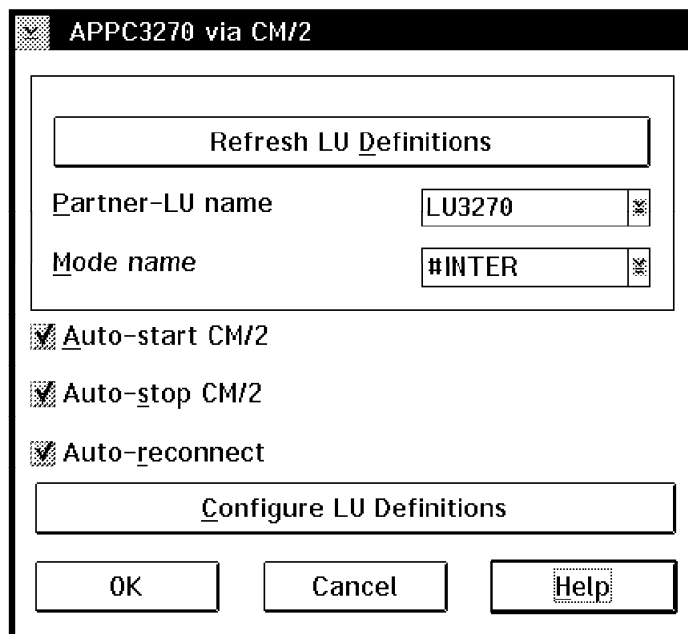


Figure 288. APPC3270 via CM/2 panel

Click on **Configure LU Definition** to get the Communication Manager Setup panel (see Figure 280 on page 250) to create or modify a configuration.

11.5 Configuring 5250 via CM/2 Sessions

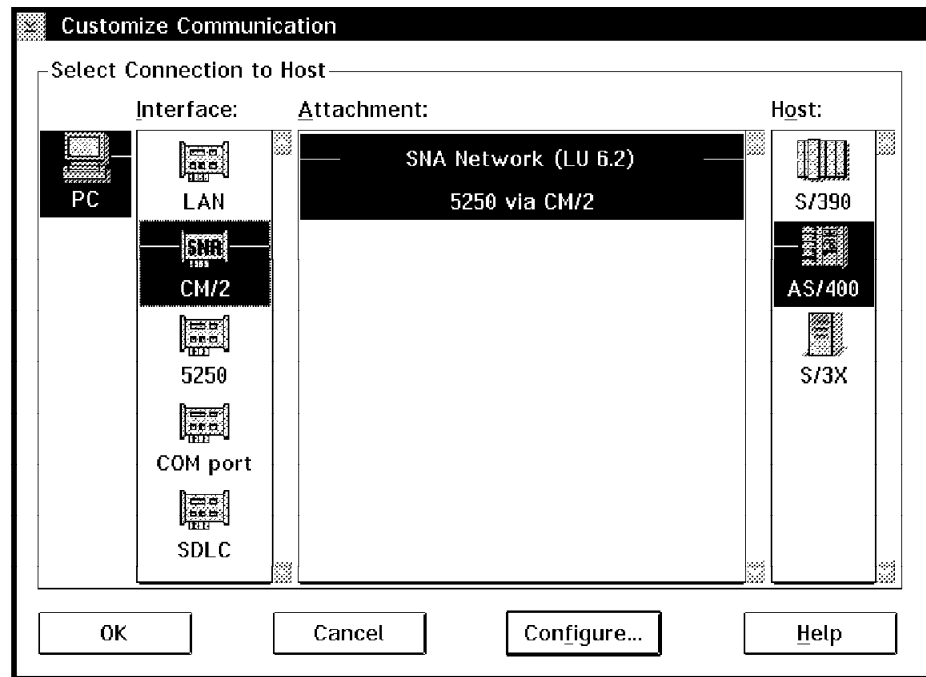


Figure 289. Customize Communication - 5250 via CM/2

In the PCOMM 4.1 for OS/2 Customize Communication window, shown in Figure 289, choose

- CM/2 under Interface
- 5250 via CM/2 under Attachment
- AS/400 under Host

Click on **Configure...** to get the Customize Communication - 5250 Host panel shown in Figure 290.

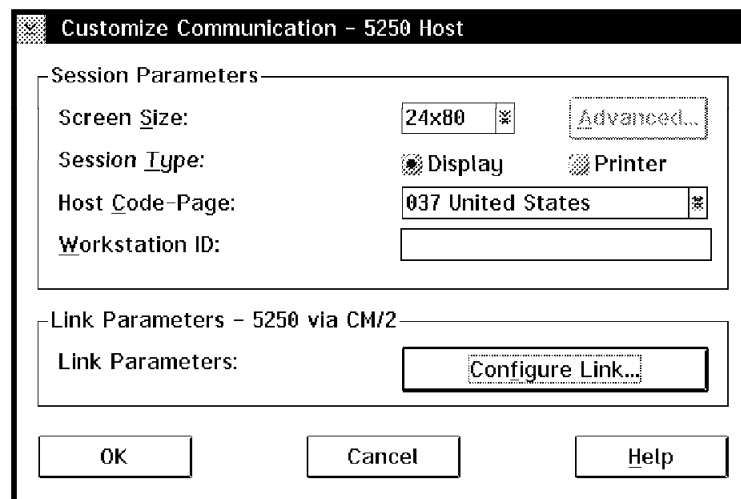


Figure 290. Customize Communication - 5250 Host - 5250 via CM/2

From the Customize Communication - 5250 Host window, select **Configure Link...** (see Figure 290).

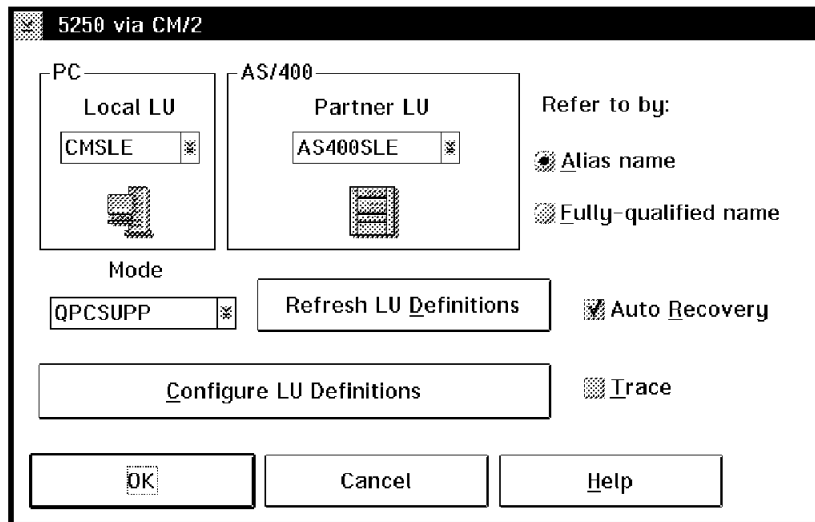


Figure 291. 5250 Host - 5250 via CM/2

Click on **Configure LU Definition** to get the Communication Manager Setup panel (see Figure 280 on page 250) to create or modify a configuration.

Part 5. Appendix

This last part of the document provides an overview of some important utilities and functions that make it easier to work with Personal Communications.

Appendix A. Miscellaneous Usability Enhancements

In this chapter we describe some of the important utilities and functions that make it easier to work with Personal Communications/3270.

A.1 LAN Support Program Considerations

In a LAN environment, PCOMM V4.1 uses IEEE 802.2 and/or NetBIOS protocols to communicate with a gateway. The IEEE 802.2 and NetBIOS protocols are implemented via device drivers that are provided by the LAN Support Program (LSP) (or NTS/2 for OS/2 V2.x environments).

For a better understanding of NetBIOS and IEEE 802.2 parameters and their relationship, a basic knowledge of SAPs, link stations and NetBIOS sessions is needed. The following are not meant to be precise definitions but may be helpful:

- A *link station* is a protocol machine in a node that manages the exchange of data traffic with another communicating link station.
- A *SAP (service access point)* is a logical point at which an application acquires services of the IEEE 802.2 protocol. A single SAP can have many link stations terminating in it.
- A *NetBIOS session* is a logical connection between any two names on the network. NetBIOS maintains a table of names by which the node is known in the network.

The PCOMM V4.1 for DOS (full-function mode) gateway communicates downstream over the LAN to the network stations via IEEE 802.2 protocols.

When communicating via IEEE 802.2, PCOMM V4.1 will use one SAP and as many link stations as the number of physical machines that it is talking to.

NetBIOS is only used when PCOMM V4.1 is configured as a station for a PC 3270 Emulation Program V3.05 gateway. When NetBIOS is used, one NetBIOS session and one NetBIOS name will be required for each host session. NetBIOS itself uses one SAP and as many link stations as the number of physical machines that it is talking to. NetBIOS is also used when you have a DOS LAN server or requestor in addition to PCOMM V4.1. The SAP'S, link stations and names of both applications *must* be set to the number of physical machines they are talking to.

A.2 LAN Support Program Configuration Examples

The following environment was set up to run the examples:

PC01 - PCOMM V4.1 Gateway
PC02 - 3270 Emulation Program Version 3.05 Gateway
PC03 - 3270 Emulation Program Version 3.05 Gateway
PC04 - PCOMM V4.1 Workstation
PC10 - PC LAN Program 1.34 Domain Controller
PC09 - PC LAN Program 1.34 Additional Server

Figure 292 on page 262 shows the environment used to test the various configurations.

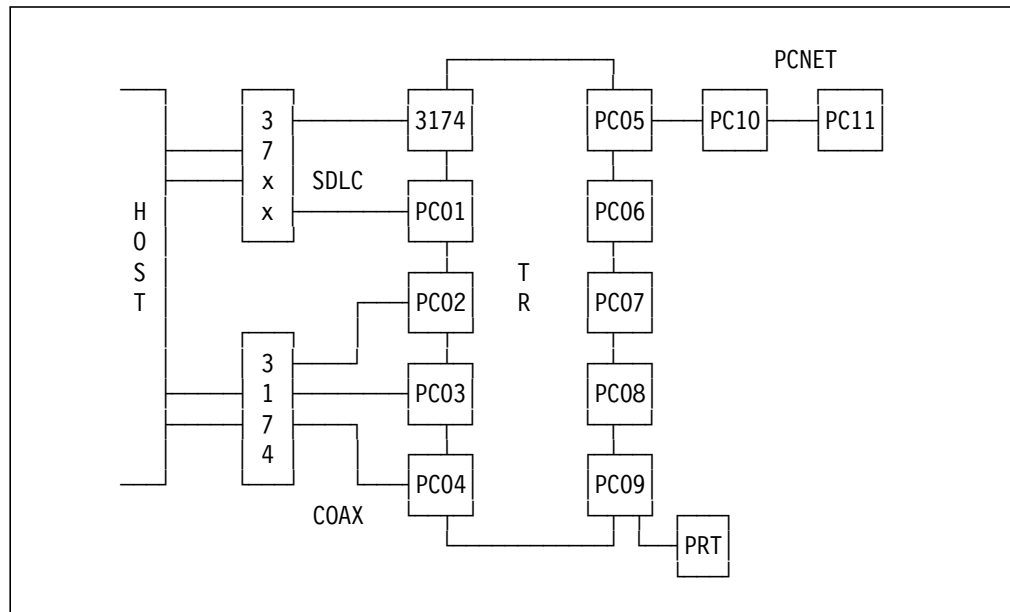


Figure 292. LAN Test Environment

A.3 PCOMM V4.1 Being the Only LAN Application in the Network Station

Consider the following examples:

- **Case 01** - PCOMM V4.1 station with one host session being provided by PC 3270 Emulation Program V3.05 gateway
- **Case 02** - PCOMM V4.1 station with two host sessions being provided by PC 3270 Emulation Program V3.05 gateway
- **Case 03** - PCOMM V4.1 station with three host sessions being provided as follows:
 - Two host sessions from a PC 3270 Emulation Program V3.05 gateway
 - One host session from a second PC 3270 Emulation Program V3.05 gateway.
- **Case 04** - PCOMM V4.1 station with one host session being provided by a 3174 gateway
- **Case 05** - PCOMM V4.1 station with two host sessions being provided by a 3174 gateway
- **Case 06** - PCOMM V4.1 station with three host sessions being provided as follows:
 - Two host sessions from a 3174 gateway
 - One host session from a PCOMM V4.1 gateway.
- **Case 07** - PCOMM V4.1 station with five host sessions being provided as follows:
 - Two host sessions from a 3174 gateway
 - Three host sessions from a PCOMM V4.1 gateway.

- **Case 08** - PCOMM V4.1 station with eight host sessions being provided as follows:
 - Two host sessions from a 3174 gateway
 - Two host sessions from a PCOMM V4.1 gateway
 - Two host sessions from a PC 3270 Emulation Program V3.05 gateway
 - One host session from a second PC 3270 Emulation Program V3.05 gateway
 - One host session via a local DFT attachment (this session does not use the network at all but was included in this example to show that it can be mixed with network sessions).
- **Case 09** - PCOMM V4.1 gateway for 20 network stations with IEEE 802.2 communication to the host via a 3174 gateway
- **Case 10** - PCOMM V4.1 gateway for 20 network stations via SDLC or X.25 communication to the host

Figure 293 shows the absolute minimum NetBIOS parameter values for the above examples. For a station configuration, we considered that a file transfer will be performed in one host session while you are working on other sessions.

	NETBIOS PARAMETERS							IEEE 802.2	
	O=	S=	ST=	C=	N=	ES=	EST=	SAP	LK ST
Case 01	N	1	1	2	2			1	1
Case 02	N	2	1	4	3			1	1
Case 03	N	3	2	5	4			1	2
Case 04								1	1
Case 05								1	1
Case 06								1	2
Case 07								1	2
Case 08	Y	3	2	5	4	1	2	2	4
Case 09								1	21
Case 10								1	20

Notes:

1. The symbols O=, ES= and so forth refer to the corresponding LAN Support Program command line parameters. The symbol LK ST stands for LINK STATIONS. The IEEE 802.2 table is for reference only.
2. No parameter values are specified for Cases 04 thru 07, 09 and 10. In these cases the NetBIOS device driver DXMT0MOD.SYS does not need to be loaded.

Figure 293. LAN Support Program NetBIOS Parameters and IEEE 802.2 Resources

For a PCOMM V4.1 gateway, the number of link stations required by PCOMM V4.1 is the *Number of network stations* parameter entered on the Downstream-Connection Options panel. Add one link station if the gateway uses IEEE 802.2 to communicate with the host.

For a PCOMM V4.1 station, the number of link stations required by PCOMM V4.1 is the sum of all gateways providing sessions to this station.

As you may have noticed, in Case 08 the NetBIOS OPEN.ON.LOAD= parameter (O=) has been coded as Y (yes). In fact, the default setting is O=Y. It is necessary because the LAN adapter *must* be opened with enough resources allocated for both NetBIOS and IEEE 802.2 interfaces. PCOMM V4.1 CONFIG.EXE program builds the configuration batch file with the PCSTKR.EXE (resident module for SNA LAN communication) being loaded before PCSVLAN.EXE (resident module for PC 3270 Emulation Program V3.0 LAN communication). If the adapter is not opened by the LAN Support Program, when PCSTKR.EXE is loaded, it opens the LAN adapter with the required resources for the IEEE 802.2 interface only. When PCSVLAN.EXE (a NetBIOS application) is loaded it fails due to the lack of NetBIOS resources.

Figure 294 shows the SAPs and LINK STATIONS relationship for Case 08.

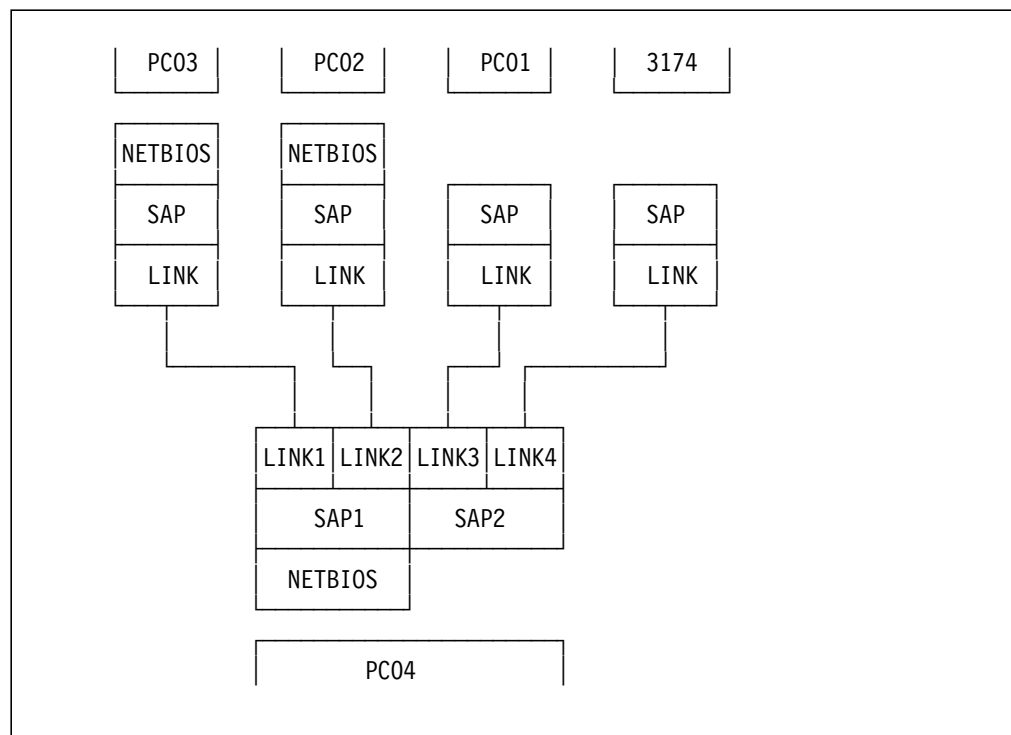


Figure 294. SAPs and Link Stations for Case 08

A.4 PCOMM V4.1 with Other LAN Applications in the Network Station

When a PCOMM V4.1 station or gateway is loaded with other network application programs, NetBIOS and/or IEEE 802.2 resources *must* match the requirements of all programs using the LAN adapter.

We present you with a PC LAN Program V1.34 NetBIOS configuration, a PCOMM V4.1 configuration, and then combine them for a better understanding of the parameters that *must* be specified.

- **Case 01** - PC LAN Program V1.34 Extended Services redirector. It is going to use resources from both PC10 (domain controller) and PC09 (additional server). The following command line was used to start the network station:
NET START RDR PC01 /XS /SRV:2 /SES:5 /CMD:2
- **Case 02** - PCOMM V4.1 station with three host sessions being provided by a 3174 gateway
- **Case 03** - PCOMM V4.1 station with six host sessions being provided as follows:
 - Two host sessions from a PC 3270 Emulation Program V3.05 gateway
 - One host session from a second PC 3270 Emulation Program V3.05 gateway
 - Three host session from a 3174 gateway.
- **Case 04** - PCOMM V4.1 gateway for 20 stations with IEEE 802.2 communication to the host
- **Case 05** - Case 01 and 02 combined
- **Case 06** - Case 01 and 03 combined
- **Case 07** - Case 01 and 04 combined

Figure 295 shows the NetBIOS parameter values for the above examples.

		NETBIOS PARAMETERS							IEEE 802.2	
		O=	S=	ST=	C=	N=	ES=	EST=	SAP	LK ST
Case 01		N	5	2	2	6			1	2
Case 02									1	1
Case 03		Y	3	2	5	4	1	1	2	3
Case 04									1	21
Case 05		Y	5	2	2	6	1	1	2	3
Case 06		Y	7	4	6	9	1	1	2	5
Case 07		Y	5	2	2	6	1	21	2	23

Notes:

1. The symbols O=, ES= and so forth refer to the corresponding LAN Support Program command line parameters. The symbol LK ST stands for LINK STATIONS. The IEEE 802.2 table is for reference only.
2. No parameter values are specified for Cases 02 and 04. In these cases, the NetBIOS device driver DXMT0MOD.SYS does not need to be loaded.

Figure 295. LAN Support Program NetBIOS Parameters and IEEE 802.2 Resources

The NetBIOS parameter values in Case 06 is not the sum of Case 01 and Case 03 as one would expect. This is because NetBIOS resources required to start up PC LAN Program V1.34 are not all used during its operation. Once a user logs on to the network, NetBIOS resources that are actually being used by PC LAN Program V1.34 in that environment are two sessions with each server and five NetBIOS names; therefore, one NetBIOS session and one name remain available.

We have found that with the following startup sequence, an out of environment space message is displayed:

1. User loads PC LAN Program V1.34
2. User logs on and then returns to DOS
3. User loads PCOMM V4.1

To solve this problem, the command processor startup parameters that are used by PC LAN Program V1.34 *must* be changed. This command resides in the domain controller C:\PCLP13XS\BATCHE\DOS.BAT file. This file contains the command:

```
%comspec% %1 %2 %3 %4 %5 %6 %7 %8 %9
```

It should be changed to:

```
%comspec% /E:4000 %1 %2 ....
```

Note that the /E:4000 parameter is valid only if the command processor that is to be loaded is COMMAND.COM.

A.5 Calculating Token-Ring RAM Usage

Each token-ring adapter contains an amount of random access memory (RAM) that is shared between the PC and the adapter. There may be 8 KB, 16 KB or 64 KB of shared RAM as follows:

- 8 KB** Token-ring Network PC Adapter
- 16 KB** Token-ring Network Trace and Performance Adapter
- 16 KB** Token-ring Network PC Adapter II
- 16 KB** Token-ring Network PC Adapter/A
- 64 KB** Token-ring Network 16/4 Adapter
- 64 KB** Token-ring Network 16/4 Adapter/A
- 64 KB** Token-ring Network 16/4 Trace and Performance Adapter

The amount of shared RAM available limits the number of network stations that can attach to a gateway simultaneously. The same is true for a network station attached to several gateways.

The assignment of shared RAM in a token-ring adapter is as shown in Table 10.

Table 10 (Page 1 of 2). Shared RAM Assignment	
Bytes	Function
1588	For adapter work and communication area
64	For each SAP
14*	For each group SAP
144	For each link station

Table 10 (Page 2 of 2). Shared RAM Assignment	
Bytes	Function
96 to 17960	For each adapter transmit buffer defined by the application program
96 to 2048	For each adapter receive buffer defined by the application or configured by the adapter
512	Reserved (on 64 KB token-ring adapters only)
Note: * Plus 2 times the maximum group SAP members	

For all formulas, *subtract 512 bytes of the shared RAM value* if using a token-ring Network 16/4 Adapter(/A).

The following shows the shared RAM requirements of PCOMM V4.1. If another application is using the same adapter, those requirements *must* be added.

Work area	Always 1588 bytes.
Individual SAPs	64 bytes for each SAP. LAN attachment via 802.2 protocol requires only one SAP.
Transmit buffers	Take the maximum PIU size for all links on this adapter, add 6 bytes overhead, and round up to a multiple of 8. Only 1 transmit buffer is required. TBreq = (PIUsize+6) rounded up to multiple of 8
Receive buffers	264 bytes for each receive buffer, which is 256 bytes of data plus 8 bytes overhead. Enough buffers are reserved to equal 2 maximum PIUs. For a gateway configuration add 1 extra receive buffer. RBreqG = 264 x ((PIUsize/256 rounded up) x 2)+1) RBreqS = 264 x (PIUsize/256 rounded up) x 2)
Link stations	144 bytes for each link station. LSnum = (sharedRAM - (1588+64+TBreq+RBreq))/144

To calculate the memory requirement when PCOMM V4.1 opens the adapter:

$$\text{sharedRAM} = (\text{LSnum} \times 144) + 1588 + 64 + \text{TBreq} + \text{RBreqG}(\text{S})$$

When the adapter is opened by the LAN Support Program, the number of receive buffers cannot be specified. After other memory requirements have been met, the adapter will configure all remaining RAM as receive buffers. The number of receive buffers can be calculated as follows:

$$\text{RBnum} = (\text{sharedRAM} - (1588 + (\text{ES} + 1) \times 64 + (\text{ST} + \text{EST}) \times 144 + \text{DS} \times \text{DN})) / \text{R}$$

The LAN Support Program parameters are as follows:

ST	NetBIOS interface link stations
ES	Extra SAPs
EST	Additional link stations
DS	Adapter's transmit buffer(s) size
DN	Number of adapter transmit buffers
R	Adapter's receive buffer(s) size

Substituting PCOMM V4.1 values in the above formula, we get the following relationships:

Gateway	$528 \times [\text{PIU}/256]\text{rounded up} + [\text{PIU}+6]\text{rounded up to mul 8}$ = sharedRAM - 1452 - 144 x totLS
Station	$528 \times [\text{PIU}/256]\text{rounded up} + [\text{PIU}+6]\text{rounded up to mul 8}$ = sharedRAM - 1716 - 144 x totLS
Note: totLS = NetBIOS+PCOMM V4.1 link stations	

Using the above formulas, you can guarantee that the adapter will configure an adequate number of receive buffers for PCOMM V4.1. Note that PCOMM V4.1 still works with a smaller number of receive buffers but you should expect a performance degradation.

A.5.1 Example Calculation

This example is for Case 06 in Figure 295 on page 265:

- PCOMM V4.1 PIUsize = 2012
 - NetBIOS parameters: O=Y S=7 ST=4 C=6 N=9 ES=1 EST=1 DN=1 R=264 DS=see below.
1. Transmit buffer size calculation:
 - DS = (PIUsize+6) rounded up to multiple of 8
 - DS = 2024
 2. Maximum number of link stations calculation:
 - $528 \times [\text{PIUsize}/256]\text{rounded up} + 2024 = \text{sharedRAM} - 1716 - 144 \times \text{totLS}$
 - $528 \times 8 + 2024 = \text{sharedRAM} - 1716 - 144 \times \text{totLS}$
 - $144 \times \text{totLS} = \text{sharedRAM} - 7964$
 - For a 8 KB token-ring adapter
 - $144 \times \text{totLS} = 8192 - 7964$
 - totLS = 1 (we need 5)
 - For a 16 KB token-ring adapter
 - $144 \times \text{totLS} = 16384 - 7964$
 - totLS = 58
 - For a 64 KB token-ring adapter
 - $144 \times \text{totLS} = 65536 - 512 - 7964$
 - totLS = 396
 3. Receive buffers calculation:
 - Adequate receive buffers for PCOMM V4.1:
 - $\text{RBreqS} = 264 \times ((\text{PIUsize}/256)\text{rounded up} \times 2)$
 - $\text{RBreqS} = 264 \times 8 \times 2$
 - RBreqS = 4224 bytes
 - $\text{RBreqS}/264 = 16$ receive buffers
 - Receive buffers for 8 KB token-ring adapter with five link stations:
 - $\text{RBnum} \times \text{R} = (\text{sharedRAM} - (1588 + (\text{ES}+1) \times 64 + (\text{ST}+\text{EST}) \times 144 + \text{DS} \times \text{DN}))$
 - $\text{RBnum} \times \text{R} = 8192 - 1588 - 128 - 5 \times 144 - 2024$
 - $\text{RBnum} \times \text{R} = 3732$ bytes
 - $3732/264 = 14$ receive buffers (not enough for PCOMM V4.1)

- Receive buffers for 16 KB token-ring adapter with five link stations:
 - $RBnum \times R = (sharedRAM - (1588 + (ES + 1) \times 64 + (ST + EST) \times 144 + DS \times DN))$
 - $RBnum \times R = 16384 - 1588 - 128 - 5 \times 144 - 2024$
 - $RBnum \times R = 11924$ bytes
 - $3732/264 = 45$ receive buffers
- Receive buffers for 64 KB token-ring adapter with five link stations:
 - $RBnum \times R = (sharedRAM - (1588 + (ES + 1) \times 64 + (ST + EST) \times 144 + DS \times DN))$
 - $RBnum \times R = 65536 - 512 - 1588 - 128 - 5 \times 144 - 2024$
 - $RBnum \times R = 60564$ bytes
 - $60564/264 = 229$ receive buffers

In this example, both token-ring adapters would work but only the 16 KB adapter would have adequate receive buffers for PCOMM V4.1. In order to use an 8 KB token-ring adapter with five link stations, two SAPs, 264-byte receive buffers and meet PCOMM V4.1 requirements, PIU size should be reduced.

A.6 Network Management via the 3174 Establishment Controller

PCOMM V4.1, when DFT-connected to a 3174 controller, supports the following network management functions:

- Network Asset Management
 - Vital Product Data
 - Extended Vital Product Data
- Alerts
- Response Time Monitor

A.6.1 Network Asset Management

Network asset management (NAM) automates the collection of product identification information, such as machine type, model, serial number, etc. It enables the network operator to control the terminal inventory of remote locations from a central site. Without this function, the operator has to check all the terminals' serial numbers by means of visual verification upon visiting all the locations or by calling terminal users and asking them to check the numbers. This can be a major task in large, geographically distributed networks.

Network asset management information is collected centrally at the host by NetView. The information is collected online either through operator commands or by means of a command list. In a multi-domain network, VPD is collected at each domain and then forwarded to a focal point host. Management reports may be generated at the host by the service level reporter program product (MVS only).

For more information, refer to *NetView Installation and Administration Guide* SC31-6018 and *NetView Operation* SC31-6019.

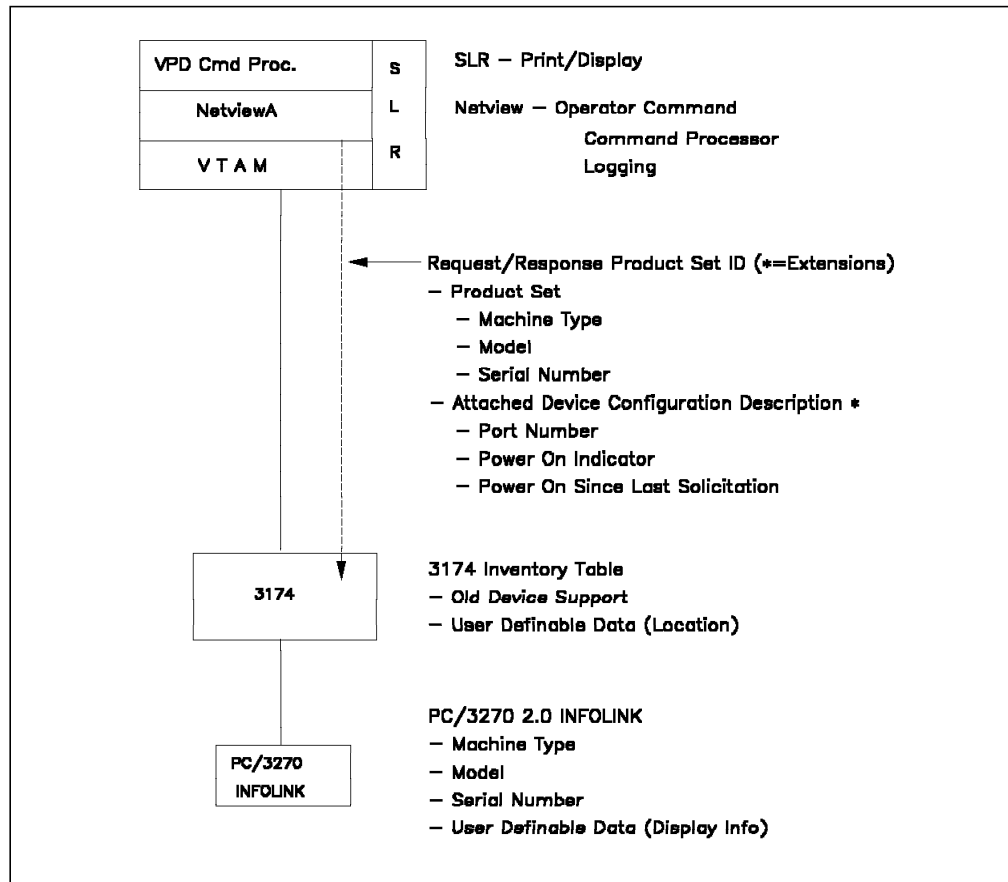


Figure 296. Network Asset Management Functions

Vital Product Data

Vital product data (VPD) is product identification information, such as machine type, model, serial number, etc. PCOMM V4.1 stores the 36-byte VPD information on a hard disk or a diskette by using the VPD Setup and Utility. PCOMM V4.1 passes this data to the 3174/3274 control unit each time the emulator responds to the control unit with a power-on reset (POR), that is, each time the emulator is loaded. VPD can be used in both DOS and Windows 3.1.

The default VPD is:

- Device type - (4) : PCS (*)
- Device characteristics - (1) : IBM PC
- Model number - (3) : null (*)
- Origin - (2) : null (*)
- Sequence - (7) : null (*)
- Release number - (3) : 2.0
- Device specific info. - (16) : null

(*) These fields are replaced by the user data input via the VPD setup utility.

Note: The VPD setup option on the 3270 Setup and Utility panel is displayed only if PCOMM V4.1 has a CUT or DFT link to a controller which supports VPD.

VPD is supported in PCOMM V4.1 for Windows or OS/2 for DFT connections only. The VPD dialog box can be chosen from the DFT Link Parameters window (Figure 30 on page 40) during the customize process (refer to 3.2.1, “Configuring PCOMM V4.1 for DFT Connection” on page 37).

Extended Vital Product Data

Customers may wish to store additional data for each display and 3174, over and above VPD. Extended VPD or user-definable data (UDD) can be specified using the Extended VPD setup utility, if the PCOMM V4.1 workstation is attached to a 3174 with Configuration Support-B Release 2 and higher. The controller supplies a *label* (UDD template), which is downloaded to the workstation when PCOMM V4.1 sends a POR (power-on-reset) message to the controller (upon loading the emulator). The user inputs the appropriate data for each label specified by the controller.

User-definable data may include the following:

- Physical location, building number, room number, etc.
- User identification, telephone number, etc.
- Charging information.

At POR time, the UDD is exchanged between the 3174 and the PCOMM V4.1. If the UDD has been updated in the Extended VPD setup utility, the updated UDD is uploaded to the 3174 at the next PCOMM V4.1 POR (see Figure 297).

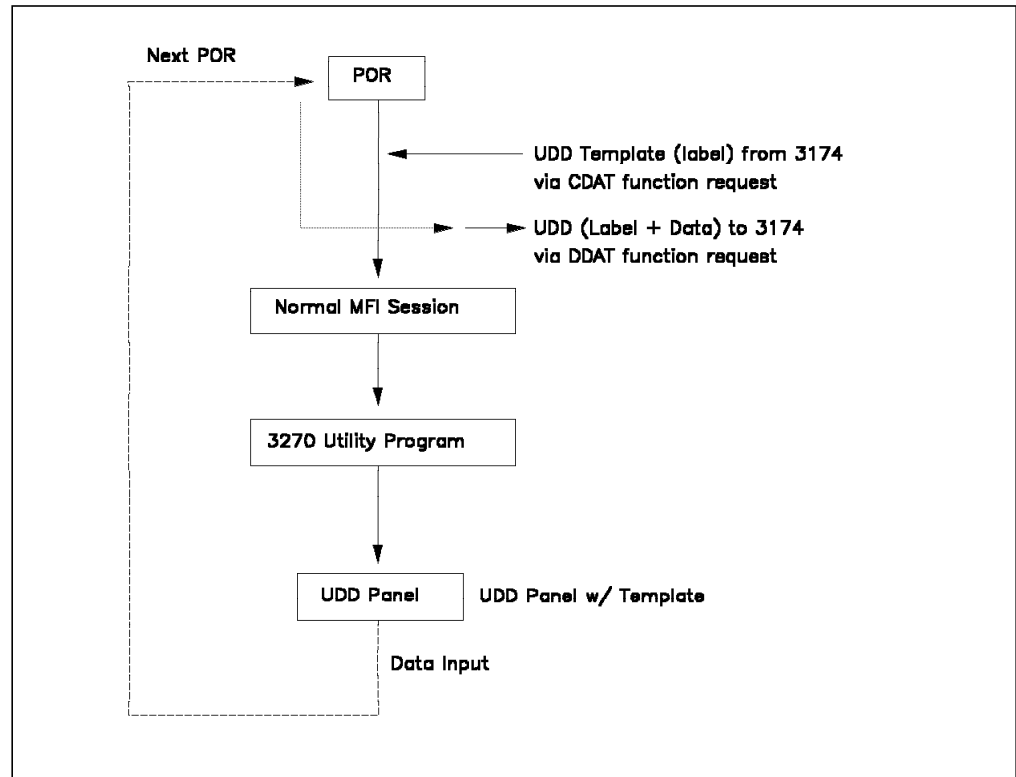


Figure 297. The User-Definable Data Update Process

Up to eight UDD sets per workstation are supported. Up to 45 characters of UDD may be entered in each of the eight sets. The data is stored on the hard disk or diskette of the workstation.

If the 3174 is IMLed or the power is turned off, the data fields stored in the controller are erased. However, the labels that were entered during 3174 customization are saved on the control disk that was used for IML. If the 3174 is powered off, the extended vital product data is saved in the terminal, even if the power to the terminal itself is turned off.

Note: The extended VPD setup option on the 3270 Setup and Utility panel is displayed only if PCOMM V4.1 has a DFT link to the controller and Question 802: Prompts for extended vital product data has been enabled during 3174 customization.

There are two ways to define extended VPD in your 3174:

- Via online test display
- During customization

Figure 298 and Figure 299 are the customization panels where you enable extended VPD in your 3174.

```

_____ Device Definition _____

Select one or more Device Definitions. All selections
will be processed without returning to this panel.

      800 Printer Authorization Matrix (PAM) - 0 0
      801 Logical Terminal Assignment      - 0
      802 Prompts for Extended VPD        - 1
      803 ISDN Definition                  - 0

PF: 3=Quit                      8=Fwd

```

Figure 298. 3174 Device Definition Panel

Respond to Question 802 with a 1 (1=enabled) and press PF8. The panel shown in Figure 299 is displayed.

```

_____ Prompts for Extended VPD _____

Type the words below that you want to appear as prompts on the Update
Extended Vital Product Data panel (displayed during online tests or
terminal setup).

      1. TELEPHONE_____
      2. ROOM_____
      3. USER NAME_____
      4. _____
      5. _____
      6. _____
      7. _____
      8. _____

PF: 3=Quit    4=Default    7=Back    8=Fwd

```

Figure 299. 3174 Prompts for Extended VPD Panel

Enter the prompts or labels (up to eight) and press PF8.

When you start the 3270 Setup and Utility for DOS (full-function mode), you will get the Vital Product Data setup and the Extended Vital Product Data setup options.

When you select the Extended Vital Product Data setup, you will get the panel shown in Figure 300. The prompts that you have specified during 3174 customization (Figure 299 on page 272) are displayed, allowing you to enter the information for extended VPD.

Refer to the *PCOMM V4.1 User's Guide for for DOS (Full-Function Mode)* for further information about this panel.

```

Extended Vital Product Data Setup
-----
Move cursor to the desired field. Type the requested information.

Label          Data
1. TELEPHONE    * [123-345-1234567]
2. ROOM         * [Project Room]
3. USER NAME    * [John Smith]
4.              * [
5.              * [
6.              * [
7.              * [
8.              * [

(Valid input characters: A-Z a-z 0-9 Space +<=>%&*'"(),_-./:;?)

Esc=Cancel  F1=Help  F3=Save and Exit

```

Figure 300. Extended VPD Setup Panel

Extended VPD is available in PCOMM V4.1 for Windows 3.1 from the Communication pull-down menu of an active WorkStation connected to a 3174, which provides the usability for extended VPD. If Extended VPD is not supported by the 3174, the Extended Vital Product Data option will not appear in the list under the Communication pull-down menu.

A.6.2 Response Time Monitor

The response time monitor function (RTM) is a tool for network management, used to measure and evaluate response times. The RTM function measures and records the response time from the recognition of the inbound attention identification (AID) request from PCOMM V4.1 that communicates with the host. RTM information can be retrieved either by a network management application in the host (for example, NetView) or by a display station, or both. Authorized display stations can retrieve and display two kinds of RTM data:

- RTM log
- RTM LTTI (last transaction time indicator)

In order to use the RTM function, an RTM function key *must* be defined in your PCOMM V4.1 keyboard layout and also in the 3174 customization.

To enable the RTM function on your 3174 you *must* answer Question 127: Response Time Monitor Definition and Question 128: RTM Boundaries and Interface Specification during 3174 customization. The Question 128 panel appears if your response to Question 127 was non-zero.

For detailed information about 3174 RTM customization and planning, refer to:

- *3174 Establishment Controller Planning Guide:*
 - GA27-3844 for Configuration Support A and S
 - GA27-3862 for Configuration Support B
 - GA27-3918 for Configuration Support C
- *3174 Establishment Controller Functional Description*, GA23-0218-08

A.6.3 Alerts

The alert function is a mechanism whereby the controller can pass error conditions relating to problems within the subsystem to a host via an SSCP-PU session. Such errors are passed up to the host via the network management vector transport (NMVT).

When the device is attached to an SNA controller, AEER status is used to generate alerts for errors detected by the device. AEER status generates an NMVT formatted record for 6nn and 7nn errors only, that is, DFT errors only. The 3174 SNA alert function sends problem determination information, collected by the 3174 or entered by the operator, to the hardware monitor component of the NetView program.

The 3174 sends problem determination information (alert messages) to the host NetView program in response to the following events:

- Controller errors
- Attached-terminal errors
- Application program checks
- Operator-generated alerts
- Token-ring errors
- Integrated services digital network (ISDN) errors
- Advanced peer-to-peer networking (APPN) errors
- 3174 Peer Communication errors

Note: PCOMM V4.1 reports program check errors only.

During the alert generation process, statistics received by the NetView program are sent to a statistical processor and compared with a user-established error-to-traffic ratio. If the statistical data is greater than the established threshold value, a performance event record is created.

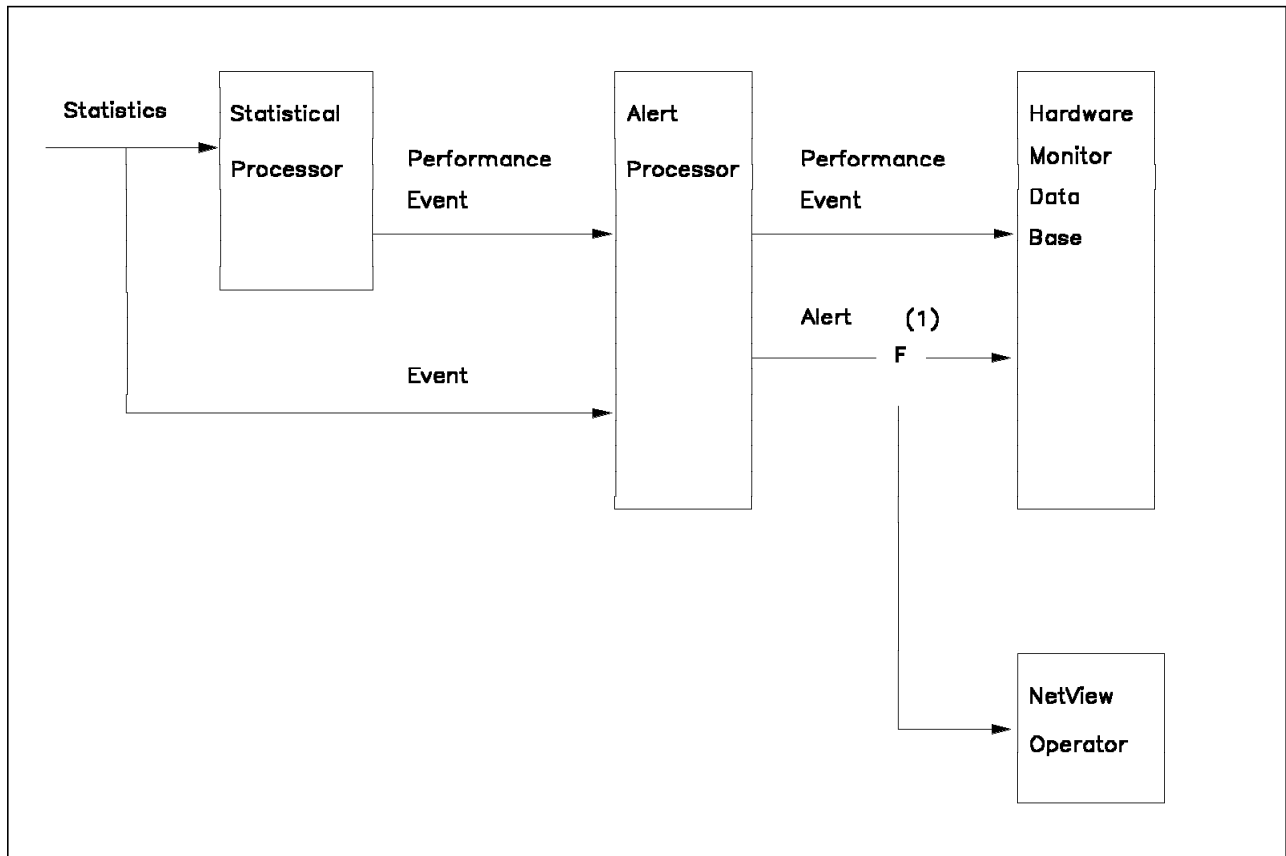


Figure 301. Alert Generation

The performance event record is then processed by the alert processor and the alert record is formatted. This newly generated alert record is directed to the NetView operator and is also entered into the database.

Alerts are stored in the hardware monitor database and displayed (at the host) to the user in a reverse chronological listing that may be viewed in several display stations.

Refer to *3174 Establishment Controller Functional Description*, GA23-0218 for more information about alerts.

Note that alerts can also be forwarded to NetView by a PCOMM V4.1 network station on a LAN.

Appendix B. Special Notices

This publication is intended to help IBM and customer personnel to install, customize and use the Personal Communications family for the mobile environment. The information in this publication is not intended as the specification of any programming interfaces that are provided by Personal Communications AS/400 and 3270 Version 4.1. See the PUBLICATIONS section of the IBM Programming Announcement for Personal Communications family for more information about what publications are considered to be product documentation.

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Appendix C. Related Publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this redbook.

C.1 International Technical Support Organization Publications

For information on ordering these ITSO publications see "How To Get ITSO Redbooks" on page 281.

- *Personal Communications Version 4.X Interoperability and Problem Determination*, GG24-4457
- *Personal Communications Version 4.1 Implementation Guide*, SG24-4681
- *Personal Communications for the Mobile User - DOS, Windows and OS/2*, SG24-4456
- *Personal Communications Version 4.1 for Windows 95 Implementation Guide*, SG24-4689
- *Personal Communications for OS/2 and CM/2 Product Differences*, GG24-2546
- *Communications Manager/2 - SNA Phone Connect*, GG24-4385
- *Communications Server for OS/2 Warp V4.0 Enhancements*, SG24-4587
- *To Emulate or Not to Emulate? A 3270 and 5250 Workstation and Emulation Selection Guide*, SG24-4458
- *An Introduction to Wireless Technology*, SG24-4465

C.2 Other Publications

These publications are also relevant as further information sources:

- *Personal Communications AS/400 and 3270 Version 4.1 for Windows Up and Running*, SC31-8261
- *Personal Communications/3270 for DOS (Full-Function Mode) Up and Running*, SC31-8262
- *Personal Communications/3270 for DOS (Entry-Level Mode) Up and Running*, SC31-8263
- *Personal Communications AS/400 and 3270 Version 4.1 for Windows Reference*, SC31-8264
- *Personal Communications/3270 for DOS (Full-Function Mode) Reference*, SC31-8265
- *Personal Communications AS/400 and 3270 for Windows and DOS (Full-Function Mode) Programmer's Guide*, SC31-8266
- *Personal Communications/3270 for DOS (Entry-Level Mode) Programmer's Guide*, SC31-8267
- *APPC Networking Services for Windows Getting Started*, SC31-8124
- *IBM AnyNet Guide to SNA over TCP/IP for Windows*, GV40-0113
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- *Personal Communications AS/400 and 3270 Version 4.1 for OS/2 Programmer's Guide*, SC31-8260
- *Personal Communications AS/400 and 3270 Version 4.1 for OS/2 Reference*, SC31-8259
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Abbreviations

ABBREVIATION	MEANING	ISDN	integrated services digital network
ACTLU	activate logical unit	ITSO	International Technical Support Center
ACTPU	activate physical unit	KB	kilobyte
AID	attention identifier	LAA	locally administered address
APA	all points addressable	LAN	local area network
API	application programming interface	LIM	Lotus-Intel-Microsoft
ASYNCH	asynchronous	LLLAPI	low-level language API
bps	bits per second	LOCADDR	local address
BSC	bisynchronous	LSP	LAN Support Program
CU	control unit	LU	logical unit
CUT	control unit terminal	MAC	medium access control
DACTLU	deactivate logical unit	MACADDR	medium access control address
DDE	dynamic data exchange	MB	megabyte
DFT	distributed function terminal	NCP	network control program
DIA	document interchange architecture	NDIS	network driver interface specification
DISOSS	distributed office support system	NIF	network information form
DLC	data link control	NMVT	network management vector transport
DLOGMOD	default logmode	NRZI	non-return-to-zero inverted
DSAP	destination service access point	NTRI	NCP token-ring interconnection
DSC	data stream compatible	NTS	network transport services
DSPU	downstream PU	OIA	operator information area
ECF	enhanced connectivity facilities	PC	personal computer
EHLLAPI	emulator high-level language API	PC/3270	Personal Communications/3270
EMM	expanded memory manager	PCLP	PC LAN Program
EMS	expanded memory specifications	PDF	printer definition file
ES	extra SAPs	PDT	printer definition table
EST	extra stations	PIU	path information unit
EVPD	extended vital product data	PS/2	Personal System/2
FDDI	fiber distributed data interface	PTC	printer table compiler
FFT	final form text	PU	physical unit
FOS	front of screen	PUID	physical unit ID
HMA	high memory area	PVC	permanent virtual circuit
IDP	interchange document profile	RAM	random access memory
IEEE	Institute of Electrical and Electronics Engineers	RTM	response time monitor
		RU	request unit

SAP	service access point	T2.0	type 2.0
SCS	SNA character string	T2.1	type 2.1
SDLC	synchronous data link control	UAA	universally administered address
SDDL	self-defining dependent LU	UDD	user definable data
SNA	Systems Network Architecture	UMB	upper memory block
SRPI	server-requester programming interface	VPD	vital product data
SSAP	source service access point	VTAM	Virtual Telecommunications Access Method
SSCP	systems services control point	WPCSP	3174 Workstation Peer Communication Support Program
SVC	switched virtual circuit	XID	exchange identification
TIC	token-ring interface coupler	XMA	expanded memory adapter
TSR	terminate-and-stay-resident		

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