Positioning IBM's Family of OS/2 and Windows Desktop Communications Software Products

Introduction

For many years, IBM's Communications Manager/2, or CM/2, (on OS/2) and Personal Communications/3270 (on DOS/Windows) have been the choice of over one million installed customers to meet their PC workstation application and connectivity needs.

In February 1995, IBM introduced the Personal Communications (PCOMM) family of host terminal emulator products to the OS/2 operating system. Working together, the PCOMM family of products and the new IBM Communications Server for OS/2 Warp Version 4.0, represent the natural evolution of the widely recognized, industry-leading SNA communications software, CM/2, for the OS/2 environment, as shown in Figure 1.

Note: For details on specific functions included in CM/2, PCOMM, and Communications Server, refer to Tables 1 through 5.

This paper, positioning the family of desktop communications software products, describes their relationship and their recommended deployment in the enterprise and client/server environments. Customer scenarios, included in this paper, show how these complementary products work together as a total solution.

CM/2 was originally packaged with database support in OS/2 Extended Edition. Over the years, this communications support evolved to a separate stand-alone product that provides OS/2 with a full suite of SNA communications support, ranging from 3270 and 5250 terminal emulation, SNA gateway, to full APPN network node support.

The PCOMM family of emulator products is IBM's response to the terminal-emulation needs of the PC marketplace. With the PCOMM emulators, customers are provided 3270 and 5250 emulation support for PCs, running DOS/Windows, Windows 95, and Windows NT in 16-bit windows-on-windows, or wow mode, and OS/2. The PCOMM emulators are packaged in a variety of configurations to meet the diverse needs of our customers.

With the introduction of Communications Server, the next phase of IBM communications support of the PC environment is here. Communications Server, a high-performance multiprotocol gateway, provides SNA protocol support, plus interoperability with TCP/IP, NetBIOS, and IPX, to give customers flexibility and choice for their communications needs. Communications server provides customers with the power and capability to turn an OS/2 PC into a multiprotocol communications gateway/server.

Why upgrade from CM/2 to the IBM Communications Server for OS/2 Warp, Version 4?

The IBM Communications Server extends the capabilities of CM/2 with a broader range of communication networks, and system management facilities. It offers enterprises greater opportunities than ever to exploit the power of their networks and to increase significantly the efficiency and productivity of every workstation user.

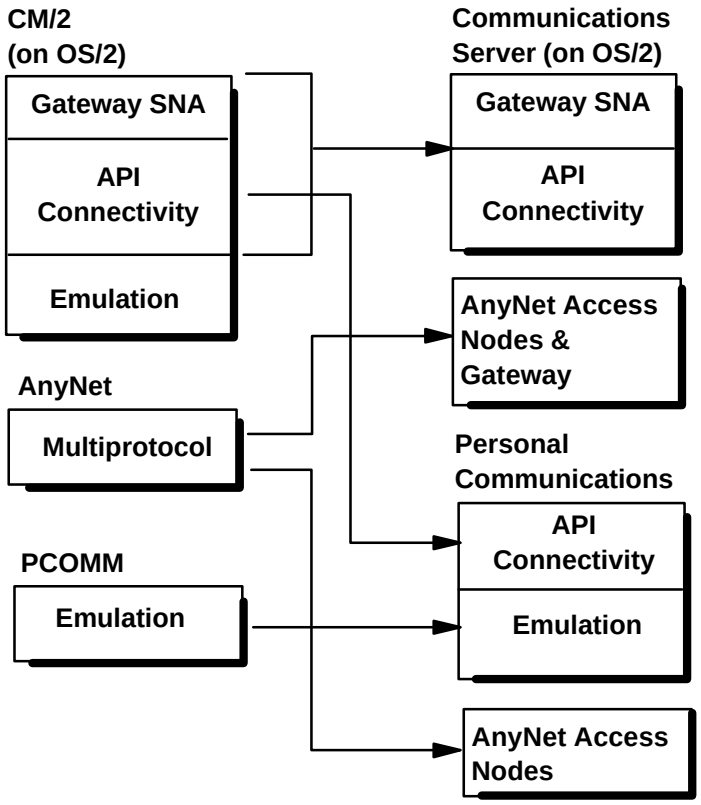


Figure 1. Product transition

Some of the prominent features and functions of the Communications Server are its enterprise-wide capacity, all-in-one SNA services, multiprotocol gateway capability, and advanced peer-to-peer networking (APPN) TN3270E. These services are briefly described in the following paragraphs.

Enterprise-wide capacity

The Communications Server provides capacity for 2,000 downstream workstations and 20,000 LUs or host sessions, while supporting multiple protocols, data compression, high-performance routing, and transmission priority setting. This means a business can provide maximum communications across its entire enterprise, using all its existing networking and application solutions, while preserving high performance and taking advantage of full-duplex lines.

SNA Services

The Communications Server provides all-in-one SNA communications services between a personal computer and S/390, AS/400 hosts, and other personal computers. Its capabilities include a full-function SNA gateway, the best APPN in the industry, and a rich set of application programming interfaces (APIs). The support of SNA is based on IBM's established experience as the architect and developer of this important networking architecture/protocol.

Multiprotocol gateway

The Communications Server is a powerful multiprotocol gateway for SNA, TCP/IP, NetBIOS and IPX networks representing the next phase in communications server technology from IBM. A 32-bit high-performance capability extends today's technology to provide support for Sockets over SNA and SNA over TCP/IP and NetBIOS and IPX over SNA and TCP/IP.

Table 1. OS/2 Communications Products

Function and Feature	CM/2	PCOMM Family	Communications Server	OS/2 Access Feature (Client)
Emulation	- 3270/5250	- PC/3270 - PC400 - Combo (3270/5250) - TN3270 - TN5250	- 5250 Entry - 3270 Entry - - Primarily for system administration	- None (use PCOMM)
SNA/Multiprotocol	- SNA Gateway (GW)	- DOS	- HPR Gateway over SNA and IPX - SNA GW - SNA over TCP/IP GW - Sockets over SNA GW - TN3270 IE TN3270E Server	- SNA over TCP/IP - Sockets over SNA
APPN Support	- Network node - End node	- LEN node - End node (OS/2)	- Network node - End node - High-performance routing - DLUR	- End node - High-performance routing - DLUR
APIs	- 16-bit • LUA • EHLLAPI • SRPI- • APPC • CPI-C • ADCI • X.25	- 16-bit Release 4.0 - 32-bit • DDE • SRPI • PCSAPI • EHLLAPI	- 32-bit • LUA • APPC • CPI-C • ADCI • X.25 - 16-bit • LUA • EHLLAPI • SRPI • APPC • CPI-C • ADCI • x.25	- 32-bit • LUA • APPC • CPI-C • ADCI • X.25 - 16-bit • LUA • EHLLAPI • SRPI • APPC • CPI-C • ADCI • x.25
LAN/WAN Media/Transport	- Coaxial - Twinaxial - Asynchronous - SDLC - 802.2 - ISDN - IDLC - X.25 - Frame relay via RxR/2 - LAN	- Coaxial - Twinaxial - Asynchronous - SDLC - 802.2 - TCP/IP - IPX - LAN (except FDDI) - FMI -	- Twinaxial - Asynchronous - SDLC - 802.2 - ISDN - IDLC - X.25 - Frame relay - IP (gateway) - LAN - IPX - NetBIOS	- Twinaxial - Asynchronous - SDLC - 802.2 - ISDN - IDLC - X.25 - Frame relay - IP (gateway) - LAN

Note 1: LAN = TR, Ethernet, FDDI, and ATM

Note 2: For information on RouteXpander/2 (RxR/2), refer to IBM's Redbook, Introduction and Configuration Examples, GG24-4334-00).

Note 3: PCOMM is shipped with the respective access feature for each platform.

Figure 1. Product transition

This multiprotocol support integrates Multiprotocol Transport Networking, or MPTN, technology from the AnyNet products with the Communications Server. As a result, businesses are able to connect applications on any platform across heterogeneous networks. For example, the Communications Server gateway allows SNA applications to communicate with other SNA applications, using either an SNA or TCP/IP backbone transport network. The SNA applications can be running (1) on the server, (2) on NetWare for SAA, (3) on Apple SNA* ps gateways, or (4) on OS/2, DOS, Windows 3.1 or Windows NT desktops.

Function and feature comparisons

The following tables present specific details for each of the products. The specifications are divided into four cate gories:

- *Table 2.* Emulator Comparison
- *Table 3.* Communications APIs
- *Table 4.* Connection and Protocol Support
- *Table 5.* System Requirements and Packaging

Table 2. Emulator Comparison

Function and Feature	Common to PCOMM, CM/2	PCOMM Additions	CM/2 Additions	Communications Server and OS/2 Access Feature
Terminal Emulation Types	- 3270 - 5250 - SNA DFT	- SDLC via AS/400 - TN3270 - TN5250 - Home terminal (including Turbo file transfer) - 3270 CUT mode - Non-SNA DFT		See PCOMM for your emulator requirements
Emulator User Functions	- Menu bar - Pop-up keypad - Hotspots - Color remapping - Keyboard remap - Automatic font sizing - Clipboard editing - File transfer - Online help - Host graphics - Integrated mouse support	- Auto "Start" of Web Browser - Macro function - Keystroke record - Iconic tool bar - Enhanced clipboard editing - Shared folders (AS/400) - Data transfer (AS/400) - Toolbar customization - Toolbar pop-up description - Keyboard remap layout by language - Printer set up for form feed option - TCP/IP Host Print (RFC1646-RFC1647) - Column separator customization support	Session-level encryption	See PCOMM for your emulator requirements

Table 3. Communications APIs

Function and Feature	Common to PCOMM, CM/2	PCOMM Additions	CM/2 Additions	Communications Server and OS/2 Access Feature
Application Programming Interface (API) Support	- EHLLAPI - HLLAPI - SRPI - Kernel API (PCSAPI)	- 16-bit Release 4.0 - 32-bit - DDE - EasyREXX for HLLAPI utility - APPC3270	- 16-bit - LUA - APPC - CPI-C - ACDI - X.25 - Common services	- 32-bit & 16-bit - LUA - APPC - CPI-C - ACDI - X.25 - Common services - Communications kernel

Table 4. Connection and Protocol Support

Function and Feature	Common to PCOMM, CM/2	PCOMM Additions	CM/2 Additions	Communications Server and OS/2 Access Feature
Connection Types and Communication Protocol Support	- Coaxial - Twinaxial - Leased lines - Switched lines - Ethernet - Token ring - SNA over Asynchronous - Hayes AutoSync - PCMCIA adapters - SDLC - 802.2 - 3174 Peer Communication - FDDI	- Asychronous for IGN IBM Global Network - IPX/SPX - TCP/IP - ISDN via WaveRunner	- ISDN - IDLC - PC network - X.25 - FDDI	- Twinaxial - Asynchronous - Leased lines - Switched lines - ENET - Token ring - FDDI - SNA over asynchronous - Hayes AutoSync - PCMCIA adapters - SDLC - 802.2 - 3174 peer communications - ISDN - IDLC - PC network - X.25 - TCP/IP - DLUR - Frame Relay
SNA Gateway Workstation Support for	N/A	N/A	- OS/2 clients - DOS clients - DOS/Windows clients	- OS/2 clients - DOS clients - Windows 3.1 clients - Windows 95 clients - Windows NT clients - Sockets - Apple SNAps gateways - NetWare for SAA
Additional Support	- Data compression - Response time Monitor		- APPN - Network node - End Node - Encryption	- APPN - Network node (server only) - End node - Encryption - Compression
Communication Line Speeds for WANs	- 9.6 Kbps switched - 19.2 Kbps leased - 57.6 Kbps asynchronous	- 57.6 Kbps asynchronous	- 64 Kbps leased	- 2 Mbps leased
Major Enhancements	N/A	- HPR - DLUR - Windows 95 support - Ships with access features	N/A	- Supports OEM cards - 16 SDLC lines - AnyNet Access Node and Gateway - APPN HPR - SDLC full-duplex - Automatic back-up

Table 5. System Requirements and Packaging

Function and Feature	Common to PCOMM, CM/2, and Communications Server	PCOMM Additions	CM/2 Additions	Communications Server and OS/2 Access Feature
Hard Disk Requirement	N/X	9 MB	10 - 12 MB	17 MB Server 5 MB Access Feature
Memory Requirement	N/A	2 MB	4 MB	4 - 10 MB Server 3 MB Access Feature
Translations Available	- French - German - Italian - Spanish - Japanese - Korean - Chinese (simplified) - Keyboard and code page for many other languages	- Chinese (traditional) - Swedish	- Thai	- Chinese (traditional) - Brazilian Portuguese
Packaging Media	- CD-ROM	- 3.5-inch diskettes	- 3.5-inch diskettes	- CD-ROM only
Platform	OS/2	Windows 3.1, NT, and 95		

The Communications Server acts as a subarea gateway and an APPN node (both network node and end node).

Advanced Peer-to-Peer Networking (APPN)

Communications Server APPN support includes SNA networking facilities that connect distributed computing applications, peer applications, and client applications to their servers. It also includes support for high-performance routing (HPR), which provides the following benefits to the client:

- Improves throughput (through better flow control and nondisruptive switching)
- Increases speed while decreasing intermediate node processing (through source routing and error control at end points)
- Improves reliability (through error recovery)

If an intermediate link or node in a connection route fails, HPR can calculate a new connection route and resume transmission without disrupting user sessions.

Product positioning summary

Table 1 provides a summary of the family of desktop communication software products that are positioned in this paper. A detailed description of each product is included in this paper to assist in RFPs, RPQs, and RFIs. Combination feature-function matrices are included to show quick product comparisons. Typical scenarios describe how these products can be deployed. A table of recommendations is included to help you decide the best alternatives to meet customer requirements. For more information on these products, see the following IBM documents:

IBM Redbook, Personal Communications for OS/2 and CM/2: Product Differentiation Guide (GG24-2546-00)

Communications Server Version 4.1 Up and Running (GC31-8189-01)

Cs/2 4.1 Redbook

CM/2

IBM's Communications Manager/2 established its OS/2 leadership by providing an all-in-one communication package between a personal computer and a System/390 host, an AS/400 host or other personal computers. In one package, CM/2 provides 3270 and 5250 terminal emulation, a powerful SNA gateway, network node and end node support for many types of wide area connectivity, and a rich set of application programming interfaces (APIs). While it has been imitated by other vendors, no other product offers the level of product function and capability for the price of CM/2.

CM/2 evolved as an integrated SNA support program for the OS/2 environment, providing 3270 and 5250 emulation, with a complete set of APIs including EHLLAPI. CM/2 includes a full suite of communication programming APIs LUA, APPC, CPI-C, and ACDI. It also provides a PU 2 gateway and full APPN support for network and end nodes. CM/2 provides transport support for coaxial, twinaxial, asynchronous, token ring, Ethernet, SDLC, X.25, ISDN, IDLC, and FDDI. The programmable APIs of CM/2, have 16-bit attributes, which will continue to be supported by IBM.

Note: Customers with 32-bit applications can obtain 32-bit API support in Communications Server and in the PCOMM emulators.

The emulators incorporated in CM/2 were developed from 3270 and 5250 emulation support provided with OS/2 Extended Edition.

Presentation Manager (PM)-based installation, configuration, and customization programs are included. CM/2 also supports remote configuration, installation, and distribution (CID). All of these features make CM/2 easy to manage.

CM/2 is not limited to terminal emulation (3270 and 5250) communication. With the built-in application and peer APIs, CM/2 supports LUA, APPC, and CPI-C communication between applications, running on a PC to another PC, an AS/400, a System/390, or any other computer that supports standard SNA communications protocols. Also, CM/2 includes the powerful APPC suite of applications, such as AFTP (file transfer), ATELNET (remote logon), AREXEC (remote command execution), and APING (connectivity test). These are not only proven utilities, but they also distinguish a PU 2 (PC/3270) from a 2.1 node (CM/2).

While CM/2's powerful follow-on is Communications Server, customers can be assured that CM/2 will be supported for their network needs.

PCOMM

IBM's Personal Communications family of products provides comprehensive terminal emulation for connection to System/390 and AS/400 hosts.

The Personal Communications products are IBM's premier terminal emulation offerings for the OS/2, DOS, and Windows 3.1 and Windows 95 environments. The PCOMM family consists of:

- Personal Communications AS/400 for OS/2
- Personal Communications AS/400 for Windows
- Personal Communications AS/400 and 3270 for Windows
- Personal Communications AS/400 and 3270 for OS/2
- Personal Communications Toolkit for VisualBasic
- Personal Communications AS/400 and 3270 for Windows 95
- Personal Communications PC AS/400 and 3270 for Windows NT
- Personal Communications PC AS/400 for Windows 95
- Personal Communications PC AS/400 for Windows NT

The Personal Communications emulators offer many powerful, yet simple-to-use, features. Experienced users of emulators will find features like macro support, keystroke record and playback, the iconic tool bar, dynamic data exchange (DDE), and enhanced clipboard editing to be real productivity benefits. All users will find the Personal Communications products easy to use, with features like graphical keyboard remapping, the ability to map a macro or command string to a key, drag-and-drop color remapping, and easy file transfer. Also, PCOMM supports remote configuration, installation, and distribution (CID) to simplify management over a LAN. These emulators have the same look and feel

across personal computer operating system environments as in 3270 and 5250 emulation sessions. Additionally, PCOMM supports a variety of local area and wide area networks and offers key application programming interfaces (APIs). Personal Communications emulators can be used in SNA networks, TCP/IP networks, and for asynchronous communication. PCOMM supports LAN communication based on NetBIOS, IEEE 802.2, NetWare IPX/SPX, and TCP/IP. PCOMM products can be installed with CM/2 and the Windows Access Feature or the OS/2 Access Feature, which lets a user operate PCOMM in a variety of connectivity situations. In addition, Microsoft's SNA Server is supported as a gateway.

PCOMM provides a common look and feel amid all this diversity and allows a user to move with confidence from one environment to another.

PCOMM for application development

The PCOMM Toolkit for VisualBasic is unsurpassed as an application development tool. Host-based applications and graphical user interfaces (GUIs) can be created for client/server environments. Important to note is that this tool enables developers not only to build powerful applications but also to incorporate host information.

Toolkit, designed for developers using VisualBasic or Windows development tools, reduces the time and resources needed to add a front-end GUI. By using a set of dynamic link libraries (DLL), the front-end can be provided in stages.

The tools and utilities provided are:

- A set of DLLs to interact with the host system
- A screen capture and maintenance definition tool to capture and define existing 3270 or 5250 screens and objects
- QuickFRONT Generator, a VisualBasic form generator

PCOMM Toolkit presents users with tailored, task-specific applications without changing the current host applications. Unlike some competitor's products, the Personal Communications emulators have been written specifically to take advantage of each operating system environment. The OS/2 emulators are native, 32-bit applications that run with either OS/2 Warp or OS/2 Version 2.1. The Windows emulators provide native support for Windows 3.1, Windows for Workgroups 3.11, Windows 95 and NT Clients (in wow mode).

Note: For AS/400 hosts with OS/400 Version 3 installed, see Other Product Considerations at the end of this paper. In addition, TN3270E Server support allows clients in a TCP/IP network to access 3270 applications. Multiprotocol support is also included to allow sockets, Sockets SNA, NetBIOS, and IPX-based applications to run unchanged over SNA and TCP/IP networks.

Communications Server

Communications Server represents the next phase in desktop communications software technology from IBM. The 32-bit high-performance multiprotocol gateway builds upon the widely-acclaimed SNA support in today's CM/2 and extends it by enhancing the technology to support the latest advancements in SNA.

Sockets over SNA allows existing Sockets applications, such as FTP, SAP R/3, Lotus Notes, Telnet, and popular web browsers, to work over existing SNA networks. The Sockets over SNA gateway function allows Socket applications on existing TCP/IP networks to communicate, without change, with Socket applications over an SNA network. Two Sockets-over-SNA gateways can be used to connect remote TCP/IP networks across an SNA network, allowing Sockets applications, running on separate IP networks, to communicate through the SNA network.

SNA over TCP/IP allows SNA applications, such as DB2, DDCS, CICS, DCAF, and emulator and printer programs, to run over existing TCP/IP networks. The SNA over TCP/IP gateway function allows SNA applications on existing SNA networks to communicate, without change, with SNA applications on a TCP/IP network. Two SNA over TCP/IP gateways can be used to connect remote SNA networks across a TCP/IP network, allowing SNA applications running on separate SNA networks to communicate through the TCP/IP network.

For administrative tasks on the server that require emulation support, Communications Server includes an entry version of the PCOMM 3270 emulator and AS/400. The 32-bit emulator is built from the same technology as the PCOMM family, with reduced functionality, and is intended for use on the Communications Server machine. This entry emulator provides all the basic 3270 and 5250 emulation support but works over LUA/APPC only and has no APIs.

OS/2 Access Feature and Windows Access Feature

PCOMM 4.1 and the Communications Server provide two free-standing components, that can be purchased and installed separately, to support application development in the OS/2 or Windows environments. These components provide SNA services and application programming interfaces which function independently from the communications gateway-server. They provide support for applications that execute on the workstations.

- OS/2 Access Feature consists of the CM/2 SNA communication support and services, the CM/2 APIs (including APPC support), and the AnyNet/2 Access Node, which allows SNA and TCP/IP workstation applications to communicate through the multiprotocol gateway to IBM and other computers.
- Windows Access Feature consists of the APPC Networking Services for Windows product (NS/Windows), and the AnyNet Access Node, which allows APPC and CPI-C to communicate through the SNA over TCP/IP gateway to both IBM and other computers. NS/Windows provides the CPI-C API and APPC support for APPN Low-Entry Network Node (LEN Node).
- Windows 95 support consists of CPI-C, APPC (including APPN End Node), HPR, and DLUR, which are shipped as an integral part of the Personal Communications solution. This support does not ship as part of the Communications Server product.

Note: AnyNet SNA over TCP/IP for Windows, in PCOMM, will provide fuller SNA support for printers and emulators than the Communications Server Windows Access Feature, which is APPC/IP only.

Customer scenarios

The ten scenarios that follow describe typical customer situations. Scenarios can be combined to match the needs of a specific situation.

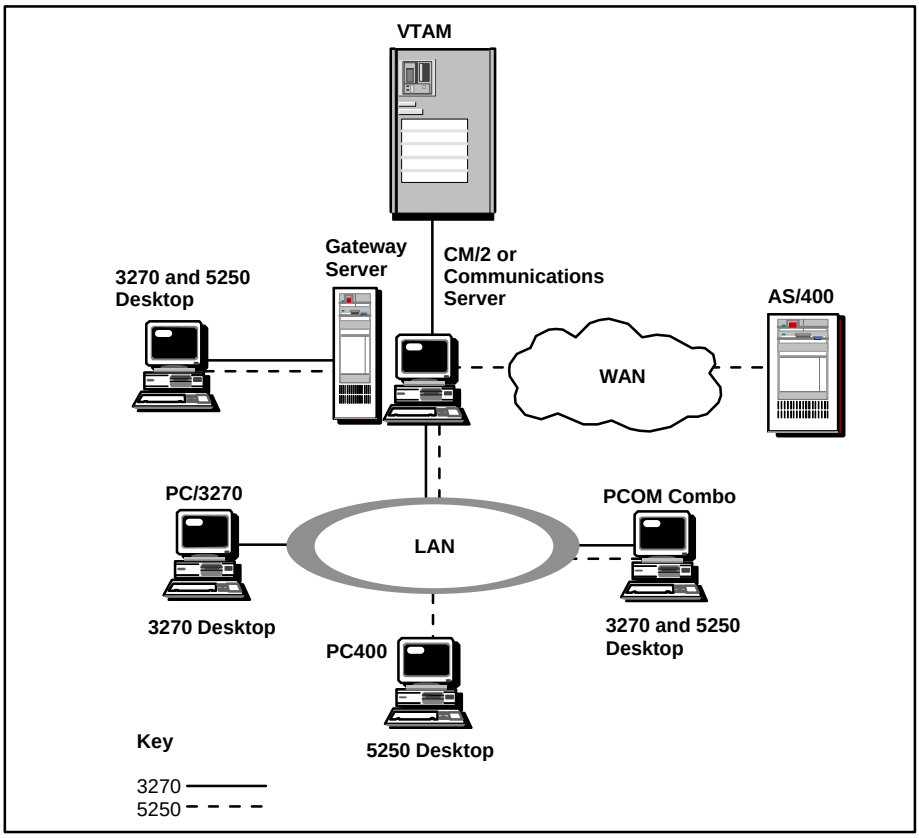
Scenario 1

3270 and 5250 emulation

In this scenario, a customer needs 3270 and 5250 emulation from a LAN. Only emulation is required (no APPC or APPN).

The recommended solution for this customer is to use either CM/2 or Communications Server as a gateway and use:

- PCOMM COMBO* on desktops that need only 3270 emulation
- PCOMM for AS/400 on desktops that need only 5250 emulation (see Other Product Considerations)
- PCOMM Combo on desktops that need both 3270 and 5250 emulation



Scenario 1. 3270 and 5250 emulation

Scenario 2

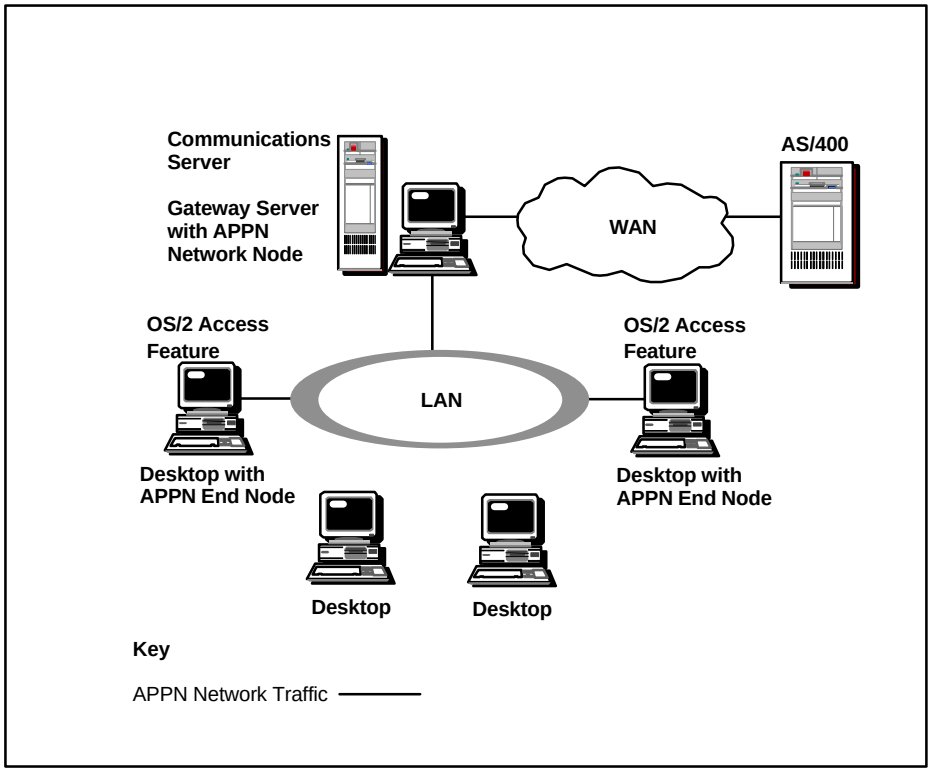
32-bit APPC application on a remote LAN to an AS/400

In this scenario, a customer needs APPN connectivity from desktops to a remote AS/400. The application requiring the APPC support is a new 32-bit client/server application.

The recommended solution for this customer is to use:

- Communications Server as a gateway providing APPN
- OS/2 Access feature on desktops to provide APPC because the 32-bit application requires 32-bit APIs

Note: The OS/2 Access Feature provides 32-bit CPI-C and APPC APIs.



Scenario 2. 32-bit APPC application on a remote LAN to an AS/400

** PCOMM = Personal Communication AS/400 and 3270 for OS/2*

Scenario 3

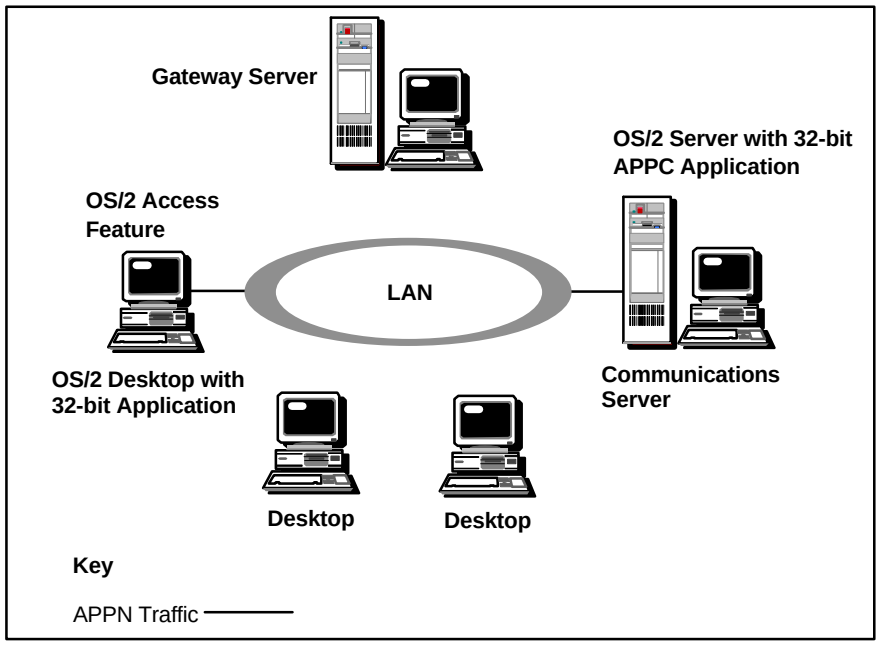
APPC application between 2 LAN desktops

In this scenario, the customer has developed a custom 32-bit APPC application, running on an OS/2 desktop, that interacts with another 32-bit APPC application, running on an OS/2 server.

The recommended solution for this customer is to use:

- OS/2 Access Feature on the OS/2 desktop, running the 32-bit APPC client application
- Communications Server on the OS/2 server, running the partner 32-bit APPC server application

In this scenario, a new server was installed (in place of the existing desktop system) in anticipation of the required additional computing power for the server application.



Scenario 3. APPC application between two LAN desktops

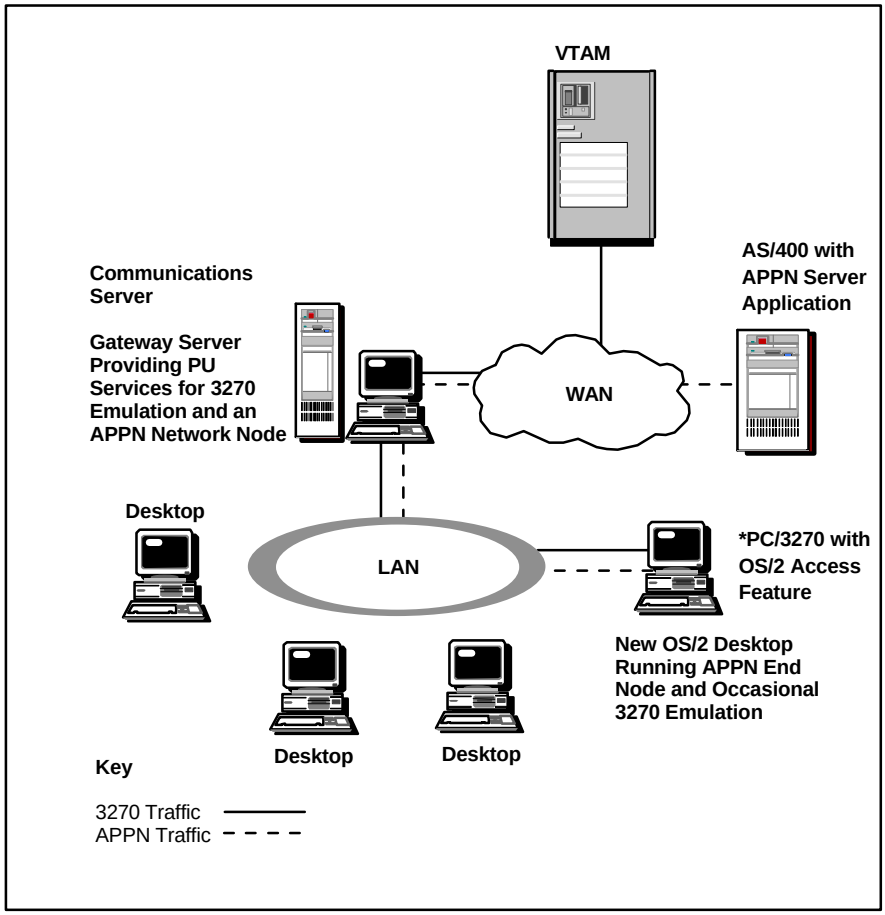
Scenario 4

New desktop with APPN and 3270 emulation requirements

In this scenario, the customer is adding a new OS/2 desktop, primarily running a client for an AS/400 server application that uses APPN. Additionally, the user of this desktop occasionally needs to access a 3270 application.

The recommended solution for this customer is to use:

- PCOMM COMBO, which includes the OS/2 Access Feature, and PC/3270 on the new OS/2 desktop
- Communications Server, if CM/2 is not already present



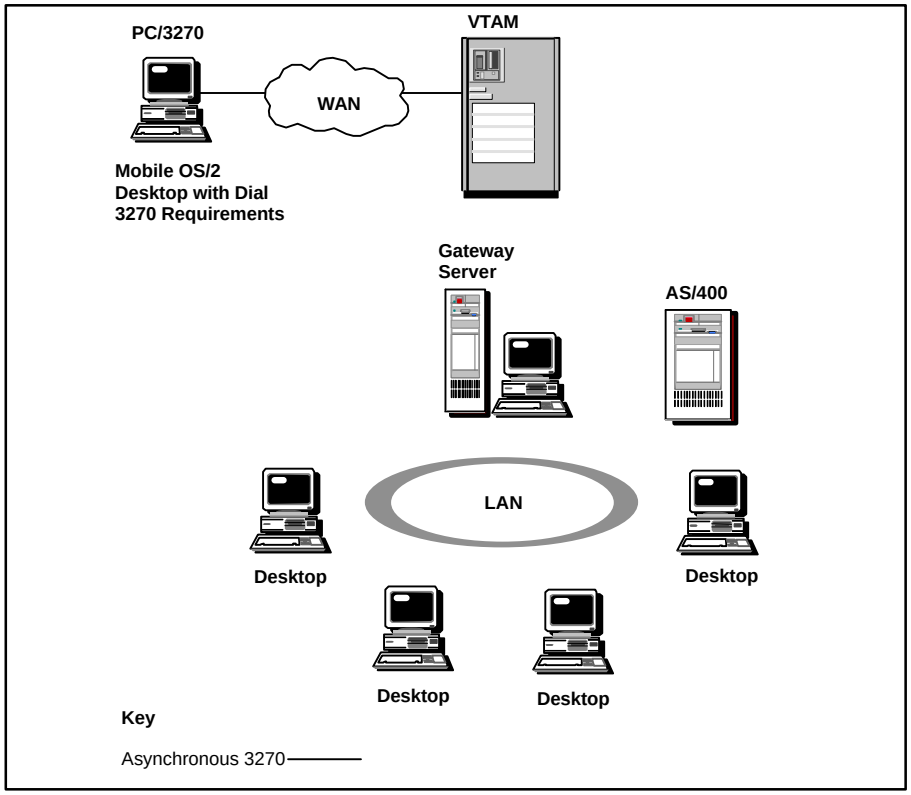
Scenario 4. New desktop with APPN and 3270 emulation requirements

Scenario 5

Mobile OS/2 desktop with dial 3270 requirements

In this scenario, a mobile OS/2 desktop needs to attach to a 3270 application, using a switched asynchronous connection.

The recommended solution, in this case, is to use PC/3270, with its switched asynchronous support, directly to IBM Global Network (IGN), Communications Server, or a host controller.



Scenario 5. Mobile OS/2 desktop with dial 3270 requirements

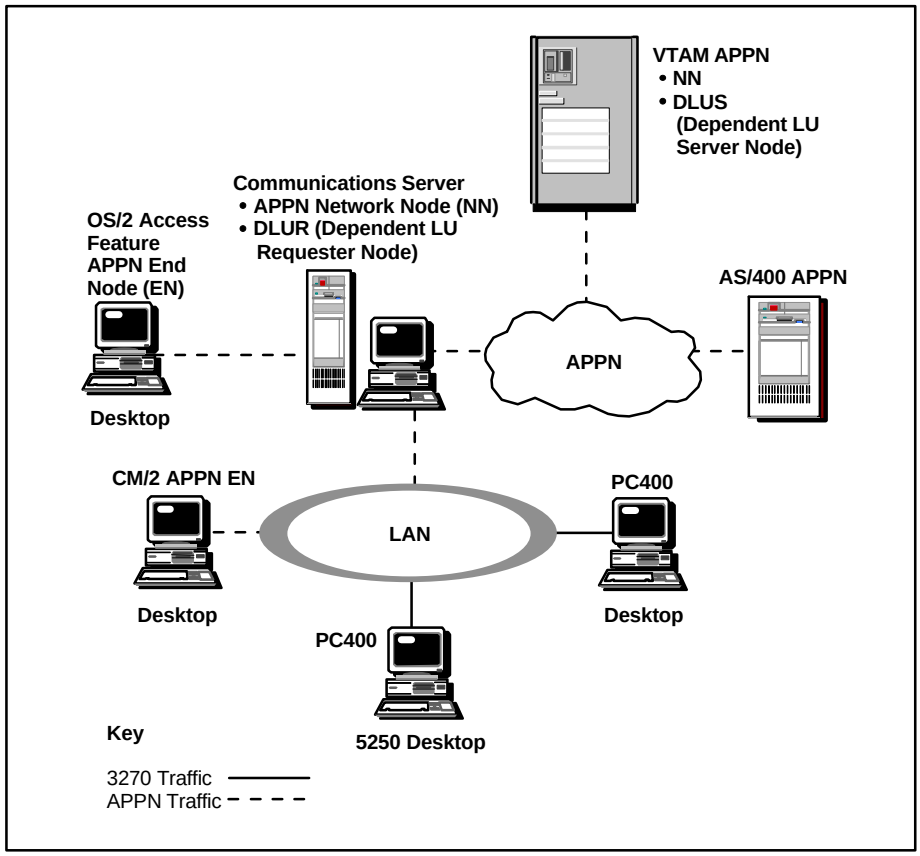
Scenario 6

APPN

In this scenario, the customer requires multiple logical protocols to flow over a single, common transport.

The recommended solution is to define and deploy Advanced Peer-to-peer Networking (APPN) to allow:

- A single consolidated network
- Network node (NN) auto-backup, rerouting of bad links over efficient links (optimized for either cost-per-bit or bandwidth)



Scenario 6. APPN

Scenario 7

Finance industry application

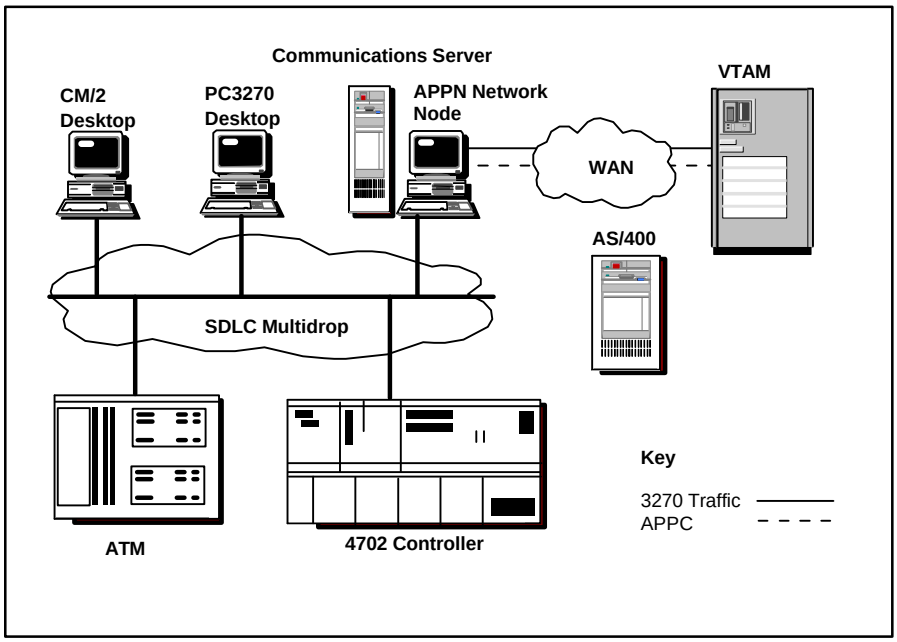
A bank is rolling out a new information technology (IT) infrastructure that is positioned for growth and exploitation of new technological features and can protect its existing investment.

The recommended solution for this customer is to:

Use Communications Server as the gateway for a branch to an outside network to provide the following network support.

- 3270 gateway
- APPC gateway
- APPN network node

This solution supports today's investment and positions the customer to exploit tomorrow's new technology.



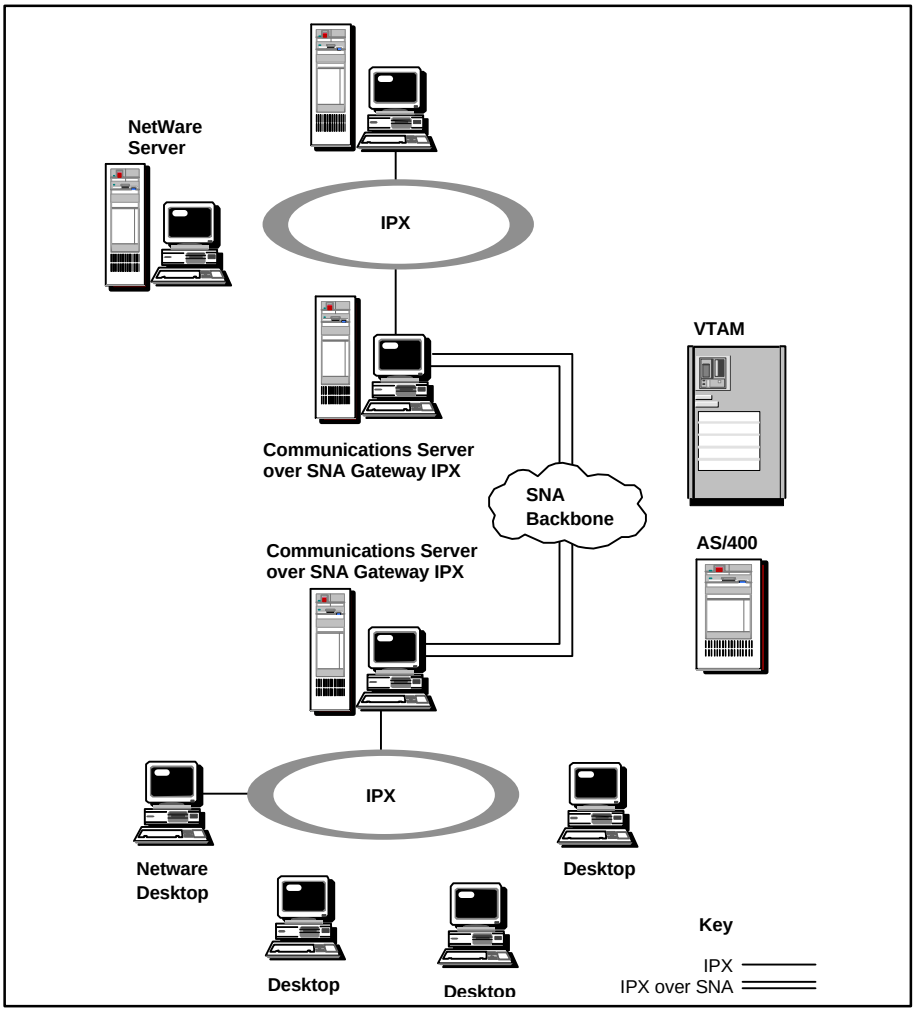
Scenario 7. Finance industry application

Scenario 8

IPX over SNA

In this scenario, a desktop on an IPX LAN needs to access a NetWare server on another IPX LAN, connected by an SNA backbone.

AnyNet IPX over SNA standalone product is no longer serviced. As of 12/31/96 customer is to use Communications Server, IPX over SNA gateway capability on each to connect the IPX LANs across the SNA backbone.



Scenario 8. IPX over SNA

Scenario 9

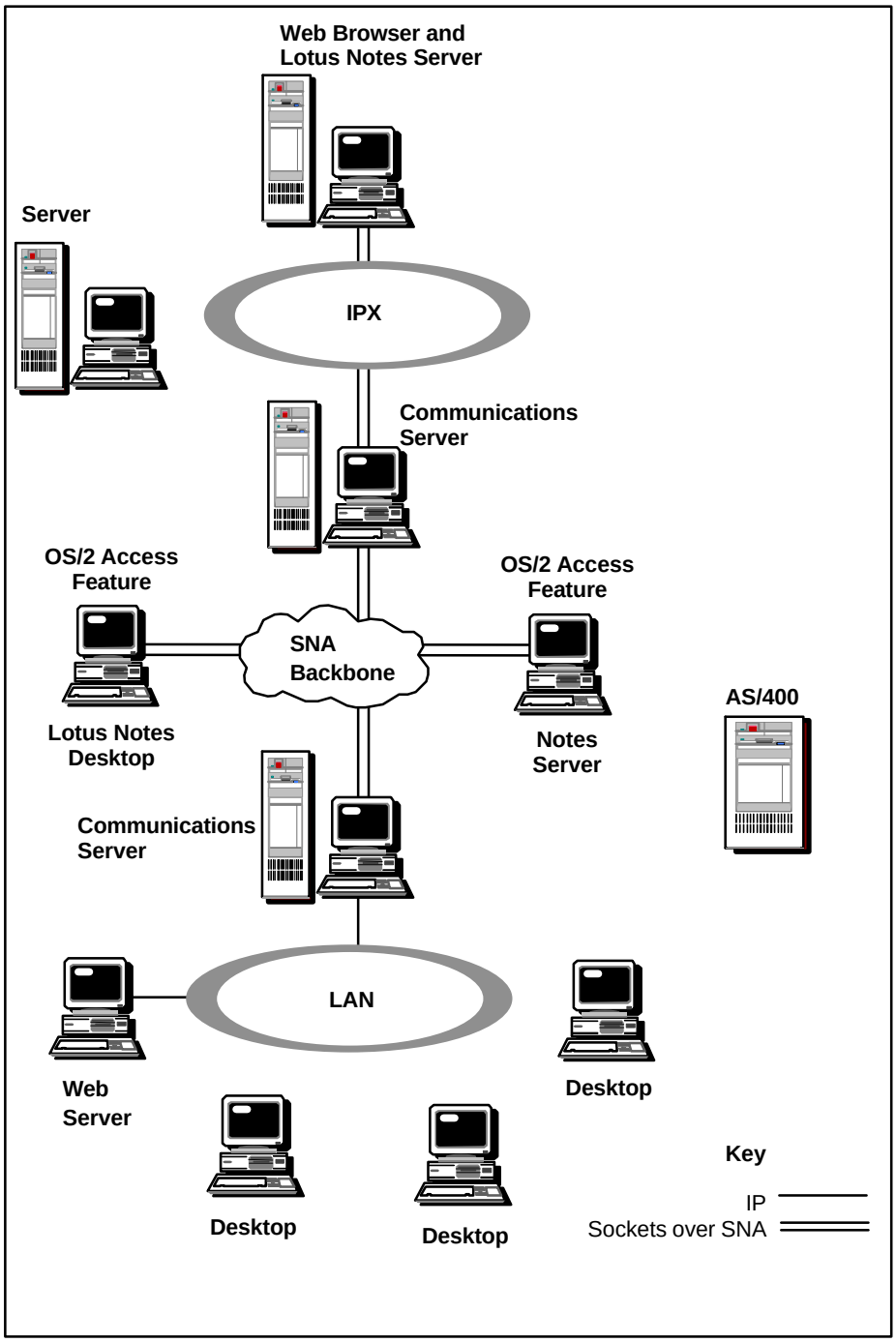
Sockets over SNA

In this scenario, the customer requires a web browser on a desktop residing on an IP LAN to access the Internet over an SNA backbone.

A customer with an SNA desktop requires access to Lotus Notes server over an SNA backbone(access node to access node).

Additionally, there is a requirement for data to be transmitted from a Lotus Notes server on an IP LAN to a Lotus Notes server on the SNA backbone (single gateway).

The recommended solution for this customer is to install a communications server with the sockets over SNA gateway on the boundary of the IP LANs and SNA network and OS/2 Access Feature on the SNA desktops.



Scenario 9. IP Sockets

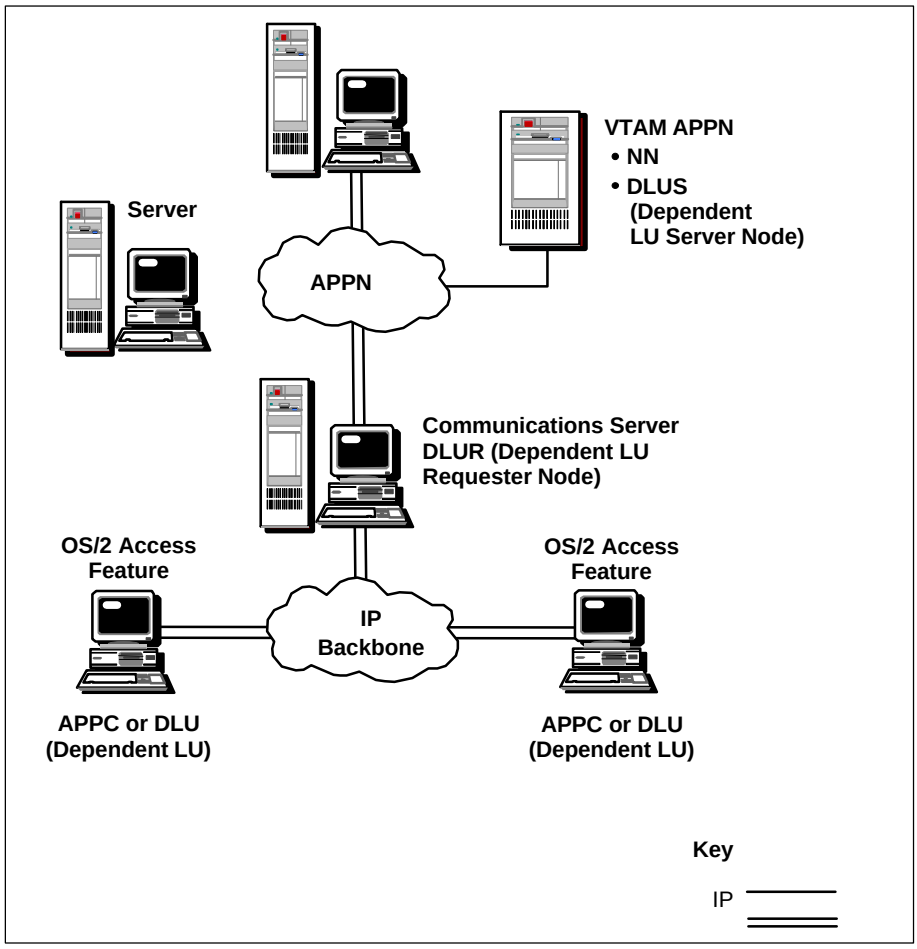
Scenario 10

SNA over TCP/IP

In this scenario, a customer with an SNA desktop requires access over an IP backbone (access node to access node).

Additionally, there is a requirement for data to be transmitted from VTAM on an APPN network to a dependent LU, with requirements for host emulator and printer applications access on the IP backbone (single gateway).

The recommended solution for this customer is to install a Communications Server with the SNA over TCP/IP gateway on the boundary of the IP and SNA networks and OS/2 Access Feature on the SNA desktops.



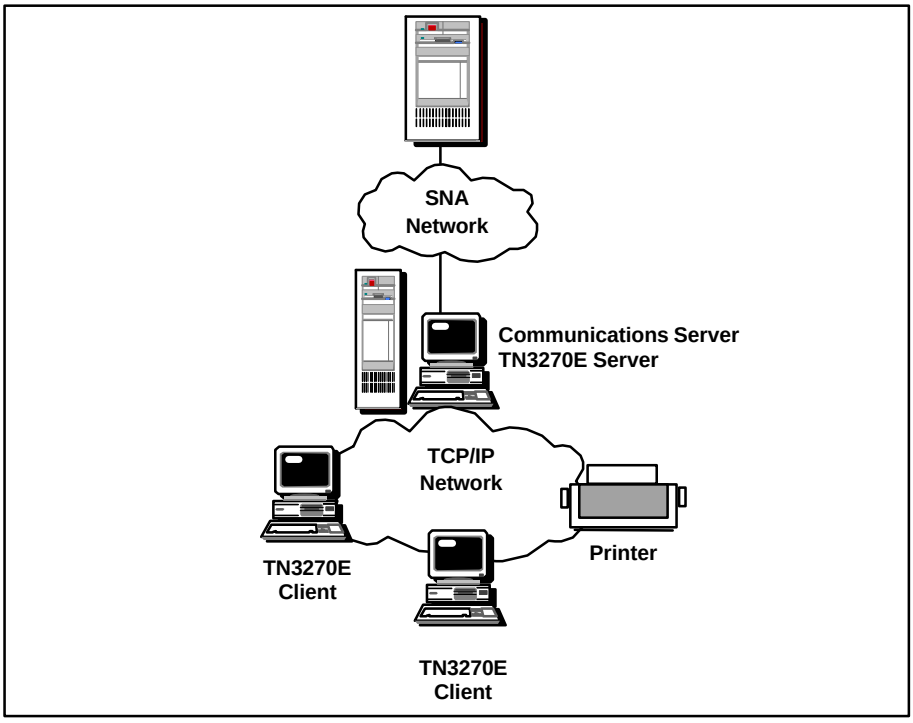
Scenario 10. SNA over TCP/IP

Scenario 11

TN3270E Server

In this scenario, a customer with TCP/IP desktops can easily access 3270 applications with the TN3270E server. Either standard or extended Telnet 3270 clients can run interactive 3270 display application programs. With the Telnet 3270 standard extensions (TN3270E), users can print from 3270 applications to printers attached to their desktops, or in their TCP/IP network using LU1 or LU3 print sessions. Also, TN3270E clients can send both positive and negative responses and ATTN and SYSREQ help.

TN3270E Server supports both standard and extended Telnet 3270 clients. PCOMM COMBO offers a rich set of functions for TN3270E clients.



Scenario 11. TN3270E Server

Product recommendations

Table 6 Product Recommendations contains some brief situations and proposed solutions for each. In many cases, several solutions can be proposed. In this positioning paper, the most straightforward approach is suggested. Also, see Other Product Considerations for additional recommendations.

Table 6. Product Recommendations

Situation	Recommendation
New OS/2 desktop, requiring 3270 emulation on a LAN with an existing CM/2 or Communications Server gateway	- PCOMM Combo
New OS/2 desktop, requiring 5250 emulation	- PCOMM AS/400
New OS/2 desktop, requiring both 3270 and 5250 emulation on a LAN with an existing CM/2 or Communications Server gateway	- PCOMM Combo
OS/2 desktops, running client application for an AS/400 Server, using SNA APPC or CPI-C as the communications protocol	- OS/2 Access Feature on each of the desktops configured as an APPN end node or LEN node - Communications Server also required if an APPN network node not available for the end nodes
OS/2 client/server application between an OS/2 desktop and an OS/2 server; application using APPC or CPI-C as the communications protocol	- OS/2 Access Feature for each client desktop and Communications Server for each required server
OS/2 desktops, running client application for an AS/400 server, using SNA APPC or CPI-C; occasional 3270 use also anticipated	- OS/2 Access Feature for the desktop; PCOMM COMBO must be installed with the OS/2 Access feature - Communications Server also required when an APPN network node not available for the end nodes, or when a 3270 gateway not available
Mobile OS/2 desktop, requiring switched asynchronous 3270 connectivity	- PCOMM COMBO
Terminal emulation, with power-user and application-interoperability features	- PCOMM (AS/400 or Combo) for each desktop - Communications Server also required when a gateway not available
Outstanding emulation with the smallest memory and hard disk requirements	- PCOMM (AS/400 or Combo) for each desktop - Communications Server also required when a SNA gateway not available
3270/5250 emulation for SNA, TCP/IP, or IPX/SPX networks	- PCOMM (AS/400 or Combo) for each desktop - Communications Server also required when a 3270/5250 session not available, except for IPX
Emulators with a common look and feel across both OS/2 and Windows environments	- PCOMM (AS/400 or Combo) for each desktop - Communications Server also required when a 3270/5250 session not available
5250 emulation with shared folder and data transfer support	- PCOMM for each desktop
SNA gateway, with support for OS/2, Windows, Windows 95, Windows NT, and DOS workstations	- Communications Server
Support for extended connectivity (X.25, ISDN, FDDI, Frame Relay)	- Communications Server
Support for APPN and node and network node	- Communications Server and OS/2 Access Feature (end node only)
Expanded API support such as APPN, APPC, ACDI, LUA, ISDN, X.25	- Communications Server and OS/2 Access Feature
Comprehensive terminal emulation function and expanded API support for APPC, CPI-C, or LUA	- PCOMM (AS/400 or Combo) which includes OS/2 Access Feature
Comprehensive terminal emulation function and gateway support in the same personal computer	- PCOMM (AS/400 or Combo) installed over Communications Server
Desktop, requiring TN3270E, on a LAN with a TN3270E server	- PCOMM Combo - Communications Server

Other product considerations

This positioning paper would not be complete without consideration of several other IBM products that are available for specific configurations. In the OS/2 Warp environment, two options, TN3270 and AttachPak, provide 3270 terminal emulation. For communication with an AS/400, running OS/400 Version 3, a new and comprehensive product, Client Access/400 (CA/400), is available.

All three products are discussed below:

TN3270 and TN5250

The first implementation of 3270 and 5250 terminal emulation in the OS/2 Warp environment, Telnet 3270 and Telnet 5250, are packaged with TCP/IP for OS/2. When OS/2 Warp Connect was announced in spring 1995, it included, as part of the connect package, the full TCP/IP for OS/2 product. Where limited 3270 and 5250 emulation is required in a TCP/IP environment, Warp Connect's TCP/IP (with TN 3270 and TN 5250) support is an option. A 3270 and 5250 session is established using the Telnet protocol over the TCP/IP connection. In this situation, Communications Server's TN3270E Server function should also be considered.

Note: TN3270 and 5250 are limited function emulators.

Client Access/400 (CA/400)

CA/400 is a program that provides client functions for workstations attached to AS/400s running OS/400 V3RI, or later. It is available for the Windows and OS/2 environments.

CA/400 replaces PC Support/400; it provides all the PC Support/400 functions, but is more closely integrated with OS/400 and has a graphical user interface.

The capabilities of CA/400 include industry-standard file and database APIs multimedia, print and e-mail (VIM and MAPI) services; and APPC and CPI-C APIs. In addition, CA/400 includes an IBM terminal emulator, PC/5250, as well as Shared Folders and Data Transfer. PC/5250 provides the same terminal emulation and function as the stand-alone emulator, Personal Communications AS/400 (PCOMM).

Note: Client Access/400 ships the same access node combinations that are available with the Communications Server OS/2 Access Feature and Windows Access Feature, which are:

- OS/2 - Sockets over SNA and SNA over IP
- Windows - APPC over IP

For more information on Client Access/400, please refer to IBM's publication, The Client Access/400 Family of Products, SC41-3560.

IBM Personal Communications AS/400 Twinaxial Entry Level

This product replaces IBM 5250 Emulation for Windows. An OS/2 version is also available. It is a low-cost 5250 terminal emulator providing two sessions to AS/400, System/36, or System/38 hosts over a twinaxial cable. It has the same easy-to-use graphical interface as the other members of the Personal Communications family but with reduced capability.

Summary

IBM's OS/2 SNA communication products have been described and positioned with each other. The following is a summary of products and their applications:

- PCOMM family of clients provides comprehensive client function that supports a wide variety of connectivity environments. This 32-bit family is the recommended solution for the majority of client and emulation requirements and includes SNA access features.
- Communications Server represents the next phase of 32-bit communications server function. It's based on industry-leading CM/2 communications support and adds to the SNA heritage by providing multiprotocol support and enhanced SNA functionality.
- Communications Server is the product of choice when SNA, TCP/IP, NetBIOS or IPX applications are required to run unchanged over an SNA or TCP/IP network, mixing and matching as your network needs change.
- OS/2 Warp Connect's TN3270 emulator can be considered where all 3270 traffic is designated to flow over a TCP/IP network connected to 3270 applications in a host running TCP/IP.
- The OS/2 Warp Connect AttachPak can be considered for customer situations where a minimum amount of 3270 emulation is required or for situations where a 16-bit SNA application environment is needed. This offering is supported through 1996 only and normally requires at least one CM/2 or Communications Server to provide the gateway or APPN network node support.
- CM/2 and Communications Server provide the gateway or APPN network node support.
- PC400 provides users with leading-edge OS/2 and DOS/Windows emulation and connectivity support to AS/400s. The 5250 Emulation Program for Windows provides a low-cost entry solution for AS/400, S/36, and S/38 twinaxial 5250 emulation.

For more information on this positioning paper, send requests over the Internet to: **epeters@vnet.ibm.com**

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