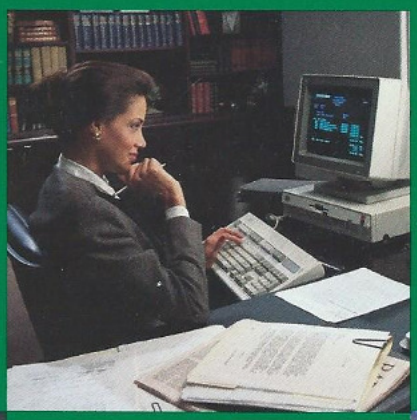
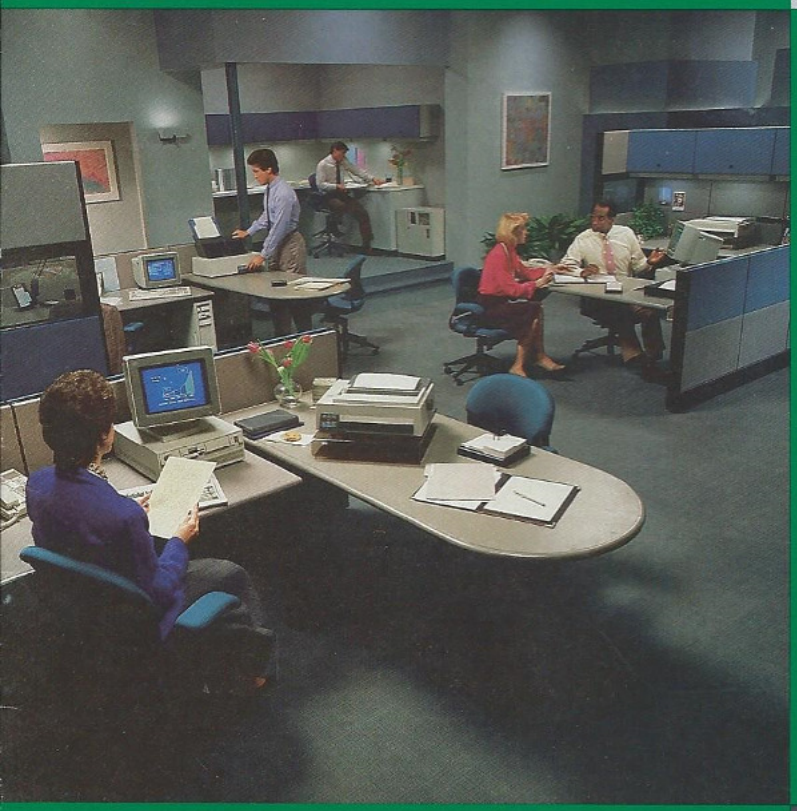
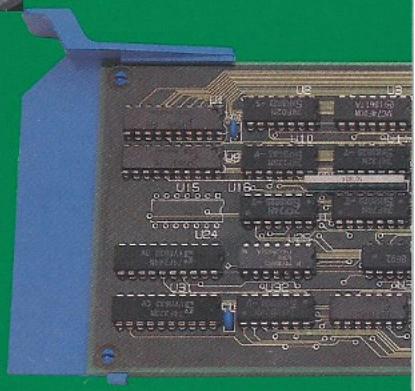
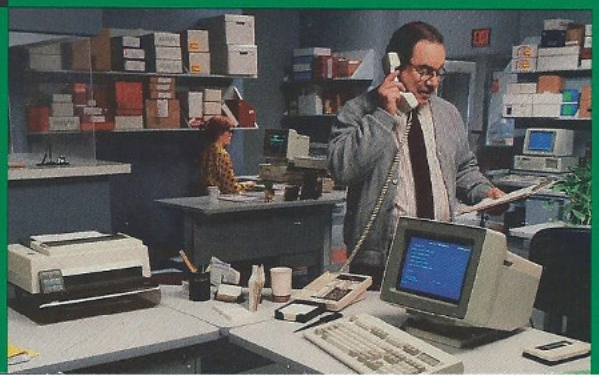
The next generation in personal computing

IBM Personal System/2 Connectivity Products









IBM

International Business Machines Corporation
Information Systems Group
Dept. KPE
900 King Street
Rye Brook, NY 10573

Printed in the United States of America
12-87

G360-2739-02

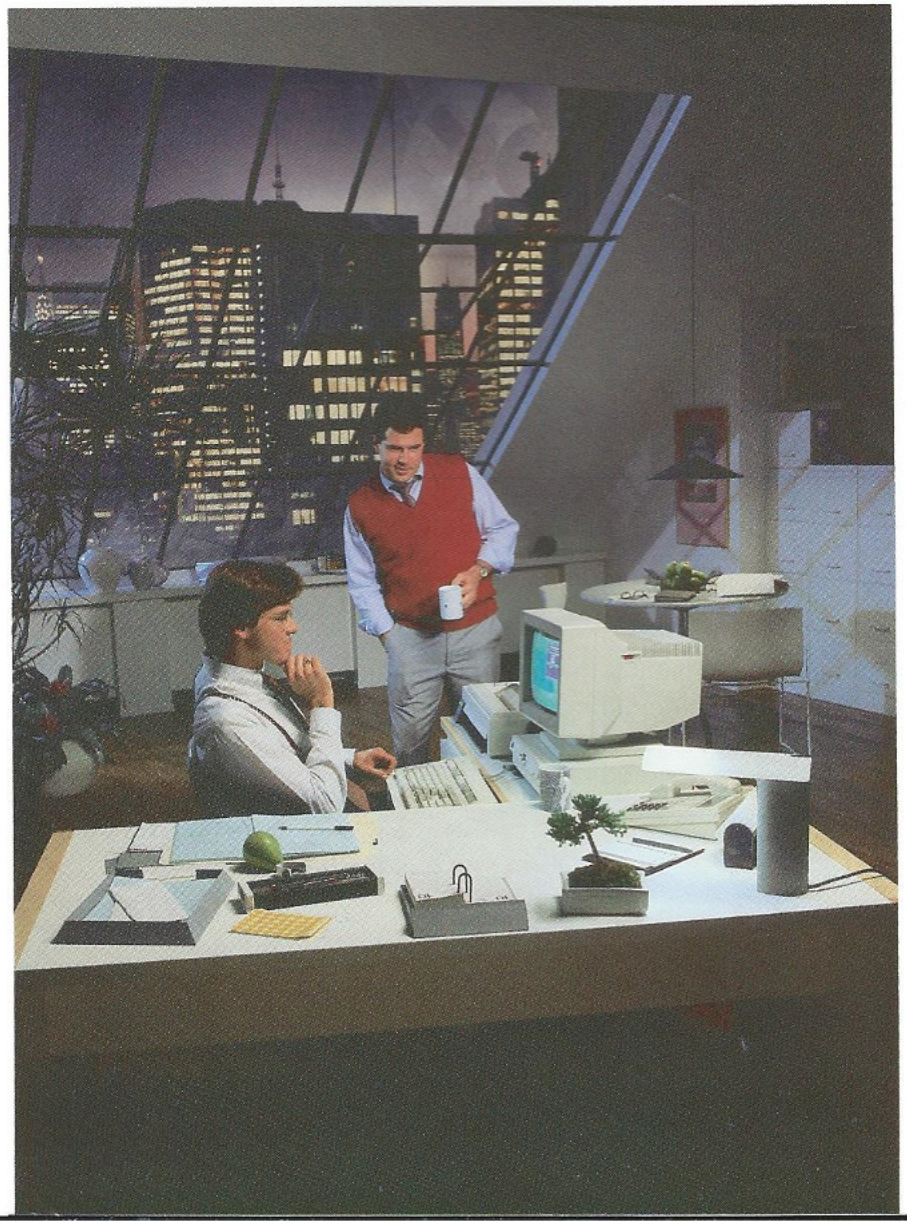
References in this publication to IBM products or services do not imply that IBM intends to make them available outside the United States.

IBM Communications Adapters
Easy ways to communicate with a computer

IBM Communications Adapters put you in touch with a wider world of computers. With a modem, all you do is dial the number of the computer you want your IBM Personal Computer or Personal System/2 model to talk to—just as if you were dialing any telephone number. Of course, if you have a dedicated line, you don't even have to dial. To enable your personal computers to talk to hosts over phone lines, an asynchronous, bisynchronous or Synchronous Data Link Control (SDLC) adapter—and a modem—is required. Whether you're accessing a personnel file stored on a host or calling a financial information service to see how your stock is doing, IBM provides the connections you need.

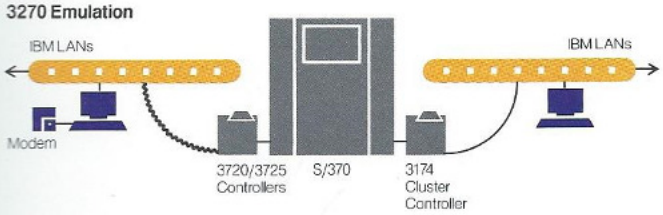
All the right connections

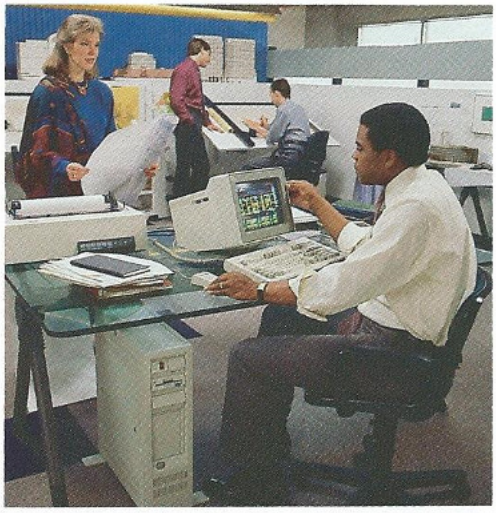
When it comes to personal computers and connectivity, IBM outconnects all the rest. And IBM Local Area Networks and other IBM connectivity products are blocks you can easily build on. Not only can they meet your needs today, they can expand to satisfy your demands tomorrow. And with IBM, your investment is secure. Whichever block you start with today, you know you'll have a firm foundation for even more productive connections in the future.



[1] *IBM PC Network Adapters II and II/A Frequency 2 and Frequency 3 cards require the use of non-IBM translator units.*

3270 Emulation





What's more, ECF lets you use host disk storage as if it were attached to your PC. That means you can create personal computer files on the host and save local storage for other tasks.

The IBM 3270 Communications Family of products consists of two adapters and three software packages.

The IBM 3278/79 Emulation Adapter provides host connection for the IBM Personal Computer, Personal Computer XT,™ Personal Computer AT,® and Personal System/2 Models 25 and 30.

The IBM 3270 Connection is an adapter that provides host connection for IBM Personal System/2 Models 50, 60 and 80.

The IBM PC 3270 Emulation Program Entry Level offers a minimal-memory, cost-effective solution for accessing System/370 mainframes. Support for IBM Enhanced Connectivity Facilities and GDDM/PCLK for graphics is also available.

The IBM PC 3270 Emulation Program Version 3.0 permits host access from IBM Personal Computers and IBM Personal System/2 models attached to an IBM Token-Ring Network or IBM PC Network and supports windowing under IBM TopView® Program. It also supports ECF.

The IBM 3270 Workstation Program lets you run up to four host sessions, up to six PC sessions, and up to two notepad sessions concurrently—plus take advantage of GDDM/PCLK host graphics capabilities and write application programs using the High Level Language Application Programming Interface (HLLAPI).

IBM Enhanced 5250 Display Station Emulation Version 2.12

With IBM's Enhanced 5250 Display Station Adapter and Enhanced 5250 Emulation Program Version 2.12, your PCs can perform both IBM 5291/92 Display Station and IBM Personal Computer functions.

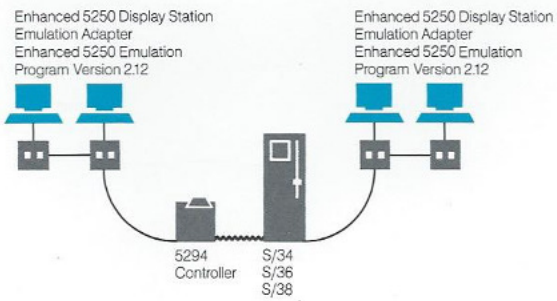
Enhanced 5250 Emulation Version 2.12 lets your IBM Personal Computer, Personal Computer XT, Personal Computer XT Model 286, Personal Computer AT, Portable Personal Computer, or Personal System/2 Model 30 access data stored on an IBM System/34, /36 or /38.

Then transfer the data to your personal computer and work with it there. It allows you to take advantage of multiple host sessions that let you run up to three programs at once—two from the System/34, /36, /38 and one from the personal computer—by using a hot key sequence to switch among them.

That's not all. Enhanced 5250 Emulation Version 2.12 adds IBM host 5292-2 business graphics—including bar charts, pie charts and graphs—to your personal computer. An IBM 7371 or 7372 Color Plotter attached to your personal computer via the asynchronous port provides presentation-quality output.

The benefits don't end there. Enhanced 5250 Emulation Version 2.12 provides 5256 (dot matrix) or 5219 (letter-quality) printer emulation for a variety of cost-effective IBM Personal and OEM printers—both parallel and serial. To use this feature, you simply identify your PC-attached printer on the Enhanced 5250 Emulation Program Version 2.12 menu.

5250 Emulation



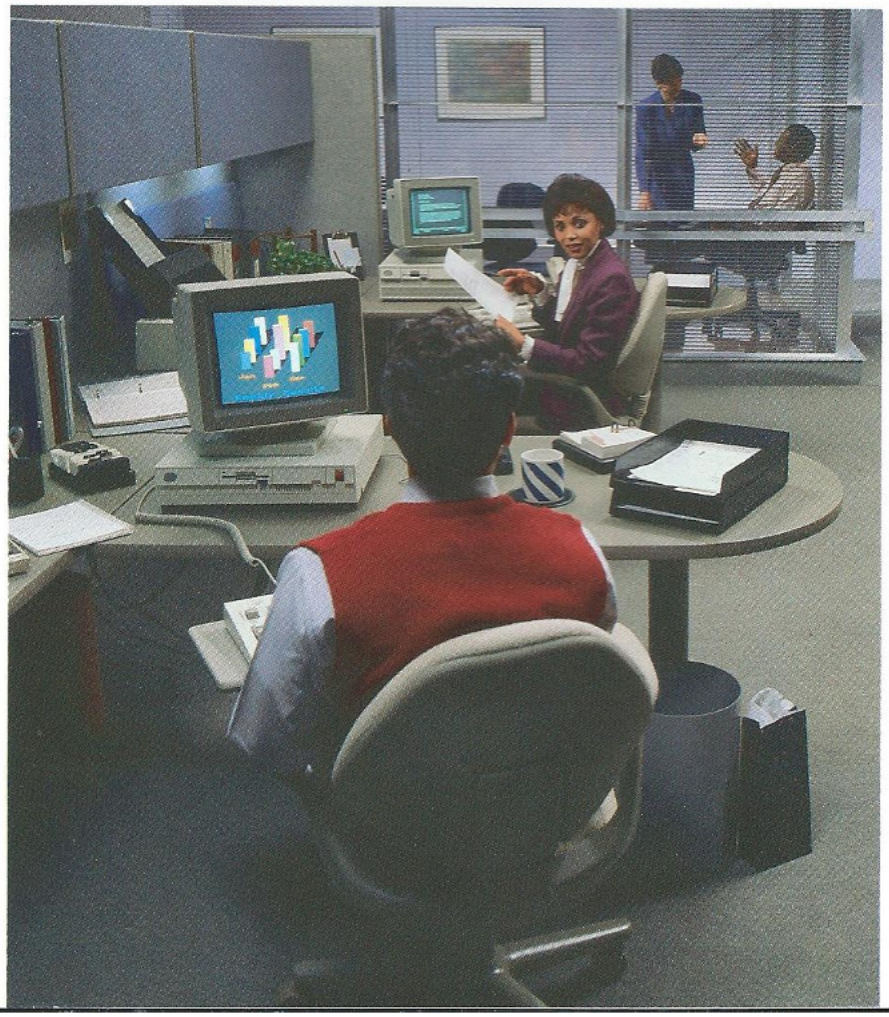
IBM Display Terminal Emulation
The power of a host at your desk

With IBM Display Terminal Emulation, you can bring all the capabilities of host computers—like processing tens of thousands of transactions a day—right to your Personal System/2 model or PC.

IBM offers two ways to gain access to the power of host computers: the IBM 3270 Communications Family for System/370 mainframes, and IBM 5250 Display Station Emulation for System/34, /36 or /38 systems.

The IBM 3270 Communications Family

With the IBM 3270 Communications Family of products, an IBM Personal Computer or Personal System/2 emulating an IBM 3278 or 3279 Display Station can access host and PC sessions. In effect, 3270 Communications eliminates the need for a display station and a personal computer—because an IBM Personal Computer or Personal System/2 can do the work of both.



Not only can you run host and PC sessions from your personal computer, you can run them at the same time. That means better use of your time. You can work at your IBM Personal Computer or Personal System/2 model while the host is processing data you need. Or let your computer execute a time-consuming task while you work with the mainframe.

There's more to 3270 Communications than running multiple sessions simultaneously—or having one device do the work of two. You can switch rapidly between host sessions and PC sessions with the touch of a jump or hot key sequence. And you can remap your computer keyboard.

Furthermore, you can set up high-speed file transfers between hosts and IBM Personal Computers. You can even route a host print file to either your personal computer or a variety of host printers, whichever is better suited to the task.

In addition, the IBM 3270 Communications Family of products lets you keep track of what you're doing by printing—on your PC-attached printer—the host or PC data you're viewing. The IBM 3270 Workstation Program—the high-end family member—allows you to open "windows" and work with information from a variety of sources on your PC display. And, with IBM's Enhanced Connectivity Facilities (ECF) and the IBM 3270 Communications Family, you can reach into host files, locate and extract specific data—even format the data to suit a particular need—then transfer the data to your personal computer.

In addition to these components, the IBM Token-Ring Trace and Performance Program and adapters provide the right facilities to monitor ring traffic and measure data throughput. Together, these products also serve as a tool for tracing and analyzing data from application programs using different protocols on a network.

The IBM PC Network

The IBM PC Network is a local area network conforming to the internationally accepted IEEE 802.2 LLC standard. It uses Carrier Sense Multiple Access/Collision Detect (CSMA/CD) protocol. It is designed to connect IBM Personal Computers and IBM Personal System/2 models.

The PC Network operates at two million bits per second and is intended for workgroup and departmental environments in which there is a need to exchange information and share resources among personal computers running such applications as word processing, spreadsheet analysis and data base management.

The IBM PC Network is available in both broadband and baseband implementations.

IBM PC Network—Broadband is capable of linking—over standard CATV cable—up to 72 computers within a radius of 1,000 feet. It is particularly suited to supporting multiple service applications including: data transmission, video conferencing, voice and telephony, security monitoring and energy management.

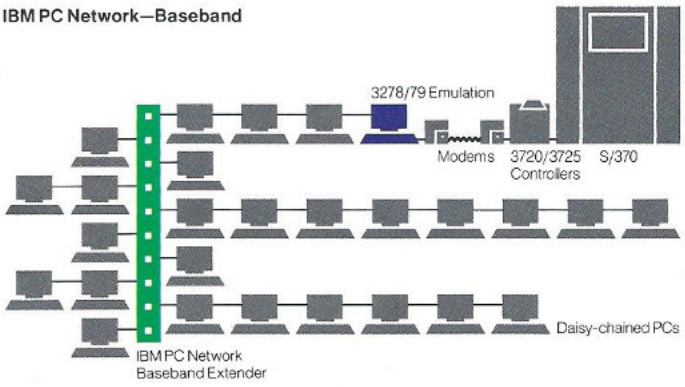
Each broadband PC Network on the cable can support up to 1,000 PCs within a 16,000-foot radius, with a customized design using non-IBM translator units.

The hardware components of the broadband PC Network are IBM PC Network Adapters II and II/A, the IBM 5178 PC Network Translator Unit, IBM PC Network Base Expander, and IBM PC Network Cabling Components. PC Network adapters are feature cards that plug into your IBM Personal Computers. The IBM 5178 provides signal amplification and frequency translation from the send to the receive channel for the network adapter cards.[1] The IBM PC Network Base Expander allows attachment of one to eight systems to the network. IBM PC Network Cabling Components physically connect PC Network adapter cards, the IBM 5178, and PC Network Base Expanders.

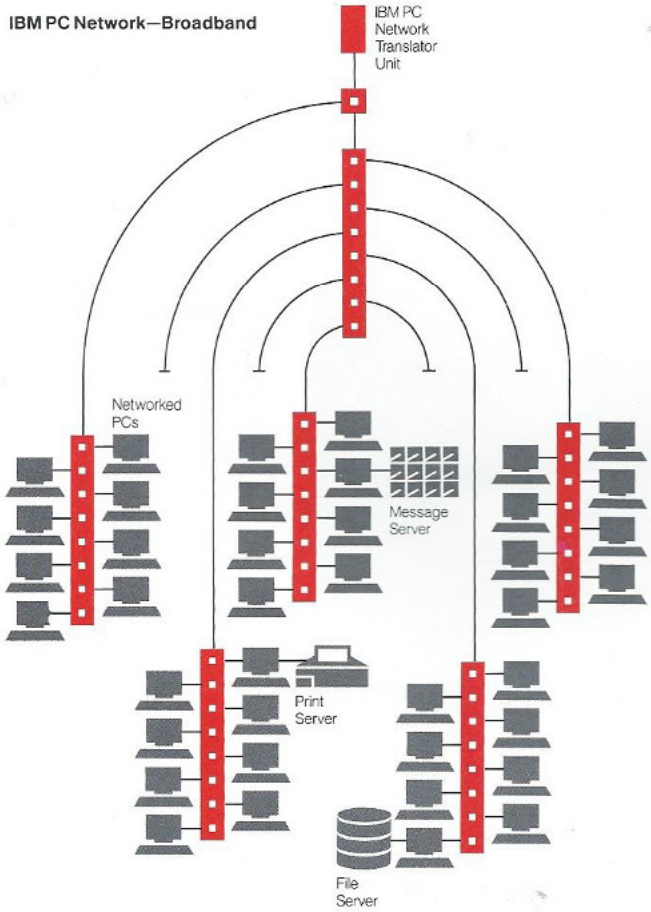
IBM PC Network—Baseband uses the IBM Cabling System media—including telephone twisted pair. The baseband PC Network allows up to eight personal computers to be wired together in a daisy-chain configuration. The addition of a 10-port IBM PC Network Baseband Extender permits up to 80 PCs to be connected in a star configuration.

Because the baseband PC Network requires a low initial investment, it is an attractive way to network PCs in a department, small business or classroom environment.

IBM PC Network—Baseband



IBM PC Network—Broadband



For these larger, more complex networks, LAN Manager provides information that allows an operator to analyze network problems and take corrective action.

IBM PC Local Area Network Program

Operating under IBM DOS, the IBM PC Local Area Network Program gives you the commands and menus you need to send and receive messages over both Token-Ring and PC Networks—and share data, printers and fixed disks attached to network file- and print-server workstations.

That's not all. The PC LAN Program allows you to protect your confidential data with file- and byte-level locking as well as passwords. And, depending on version, it offers you multiple security levels, user log-ons, resource management functions, and support for remote program loading.

IBM Operating System/2 Local Area Network Server

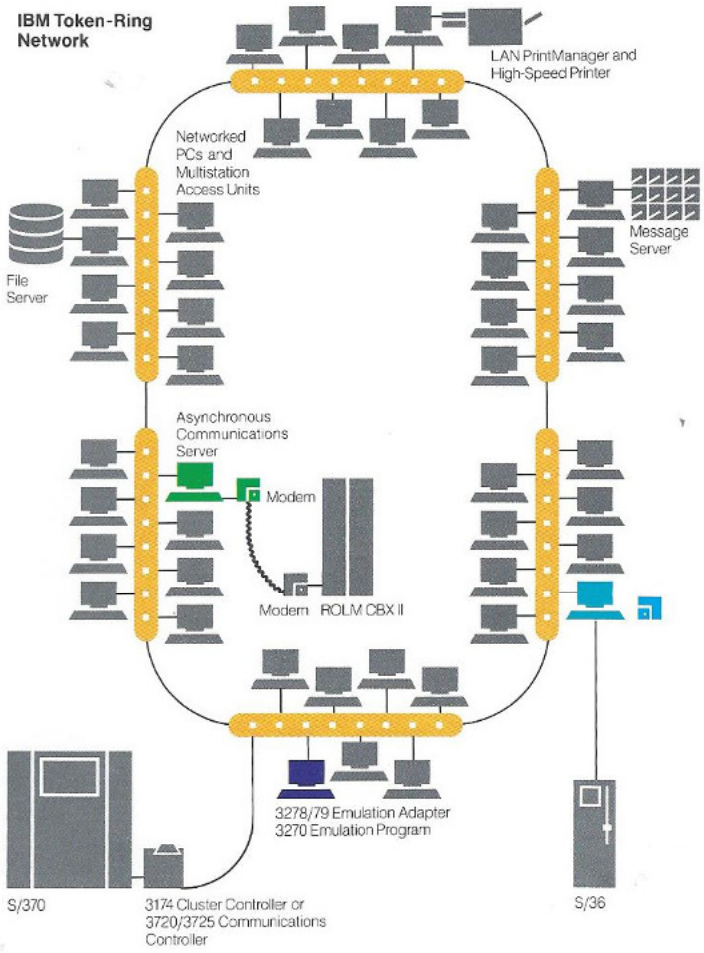
Through the PC LAN Program, you can access the IBM Operating System/2™ Local Area Network Server from your DOS-based workstation. That way, you can take advantage of OS/2™ LAN Server advanced functions—and easily migrate to OS/2 Extended Edition later.

When you move to IBM Operating System/2 Extended Edition, the OS/2 LAN Server will provide you with new and comprehensive functions—for security, printer management, messaging, resource management and remote program execution. In addition, it will support sharing of files, directories, printers, serially attached devices, and programs on a network.

More connectivity software

Additional software makes it possible for the IBM Token-Ring Network and the IBM PC Network to establish communication with:

- IBM System/370 mainframes
- Public information services and networks accessed by the public switched telephone network
- ROLM CBX
- Each other



The IBM Token-Ring Network

The IBM Token-Ring Network is a powerful baseband LAN conforming to the IEEE 802.2 LLC standard and using an IEEE 802.5 token-passing protocol. It is designed to accept direct attachment of:

- IBM Personal Computers
- IBM Personal System/2 models
- IBM 9370 departmental systems
- IBM System/36 Model 5363s
- IBM System/370s via IBM 3720/3725 Communications Controllers and IBM 3174 Cluster Controllers

Through IBM PC gateways, the IBM Token-Ring Network connects to:

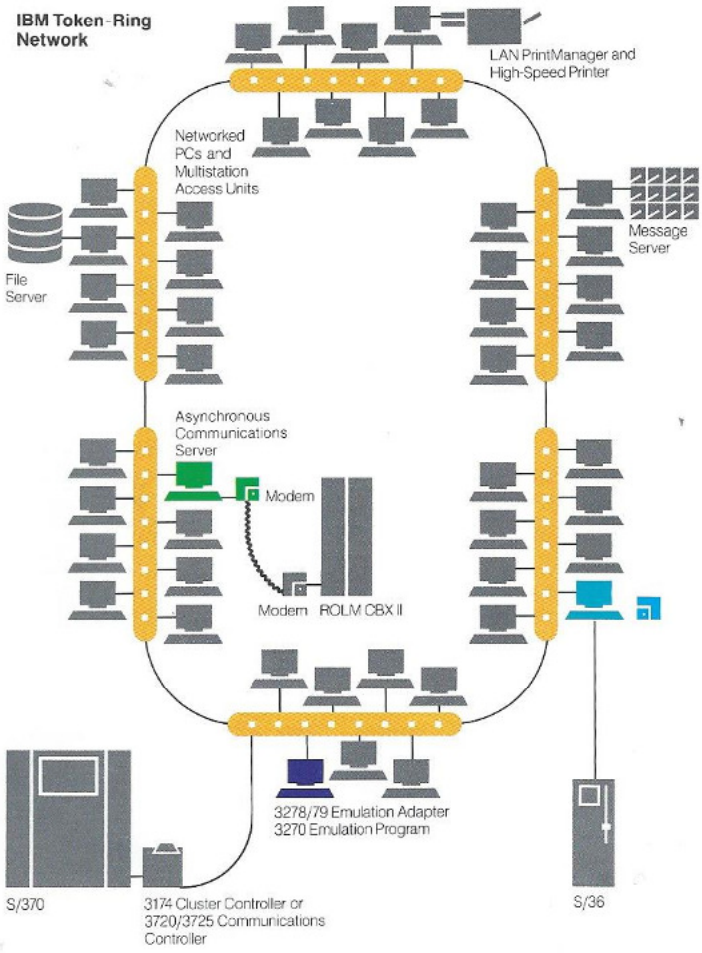
- IBM System/36s
- IBM System/370s
- Outside networks through the ROLM CBX or other PBXs

The IBM Token-Ring Network operates at four million bits per second and is capable of linking hundreds of devices acting as network workstations and servers—within a building, a complex of buildings, or a campus. As many as 260 devices can be linked in one ring. Multiple rings can be bridged together in order to connect a virtually unlimited number of devices in one Token-Ring Network.

The IBM Token-Ring Network is an establishment-wide solution. It is intended for environments in which there is a need to exchange information and share resources not only among personal computers but among other networks, departmental and host systems, and public information services as well.

The hardware components of the IBM Token-Ring Network are the IBM 8228 Multistation Access Unit, IBM Token-Ring Network Adapters, Adapter IIs, Adapter II/As and the IBM Cabling System.

The IBM 8228 allows up to eight personal computers to be attached to the network. IBM Token-Ring Network PC Adapters are feature cards that plug into your IBM Personal Computers or Personal System/2 units. The components of the IBM Cabling System physically connect an adapter to the IBM 8228, and one IBM 8228 to another.



For these larger, more complex networks, LAN Manager provides information that allows an operator to analyze network problems and take corrective action.

IBM PC Local Area Network Program

Operating under IBM DOS, the IBM PC Local Area Network Program gives you the commands and menus you need to send and receive messages over both Token-Ring and PC Networks—and share data, printers and fixed disks attached to network file- and print-server workstations.

That's not all. The PC LAN Program allows you to protect your confidential data with file- and byte-level locking as well as passwords. And, depending on version, it offers you multiple security levels, user log-ons, resource management functions, and support for remote program loading.

IBM Operating System/2 Local Area Network Server

Through the PC LAN Program, you can access the IBM Operating System/2™ Local Area Network Server from your DOS-based workstation. That way, you can take advantage of OS/2™ LAN Server advanced functions—and easily migrate to OS/2 Extended Edition later.

When you move to IBM Operating System/2 Extended Edition, the OS/2 LAN Server will provide you with new and comprehensive functions—for security, printer management, messaging, resource management and remote program execution. In addition, it will support sharing of files, directories, printers, serially attached devices, and programs on a network.

More connectivity software

Additional software makes it possible for the IBM Token-Ring Network and the IBM PC Network to establish communication with:

- IBM System/370 mainframes
- Public information services and networks accessed by the public switched telephone network
- ROLM CBX
- Each other

The IBM Token-Ring Network

The IBM Token-Ring Network is a powerful baseband LAN conforming to the IEEE 802.2 LLC standard and using an IEEE 802.5 token-passing protocol. It is designed to accept direct attachment of:

- IBM Personal Computers
- IBM Personal System/2 models
- IBM 9370 departmental systems
- IBM System/36 Model 5363s
- IBM System/370s via IBM 3720/3725 Communications Controllers and IBM 3174 Cluster Controllers

Through IBM PC gateways, the IBM Token-Ring Network connects to:

- IBM System/36s
- IBM System/370s
- Outside networks through the ROLM CBX or other PBXs

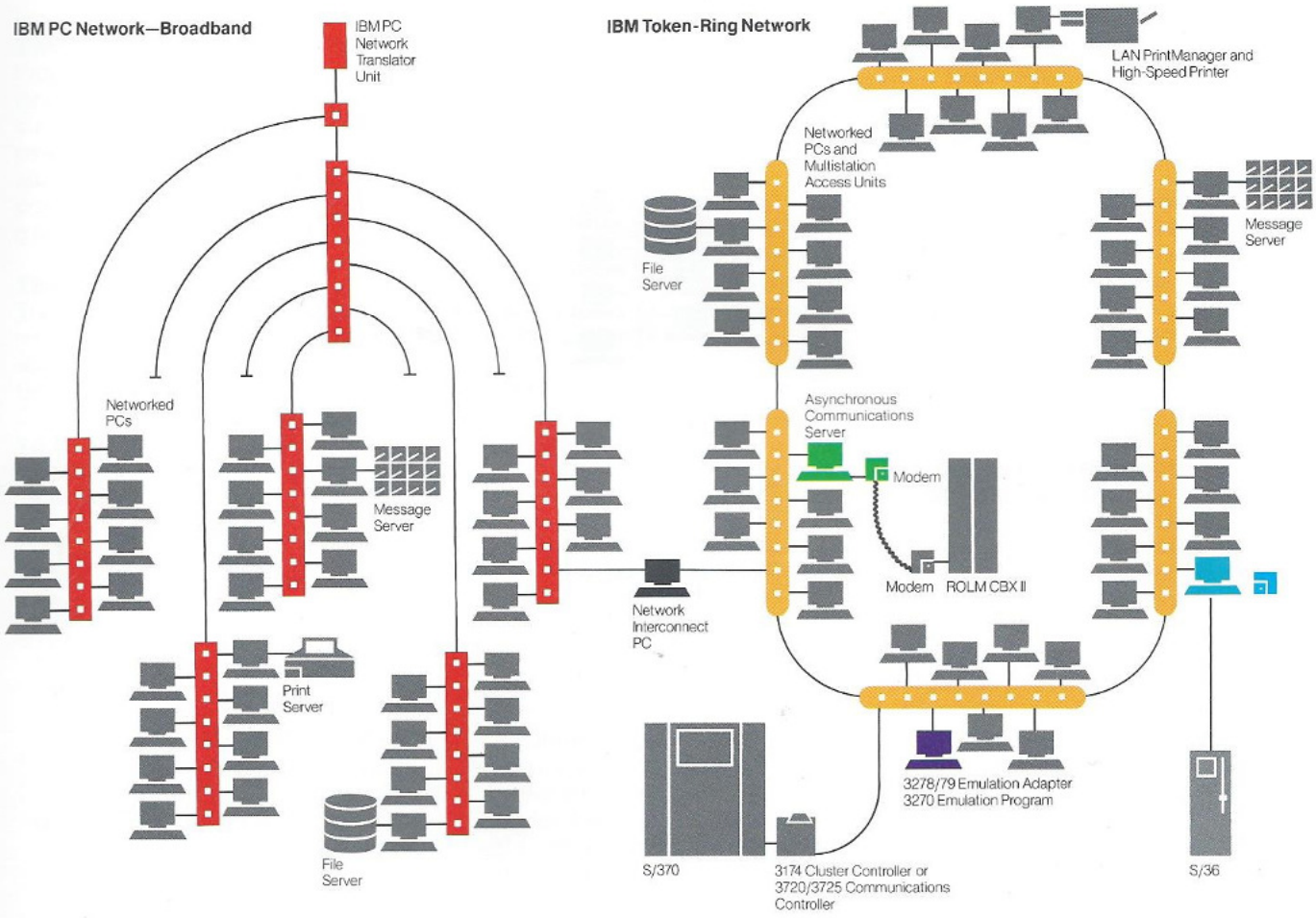
The IBM Token-Ring Network operates at four million bits per second and is capable of linking hundreds of devices acting as network workstations and servers—within a building, a complex of buildings, or a campus. As many as 260 devices can be linked in one ring. Multiple rings can be bridged together in order to connect a virtually unlimited number of devices in one Token-Ring Network.

The IBM Token-Ring Network is an establishment-wide solution. It is intended for environments in which there is a need to exchange information and share resources not only among personal computers but among other networks, departmental and host systems, and public information services as well.

The hardware components of the IBM Token-Ring Network are the IBM 8228 Multistation Access Unit, IBM Token-Ring Network Adapters, Adapter IIs, Adapter II/As and the IBM Cabling System.

The IBM 8228 allows up to eight personal computers to be attached to the network. IBM Token-Ring Network PC Adapters are feature cards that plug into your IBM Personal Computers or Personal System/2 units. The components of the IBM Cabling System physically connect an adapter to the IBM 8228, and one IBM 8228 to another.

IBM Local Area Networks
Smart ways to realize the benefits of connectivity



IBM Local Area Networks (LANs) are highly efficient ways to exchange information and share resources among IBM Personal Computers, Personal System/2 models, departmental systems, and mainframe systems within the same workgroup, department or establishment.

With a LAN, you send and receive messages and share resources such as data bases, printers, disk storage and communication lines—all at very high speeds.

The results: You can improve office communications, reduce duplication of effort, get more out of your equipment, help your staff work faster and smarter—and much more.

The IBM family of LANs includes the IBM Token-Ring Network and the IBM PC Network. They have a good deal in common.

Common interfaces

IBM Token-Ring Network and IBM PC Network both use the same interfaces for application programs and conform to the internationally accepted IEEE 802.2 Logical Link Control (LLC) standard. The application program interfaces are: the IBM Network Basic Input/Output System called NETBIOS and Advanced Program-to-Program Communications for the IBM Personal Computer (APPC/PC). These interfaces are available for users who want to develop connectivity applications.

Network management

IBM offers two programs that provide network-management functions for either IBM PC Network or Token-Ring Network environments. Both relay information on permanent and intermittent network conditions requiring operator attention to a central point. The IBM PC 3270 Emulation LAN Management Program is a cost-effective solution for small networks requiring management support from a central site. Networks large enough to justify local network-management resources can use the IBM LAN Manager which provides a fuller set of network-management functions.

Better business through connectivity

Whichever connectivity products you're using, you know you'll be able to share existing resources, improve office communications, and make your efforts and equipment more productive.

Maximize your resources
When it comes to getting the most from your IBM hardware and software, connectivity is the key. It means sharing applications throughout your company. It means that everything from memos to product plans can be quickly passed to a specific personal computer on demand—even if the information is stored on computers in widely scattered locations.

Resource sharing isn't limited to files and software; it includes equipment, too. For example, a few laser printers and high-capacity fixed disks can serve every personal computer on a floor. And just one sophisticated communication link can keep all the personal computers in your office in touch with the outside.

IBM communications solutions are more than just methods to stretch your resources—they facilitate the allocation of resources as well. For example, you can shift work from one computer to another—over a communication link—to take advantage of more powerful processors.

Improve office communications—inside and out
Connectivity solutions can answer your need to distribute information and disseminate ideas—more quickly and more widely. They let you exchange messages, transmit lengthy documents, even deliver mail electronically.

And you'll discover that using IBM Personal System/2 models or IBM PCs to rapidly transmit hundreds of pages of information from one location to another via communications links is cost-effective. You can cut down on delivering documents by hand and reduce the amount of time you spend on the phone.

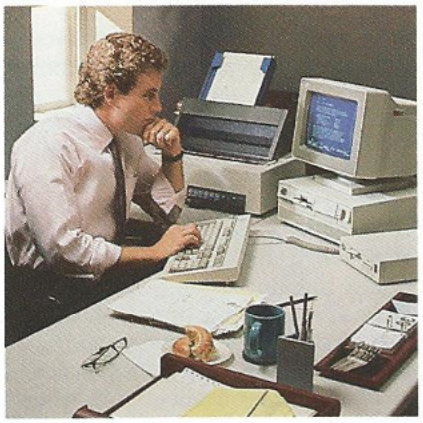
Since your personal computers can communicate, you can deliver a message when the line is busy—or when someone's out of the office—electronically.

Improving communications within your organization is only part of the story. Connectivity also provides the tools you need to make connections with the world beyond your door. Exchange important data with suppliers and customers—and speed up orders, both coming and going. Access complete libraries of information stored on scores of public data bases. In effect, cost-efficient data communications gives you the ability to explore whole new worlds of knowledge.

Connectivity means productivity
Connectivity helps eliminate duplication of effort—and cut costs. For example, you can put a master file of customer records on the IBM Personal Computer or IBM Personal System/2 in Accounting. Communications then allows the system in Order Processing to check customer credit before shipping an order. In effect, with good connections, there's no need for the same data to be duplicated on different systems. You enter it once on one system into a central data base, then make that single, up-to-date data base available to your organization.

In addition, connectivity helps you make equipment more productive. You can add intelligence to limited systems and give more problem-solving muscle to ordinary terminals by linking them to more powerful devices. Your IBM Personal Computers can, for example, access the power of host computers to perform tasks beyond the capability of personal computers.

Communications solutions for your business needs



With IBM Personal System/2™ connectivity products—local area networks, display station emulators, communications adapters and associated software—you'll have access to the information your business needs as quickly as you require it: now, not tomorrow or next week.

Whether the information is located inside your organization or at outside sources, you'll be able to get it fast enough to keep on top of your business—and keep your business strongly competitive.

Connectivity allows you to get this needed information in seconds by enabling your computers to talk to each other—and to remote computers—with ease. Even if the data you require is on a mainframe in Kansas City or a minicomputer in your West Coast distribution center, you can access it from a remote location in a more timely fashion.

Receiving timely data means increased efficiency for your staff and your business—and that can translate into significant cost advantages. By using connectivity products to get information on short notice, you eliminate the extra equipment, labor, time and money it takes to get the same information quickly by manual methods.

With its range of communications products, IBM is prepared to help you communicate information to virtually anyone, anytime, anywhere. Whether you need to send a memo down the hall or a proposal across the country, IBM has the technology and products to get the job done. Technology developed and continually refined over decades of involvement in every area of data communications. Products backed by the people, quality and service you've come to expect from IBM.