

Network Connection

January/February 1997

FORMERLY
THE APPC CONNECTION

IBM

THE IBM NETWORKING SOFTWARE NEWSLETTER

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And More...

AnyNet Keeps Information Flowing at Drogerie Markt



*German retailer
leverages powerful
multiprotocol
support for SAP R/3*

Drogerie markt is one of the largest drug-stores in Germany, with company revenues exceeding two billion deutschemarks last year. The company also has a wide presence in Europe with more than 600 stores located throughout Germany, Austria, Hungary, Italy, and other Eastern European countries. The responsibility of managing such a far-flung enterprise falls to Filiadata, Drogerie markt's computer service center. Filiadata manages a corporate-wide SNA backbone network supplied by the IBM Global Network as well as the TCP/IP LANs used at remote store locations.

To help streamline its business, Filiadata wanted to replace its existing mainframe-based accounting solution with SAP™ R/3, TCP/IP-based client/server business software used for financial applications. Filiadata needed DOS and Windows™ SAP R/3 clients on IP LANs in remote

store locations to access a SAP R/3 AIX® server over the SNA network. The server runs on an IP LAN in Karlsruhe, Germany.

According to Wolfgang Müller, Filiadata network administrator, Filiadata decided to run SAP R3 over the SNA backbone, because doing so would be more cost-effective than obtaining additional lines for IP routers. The challenge was finding a way to connect the remote stores to the main store across that SNA backbone.

Application

**SAP R/3 financial
applications**

Software

**Communications Server
for OS/2 Warp™,
AnyNet/2 Sockets over
SNA Gateway, and OS/2®**

ANYNET PROVIDES MULTIPROTOCOL CON- NECTIVITY

To find a solution, Filiadata turned to IBM. Filiadata installed eight AnyNet/2 Sockets over SNA Gateways at stores in Austria, Germany, Hungary, Italy, Czech Republic, Slovakia, Croatia, and Slovenia to connect the IP LANs over

Continued on page 13

Welcome to 1997

As I write this, we've just begun another new year: 1997. Time seems to go by faster and faster, especially in the world of technology. Nowhere, it seems, does time go faster than in network computing. An IBM colleague recently coined the term "Web year" to describe the amount of time it takes Internet technology to advance by one year. She added that a "Web year" is currently about three months long, and it will probably shrink even more.

As technology advances faster and faster, one thing remains constant: IBM Networking Software continues to be the leader in providing innovative technology that helps your business succeed and gives you an edge over your competitors.

1996 (the actual calendar year, not the "Web year") was another exciting and successful year for IBM Networking Software. It began with the announcement of the Enterprise Communications family and ended with major successes that included the launch of PCOMM and Communications Server beta programs for Windows NT™ and the introduction of Host On-Demand.

As the networking leader, we know that 1997 will be just as busy and exciting as 1996. We started the new year by announcing the general availability for PCOMM for Windows NT. This gives you the power of IBM's Enterprise Communications software in another popular operating environment.

But that's just the beginning. In this issue of *Network Connection* you'll read how the Enterprise Communications family—especially IBM's TCP/IP—is part of IBM's network computing initiative, helping to make seamless multiprotocol networks a reality. You'll read more about Host On-Demand, which will be generally available soon. You'll read about how customers are deploying High-Performance Routing (HPR) to overcome their business challenges.

You'll also read how IBM Networking Software teamed with customers and business partners from Japan to keep them informed about the latest advances in network computing. And we report on how Drogerie markt, a leading German retailer, has used IBM's AnyNet® technology to put its employees in touch with key data and applications.

A reminder: If you haven't already mailed the Networking Usage and Requirements survey enclosed in the last edition of *Network Connection*, please take a moment to do so now. When we receive your completed survey, we'll send you a free memento as a token of our appreciation.

We're always happy to hear your comments and suggestions about *Network Connection*. You can send them to appcnews@vnet.ibm.com or fax them to 919-254-9132.

I wish all of you continued success in 1997.

Larry Kunz

Larry Kunz
Editor, *Network Connection*

IBM Networking Magazines Available Online

Have you forgotten where you put your last issue of *Network Connection*? Did someone conveniently "borrow" it for the next decade? Don't worry.

Now whenever you need a copy of *Network Connection*, you can find one online at <http://www.networking.ibm.com/nwc/nwcover.htm>. The online version of *Network Connection* contains the same information as the printed version. And if there's a piece of code or some other information you need, you can simply download it to your PC.

You can also find copies of IBM's *NetNews* networking magazine online at <http://www.networking.ibm.com/nnn/nnn1int.htm>. *NetNews* features IBM's networking hardware and software products along with customer success stories, consultant interviews, and executive viewpoints.

Both magazines can be accessed from IBM's Networking home page at <http://www.ibm.networking.com>.

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Sushi and Grits



Japanese business partners get a taste of the American South and gain insight on IBM's network strategy

To help keep its worldwide business partners informed about the latest advances in network computing, IBM recently invited representatives from eleven Japanese firms to tour IBM facilities in the United States. IBM hopes the new program—dubbed the "Capability Tour"—will strengthen its relationship with regional IBM Business Partners and help ensure the highest quality sales support for IBM customers around the globe. IBM Networking Channel Marketing Programs (NETeam in the U.S. and NETS in Japan) jointly sponsored the visit, during which the Japanese participants learned about IBM's networking strategy and sampled the culture of the American South.

Tatsuji Namatsu from NETS states, "Although ATM networks have been popping up in Japan, there has not been a widespread implementation of ATM technology. As more and more companies have begun to express interest in ATM, we decided to create this tour to let our business partners take a firsthand look at the outstanding advantages of ATM and Switched Virtual Networking (SVN)."

The visit included three days of briefings that focused on IBM's strategy, products, and future networking trends. Key topics included IBM's plans for SVN, campus networking, enterprise networking, network management, and the Internet. The tour also included a trip to the Network+Interop® conference in Atlanta, where the visitors had an opportunity to view an ATM network on display at the IBM booth. As part of the Atlanta visit, the Japanese entourage also visited the site of the 1996 Summer Olympics—a valuable side trip since many of the visitors might be called upon to help support the next Olympic games, which will be held in Japan in the winter of 1998.

According to Namatsu, "The tour was an important step in strengthening IBM's relationship with Japanese business partners. The SVN presentations were very effective and met with much enthusiasm from the business partners." As a result of the tour, nearly all of the Japanese firms have begun to

establish ATM and SVN promotions—much to the delight of their customers throughout the country.

In fact, there has been so much customer interest that NETS and its business partners recently held an "Infranet Fair" (infranet means infrastructure network) to help Japanese companies implement SVN technology. One such business partner—AST, a joint company of IBM and Mitsubishi®—has entered into a long-term collaboration with NETS to fulfill ATM business opportunities. Another influential business partner, Nippon Information and Communication—a joint company of IBM and Nippon Telephone and Telegraph—has redirected its core business strategy from PCs to network computing, based on the recommendation of the company president who participated in the tour.



For more information

Visit the NETeam home page at <http://www.networking.ibm.com/ntm/ntmhome.html>

Host Access Direct from the Internet

- Use Host On-Demand to access a central computer from Internet, intranet, and Web-based environments

With the rapidly growing popularity of the Internet, more and more users are looking for ways to leverage the valuable resources located there. Companies have also been quick to realize the enormous potential of internal intranets as a vehicle for making information more accessible to the users who need it. Beyond accessing Internet and intranet resources, Web-oriented users often require access to central computer information and services, though usually on a limited or infrequent basis. This type of access enables critical information resources—located on SNA hosts—to be shared among colleagues, vendors, business partners, suppliers, and customers.

Most Web-based users, however, have different computing needs from users who normally operate within the traditional host environment. For example, many Web users might not possess a 3270 emulator since they do not require host access as frequently as traditional SNA host users. Whatever the case, this growing sector of the workforce needs a multiprotocol solution that will enable them to seamlessly access 3270 applications directly from industry-standard Web browsers.

A JAVA-BASED INTERNET-TO-SNA SOLUTION

To help Web users access the host-based information they need, IBM now offers Host On-Demand, a Java™-based Internet-to-SNA solution that incorporates industry-standard Telnet 3270 (TN3270) protocols. Host On-Demand provides a high-performance, low-cost solution for Intranet and Web users who need only occasional access to central computer applications or

databases from any Java-enabled end-user platform. The result is dramatically increased availability of host-based information—such as public catalogs, software applications, databases, or other resources—for Web-oriented users.

Host On-Demand provides a simplified alternative to installing a terminal emulation program on the desktop. Using the Java environment and native TN3270 and Internet protocols, Host On-Demand provides platform-independent host access from within a Web-browser window. Access is as simple as pointing and clicking on an SNA application hot link from within a Java-enabled Web browser. No programming or additional hardware is required.

Host On-Demand provides a variety of features and benefits, such as:

- ◆ Emulator functions on demand
- ◆ Java-based implementation
- ◆ Customized 3270 windows
- ◆ Persistent connections
- ◆ Platform flexibility
- ◆ Enhanced security
- ◆ Investment protection

EMULATOR FUNCTIONS ON DEMAND

Host On-Demand is an excellent solution for SNA application access through a standard, Java-enabled Web browser. You do not need any additional software to use Host On-Demand.

When you click on an SNA application hyperlink, Host On-Demand dynamically downloads its Java-based TN3270 emulator to your computer. The most up-to-date release is always downloaded automatically each time you invoke Host On-Demand. When you close the Host On-Demand window (or your browser window), Host On-Demand's emulator is removed from your computer, freeing up resources for other application tasks.

By downloading only the functions needed, Host On-Demand conserves resources on your computer, such as memory and CPU time, while simultaneously reducing network bandwidth consumption.

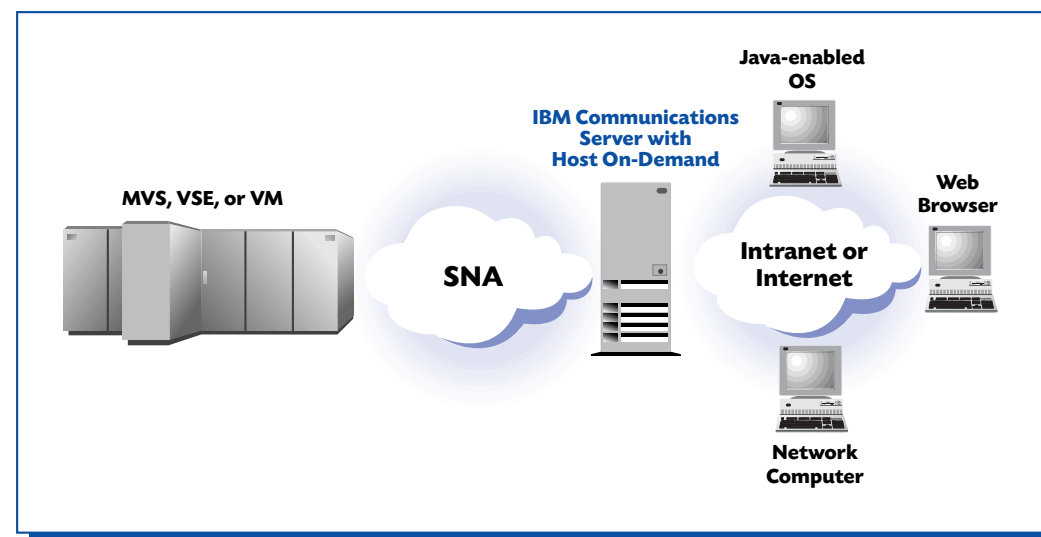


Figure 1. Host On-Demand streamlines communications between host systems and intranets

JAVA-BASED IMPLEMENTATION

The Java-based implementation of Host On-Demand offers advantages not usually found in similar programs, which often use HTML mappers. The Host Connection TN3270 Java applet provides an intuitive, window user interface that has functions and interactions associated with traditional 3270 terminal screens. The interface is especially useful for Web users who need occasional access to host applications from a browser. It allows for quick entry and exit from a 3270 application and always displays the current 3270 screen.

General-purpose HTML-to-3270 mapper screens are typically cached by the Web browser. Using a cached screen rather than the actual, real-time screen can present problems. For example, if you page backward in your browser and attempt to reuse a 3270 screen, your SNA session is disrupted. To avoid this problem, you would have to change the Web browser configurations (disable browser page caching) or implement user training. The design of Host On-Demand eliminates this problem altogether by always presenting the current, real-time SNA application screen.

CUSTOMIZED 3270 WINDOWS

You can open Host On-Demand 3270 windows within your existing Web browser window or as a new window on your desktop. Many Web-oriented users might be more at ease with SNA application access from within their browser windows. More experienced 3270 users, however, might prefer a separate 3270 window. Host On-Demand offers both options. In addition, Host On-Demand provides multiple-session support for accessing multiple 3270 applications concurrently.

PERSISTENT CONNECTIONS

Host On-Demand provides a true, bidirectional session between you and the SNA application you access. Unlike HTML mapping approaches whose connections to the Web server are constantly being terminated and reconnected, Host On-Demand provides a persistent connection to its server. A persistent connection improves network security by denying unauthorized connections. It also helps reduce network traffic by utilizing bandwidth in a stable, uninterrupted manner.

PLATFORM FLEXIBILITY

Host On-Demand supports any Java-enabled client platform and is available for a wide range of major server platforms, including OS/2, AIX, and Novell® NetWare®. (The Windows NT and S/390® servers will be available soon.) As a result, you have the flexibility to choose the platform you want.

ENHANCED SECURITY

Host On-Demand has several levels of security. You can employ existing Web security techniques, such as user IDs and passwords or firewall filters. The persistent connection of Host On-Demand improves network security by preventing the exposure found within HTML mapper implementations. With HTML mapper-driven applications, authorized users are vulnerable to unauthorized connection to their "sessions" while the HTML connection is down. You can also use traditional central



Figure 2. Host On-Demand simplifies host connections with an easy-to-use interface

computer security mechanisms, such as Resource Access Control Facility (RACF™) and ACF2, with Host On-Demand.

INVESTMENT PROTECTION

Host On-Demand leverages your existing investment in IBM Communications Servers by helping integrate your intranet and Internet environment with your SNA information and services—without expensive and time-consuming programming. Simply install Host On-Demand on your server and specify a URL for the SNA applications you want to access.

COMPLEMENTARY HOST ACCESS SOLUTIONS

IBM offers a wide range of host access products to make information accessible throughout heterogeneous environments. The IBM CICS™ Internet gateway provides an application-specific solution for Web users who need access to CICS applications. The IBM DB2® WWW Connection and its follow-on product IBM Net.Data provide Web users with Internet access to host-based databases. To further enhance host database access, Net.Data supports the new Java DB Connectivity (JDBC) API.

Either of the following solutions can provide an effective way to access your information resources on SNA hosts:

- ◆ **PCOMM**—To optimize emulation access to host applications for users who need advanced application support and networking capabilities—or productivity enhancements—with more casual use of a Web browser (see page 10 for more information about PCOMM)
- ◆ **Host On-Demand**—To optimize Web browser access to host applications where more casual use of the application is needed

Host On-Demand is now available at no additional charge as new function for the following products:

- ◆ IBM Communications Server for OS/2 Warp, V4 R1
- ◆ IBM Communications Server for AIX, V4 R2
- ◆ IBM-provided function for NetWare for SAA®, V2 R2
- ◆ IBM Communications Server for Windows NT (now in beta test) when it becomes available

In addition, IBM plans to provide Host On-Demand for the MVS/ESA platform in the near future.

For more information

Visit http://www.networking.ibm.com/hex/hexprod_en.html

HyPeR APPN: A Springboard to ATM

• *The High-Performance Routing extension to APPN could be the key to your networking future*

Over the last two decades, SNA has established an excellent reputation as an efficient and reliable networking protocol. In fact, SNA is so ingrained in the computing enterprise that Gartner Group® estimates that 90 percent of all mission-critical corporate traffic is carried by SNA. One of the primary factors behind this widespread popularity is the continual, evolutionary improvement of SNA.

With Advanced Peer-to-Peer Networking® (APPN®) available on both IBM system platforms and the platforms of many other vendors, SNA has solidified its position as an industrial-strength networking protocol. With an emphasis on "open" communications, SNA enables any-to-any communications over most LAN and WAN technologies and between user workstations and servers of any size, while continuing to meet the needs of a variety of computing models (centralized, distributed, collaborative, and client/server).

Today, SNA/APPN is at the forefront of the next stage of networking that will rely on high-speed virtual networks exploiting switched technologies—a practice known as High-Performance Routing (HPR). The HPR extension of APPN is rapidly becoming the SNA-over-ATM protocol that will carry commercial data onto multimedia networks. HPR provides unparalleled performance and a springboard to ATM, while enabling existing devices and applications to leverage past investments. Your network need not undergo revolutionary upheaval. Instead, you can install HPR as a simple, low-cost APPN software upgrade.

HPR COMBINES THE BENEFITS OF EARLIER PROTOCOLS

The major issues for enterprise networks are well-known: openness, line costs, speed, bandwidth, management, reliability, congestion control, multiprotocol support, and the future. Most routing protocols address only some of these issues. And even though APPN addresses most of the issues, only HPR gets right to the heart of all the issues.

HPR combines all the best features of earlier protocols—connectionless or connection-oriented—with entirely new features, such as non-disruptive rerouting and state-of-the-art congestion control. Three core technologies—Rapid Transport Protocol (RTP), Automatic Network Routing, and Adaptive Rate-Based congestion control—provide the functions required to take full advantage of high-speed ATM networks.

IMPROVED NETWORK AVAILABILITY

RTP handles all session set-up and routing information in HPR end-points. RTP is a connection-oriented routing protocol specifically geared to today's high-performance media. A key feature of RTP is non-disruptive rerouting. When a time-out alerts an error, RTP automatically recalculates a physical path. Traffic is then dynamically rerouted around the failure. End-to-end error recovery ensures that no data is lost.

This capability means that user sessions survive link failures, systems administrators no longer need to worry about physical rerouting, and mission-critical applications are safe. Not only is RTP fail-safe—it is also very fast. Modern media are characterized by low error-rates and high data-rates. By restricting error recovery to RTP end-points, HPR cuts down on processing time and buffer space at intermediate nodes. This reduces network traffic, thereby improving bandwidth usage. Selective retransmission improves performance even further. For example, if the third packet of a six-packet sequence is lost, only the missing packet is retransmitted.

FASTER ROUTING AND RESPONSE TIMES

Automatic Network Routing (ANR) enables high-speed routing between intermediate HPR nodes, while supporting SNA traffic prioritization and allowing specific priorities to be assigned for multiprotocol traffic. Within HPR, each data

packet is prefixed by a sequence of ANR labels that define the complete route. Intermediate nodes need only strip the first label in the sequence and pass the packet on to the next intermediate node.

Connection awareness, and thus complex processing, is not needed at intermediate nodes since the RTP end-points determine network paths, set up sessions, and handle error recovery. As a result, fewer routing instructions per packet are required and routing performance significantly increases.

IMPROVED CONGESTION CONTROL

Adaptive Rate-Based (ARB) congestion control continually monitors data rates between individual RTP end-points. By comparing send and receive rates, ARB regulates input traffic to optimize network performance. There are two main reactions to feedback from a receiving RTP end-point:

1. If the receive rate is lower than the send rate, a danger of backbone overload exists. ARB automatically reduces input traffic at the sending RTP end-point, preventing congestion and packet loss.
2. If the receive rate is equal to the send rate, ARB increases input traffic up to an allowed limit, thereby providing efficient link and bandwidth usage.

EXTENDING APPN WITH HPR

IBM is currently promoting APPN and HPR extensions to APPN to ensure the widest possible choice of interoperable products from as many vendors as possible. At the heart of this policy is the APPN Implementers' Workshop (AIW), an industry consortium of 45 member companies formed for cooperative work on APPN and SNA-related implementations and standards. Since April 1993, representatives from these companies have been meeting regularly to exchange information about APPN and formulate standards. (See page 14 for more information.)

IBM has recently encouraged third-party development by making HPR functions available at no extra charge to licensees of its APPN source code. Fourteen major manufacturers have already committed to APPN by implementing full Network Node functions. These companies include 3Com®, Bay Networks™, Cabletron®, Cisco®, CrossComm®, Hewlett-Packard®, Hitachi®, Memorex-Telex®, NET®, Network Systems®, Northern Telecom®, Novell, Proteon®, and Unisys®.

THE HPR NETWORK SNAPSHOT

HPR can be seamlessly and incrementally integrated with existing equipment and applications. Some of the components that make up an HPR network are described below. All are available today to help you implement HPR in your environment.

Communications Manager Server

The Communications Manager Server Version 4.0 for OS/2 Warp provides workstation-to-host and workstation-to-workstation multiprotocol communications services. The Server provides multiprotocol support via sockets over SNA

Banque Indosuez: Buying into APPN and HPR Futures

A wholly owned subsidiary of Compagnie de Suez—one of Europe's leading financial groups—Banque Indosuez is firmly committed to providing outstanding customer service in terms of quality, responsiveness, and resourcefulness. As a major international merchant bank employing over 12,000 people in 65 countries, Banque Indosuez offers an extensive range of financial services worldwide, with particular emphasis on Europe, the United States, and Asia. The bank primarily serves large corporations, institutional investors, and individuals with substantial funds.

Three years ago, Banque Indosuez was using SNA over leased lines. Recently, the company set up a private frame relay network to interconnect its Paris and Singapore computing centers, its New York development center, and 200 branch offices worldwide. The current environment remains predominantly SNA, with a substantial investment in APPN applications. Charles Mula, communications manager, comments, "We haven't heard any compelling argument to move our SNA net to TCP/IP, and retraining our staff to handle IP would cost too much."

Mula is quick to point out, however, that the bank still plans to evolve its network to APPN with HPR. An advanced network can provide a vital competitive edge in the financial industry. The bank's key decision was how the existing remote routers and IBM 3745 controllers should evolve.

Mula explains, "The driving force behind the decision to go with the 3746-950 Nways™ Multinetwork Controller and APPN was administration cost, which we expect to cut in half. We do all of our session and route definitions manually for over 2,000 devices. We know APPN will automate these procedures. We couldn't see eliminating that task with a router-based backbone."

Banque Indosuez also recognized the importance of first-rate network management. IBM provided a complete solution, with the management tools as well as the chosen network protocol and hardware. "With an environment of our size, we need as much automation as possible to respond to problems in our SNA network. SNMP platforms can't come anywhere near the level of NetView®. Tossing NetView out in favor of a distributed SNMP-based management platform would be inefficient and costly."

Now that the bank has already made a key enterprise-wide decision, Mula has a vision for the future network. "Without HPR, we don't believe APPN has the performance or the stability of current SNA implementations," he says. "We will have HPR everywhere. ATM is still a few years away. We'll be looking at ATM in the workgroup areas first, but the equipment first has to be evaluated."

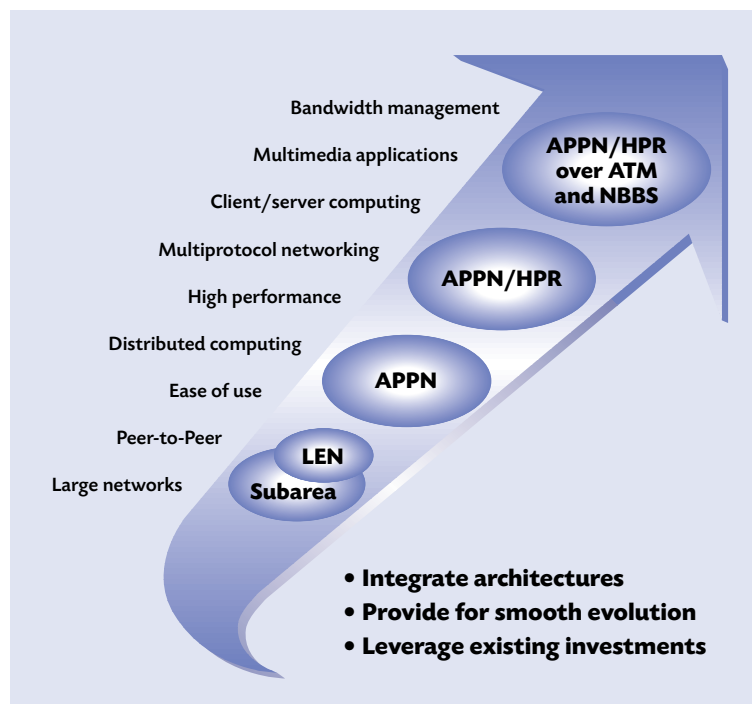


Figure 1. HPR/APPN paves the way for ATM networking

gateway and access nodes; it also provides multiprotocol support via SNA over TCP/IP gateway and access nodes.

APPN network node, end node, and APPC support for distributed applications is also available. In addition, HPR support gives you improved network availability through transparent recovery from network failures, better network performance through enhanced error recovery mechanisms, and state-of-the-art congestion control capabilities for reduced bandwidth requirements.

VTAM Software

VTAM® Version 4 provides APPN support for the mainframe (MVS®, VM, and VSE™), protecting an investment in SNA networks and enabling users to benefit from the APPN advantages of advanced routing, increased network availability, and simplified administration.

You can migrate to APPN at your own pace, whatever the size or complexity of your network, simply by upgrading software in sections of your network one at a time. VTAM Version 4 for MVS/ESA™ enables the various sections of an SNA network to migrate easily to APPN, but also offers HPR, a connectionless style solution. HPR can significantly improve network throughput by streamlining the required processing performed by APPN intermediate nodes. The SNA routing capabilities are maintained, while congestion control mechanisms are improved and bandwidth use is optimized—giving you the combined benefits of SNA, APPN, and IP capabilities.

Dependent Logical Unit Requester (DLUR) Software

DLUR is available on APPN network nodes from Communications Server for OS/2 upwards. DLUR eliminates all hierarchical constraints on the configuration of pre-APPN dependent logical units, such as 3270 terminals and printers. Thus, 3270 applications gain all the benefits of APPN and HPR, including Class of Service (COS); dynamic, alternative, and multiple routes; and non-disruptive rerouting. This translates to lower connection costs, enhanced fault tolerance, greater availability and productivity, and simplified management.

AnyNet Product Family

IBM's AnyNet access node and gateways family simplifies multiprotocol networking by letting you add and connect many types of applications, regardless of network protocols. Internetworking with gateways over SNA and APPN can help branch office users on IPX, NetBIOS, and TCP/IP LANs take advantage of SNA efficiency and reliability in addition to HPR.

IBM 2210 N Ways Multiprotocol Router

The 2210 N Ways Multiprotocol Router provides low-cost SNA multiprotocol routing for branch office environments, enabling you to connect multiprotocol LANs to WANs. Easily installed, configured, and maintained, the 2210 emphasizes optimum network management through improved routing and bridging capabilities, with the standard SNA features now benefiting from additional APPN/HPR support.

IBM 2217 N ways Multiprotocol Concentrator

The 2217 Multiprotocol Concentrator enables highly efficient and transparent Token-Ring or Ethernet™ LAN-to-LAN communication across an SNA/APPN WAN. As the first multiprotocol concentrator to support HPR and DLUR, the 2217 enables LANs to benefit from SNA features and the latest HPR advantages, such as dynamic routing capabilities and congestion control. This results in reduced line costs through data compression and prioritization.

IBM 3746 Model 950 N ways Multinetwork Controller and IBM 3746 Model 900 Network Node

The 3746-950 N ways Controller is IBM's latest high-performance APPN Network Node that supports distributed multiprotocol networks, including routing of SNA and, soon, TCP/IP traffic. The 3746 Model 900 can now be field-upgraded to offer the same routing function. Together, these models represent a cost-effective, two-stage evolution towards APPN and HPR, from 3745 controller, to 3745 plus 3746-900, to 3746-950. The 3746-950 achieves five times more throughput than an earlier 3745-210 without HPR and 15 times more throughput with HPR.

Both 3746 models epitomize the strong points of APPN: initial coexistence with an SNA subarea; gradual change with investment protection; immediate savings on material and operating costs; and a bright future with HPR, Frame Relay, and ATM.

For more information

Visit <http://www.networking.ibm.com/aac/aachpr.htm>

Networking Glossary

The January 1997 edition of the IBM Networking Software Glossary is now available online at the following Web site: <http://www.networking.ibm.com/nsg/nsggls.htm>.

This glossary contains technical terms that are used in the documentation for many IBM networking software products.

Besides IBM product terminology, the glossary also includes selected terms and definitions from standards organizations and committees such as the American National Standards Institute (ANSI®) and the International Organization for Standardization (ISO®).

Nearly 200 terms related to the TME™ 10 product line and 75 terms related to VTAM V4R4 appear in the new edition.

Using the Web site's search facility, you can search for terms either alphabetically or numerically. You can also download the glossary in Portable Document Format (PDF) for viewing or printing, or PostScript® format for printing.

Flexible Network Connectivity

As network computing requirements continue to expand at an amazing rate, you probably have found yourself straining the capabilities of your network just to provide information to all the users who need it. Some users are asking for intranets that let them access internal information easier. Others want improved Internet connections that let them conduct electronic business transactions. Many users want both...and a lot more. So how do you satisfy all those requirements?

One way to meet this challenge is to maximize the potential of your network with the IBM 2216 N ways Multiaccess Connector and Multiprotocol Access Services software. The 2216 combines the functions of a multiprotocol router, FRAD, and SNA remote controller in a single, compact component. By providing a broad range of LAN, WAN, and ATM network connectivity options, the 2216 enables flexible, money-saving network consolidation throughout your enterprise. The 2216 is ideal for:

- ◆ Consolidating branch office traffic, Frame Relay connections from multiple FRADs, or APPN HPR traffic from remote SNA controllers
- ◆ Implementing new SNA technologies such as Frame Relay BAN, Data Link Switching, or APPN HPR
- ◆ Consolidating SNA and IP networks with a single network that supports both efficiently

The 2216 uses the proven routing, bridging, and SNA capabilities of the IBM 2210 N ways router. These functions, called Multiprotocol Access Services, include standards-based, interoperable support for routing and bridging—with security and rerouting—on leased and switched networks.

A BROAD RANGE OF NETWORK CONNECTIVITY CHOICES

The 2216 can support up to 64 attachments for device access or network consolidation. Eight adapter slots with up to eight

The 2216 at a Glance

- ◆ **Highly redundant hardware** minimizes the possibility of failure and reduces failure recovery time
- ◆ **Up to eight adapters** give you the flexibility of tailoring the 2216 as your network grows
- ◆ **Easily accessible adapters, power supplies, and processor card** enable quick replacement
- ◆ **Easy-to-use tools for rapid installation and configuration** minimize overall operation costs



The IBM 2216 N ways Multiaccess Connector provides routing and controlling in a single component

interfaces per adapter give the 2216 more than five times the WAN capacity of the largest IBM 2210 N ways router. This capacity makes the 2216 a good choice for data center access or regional concentration of remote branch offices. The 2216 fits naturally between IBM's workgroup and campus routers and switches as well as IBM's high-capacity broadband switches.

HIGH NETWORK AND SYSTEM AVAILABILITY

The 2216 has a variety of design features to help maximize network availability:

- ◆ Optional dual power supplies can attach to independent power sources.
- ◆ Individually powered adapters can be inserted or removed without taking down the system or rebooting the software.
- ◆ Extensive environmental monitoring tracks system operation and helps operators correct potentially critical situations before they cause outages.

SIMPLIFIED INSTALLATION, CONFIGURATION, AND MAINTENANCE

On average, it takes only 115 minutes to install the 2216. Initial configuration to connect to a network is done via a local ASCII terminal or an ASCII terminal connected to a modem. Subsequent configuration can be done using a graphical configuration program running on AIX, OS/2, or Windows. Comprehensive administration, management, problem analysis, and reporting software is available with IBM's N ways Managers for AIX and HP™ OpenView™. To help speed problem identification and diagnostics, the 2216 maintains its configuration and operating history in nonvolatile storage.

For more information

Visit the IBM 2216 home page at <http://www.networking.ibm.com/216/216prod.html>

PCOMM is Now Available for Windows NT

• *Easy-to-use emulation software for AS/400 and S/390 hosts*

IBM's Personal Communications (PCOMM) 4.1 family is an entire suite of application development, communication, connectivity, and emulation software that gives you easy, comprehensive access to the data and applications you need. Besides receiving GUI-based 5250 and 3270 terminal emulation capabilities, you also get a wide range of end-user and system administrator tools—at an affordable price. Using these PCOMM 4.1 products, you can simultaneously access and process information on AS/400® and S/390 hosts from a PC. And, once connected, you can use a number of features, including shared folder support and data transfer support, to interact with applications resident on those systems.

Now, with PCOMM 4.1 for Windows NT, all the PCOMM functions you are accustomed to getting on DOS, OS/2, Windows 3.1, and Windows 95 are available in the native Windows NT environment. You get the same comprehensive emulation function, installation and customization features, and user interface your staff already knows, so you save the expense and time of retraining them. With PCOMM 4.1 for Windows NT, however, you receive many additional features that were not available in PCOMM for Windows 95 running on Windows NT.

"IBM is responding to customer demands for industrial-strength communications solutions on Windows NT," explains James Neiser, vice president of Marketing, IBM Networking

PCOMM at a Glance

- ◆ Full-function 5250 and 3270 emulation, SNA-based client support, client/server and peer-to-peer computing
- ◆ Multiple client APIs
- ◆ Automation tools, including CM Mouse
- ◆ Powerful system administrator tools
- ◆ Simplified installation and configuration
- ◆ Versatile connectivity options
- ◆ Superior asynchronous support, including wireless cellular data communications
- ◆ Multiprotocol access node (AnyNet) support (Windows 3.x and OS/2)

Software. "We are committed to providing the most reliable, flexible, and scalable communications solutions on all the platforms that suit your business needs."

According to Scott Campbell, advisory programmer on the PCOMM development team, "PCOMM 4.1 for Windows NT is a function-rich client that satisfies your traditional host emulation needs while enabling you to automate your key business applications." Some of these functions include Common Programming Interface for Communications (CPI-C), Advanced Program-to-Program Communication (APPC), High-Performance Routing (HPR), and Dependent LU Requester (DLUR) in the Windows 95 and Windows NT environments.

CONNECTIVITY ENHANCEMENTS

PCOMM 4.1 for Windows NT provides a full range of connectivity options, many of which are newly available in native Windows NT (such as LAN mobility and dial-in access):

Automatic dialing now supports a wider range of modems, offers better performance, and provides a greater range of customization options.

AnyNet support over TCP/IP enables SNA emulator and client/server applications to communicate over a TCP/IP network.

APPC3270 attachment for PC/3270 configuration enables migration to APPC and APPN networks. With this function, your PCOMM workstation can:

- ◆ Use APPN services such as dynamic routing and topology
- ◆ Communicate with other SNA resources over APPC and CPI-C APIs, including Emulator High-Level Language API (EHLAPI), Server-Requester Programming Interface (SRPI), and PC Services API (PCSAPI)
- ◆ Use the advanced networking capabilities provided by HPR and DLUR

In addition, your PCOMM workstation can attach to both AS/400 and S/390 systems over IPX links via a Novell NetWare for SAA gateway. It can also communicate with both the IBM Communications Server for Windows NT client and the IBM Communications Server itself. Management services are also available for reporting potential problems to a management services focal point such as Tivoli® TME 10 or NetView.

INSTALLATION AND CONFIGURATION ENHANCEMENTS

PCOMM 4.1 for Windows NT offers a variety of new installation and configuration enhancements:

- ◆ **CM Mouse** lets you define mouse buttons to perform any sequence of host keystrokes—including PF keys and special emulator control keys—and enables drag-and-drop file transfer. You can also build pop-up menus to

control host applications without making changes to those programs.

- ◆ **Font customization** gives you the ability to customize the font selection in certain languages.
- ◆ **A New Web Browser Feature** treats URLs as hot spots, allowing you to select and launch a Web page by clicking the mouse on any URL that appears on the host-session screen.
- ◆ **SNA Node Configuration** enables you to create SNA configurations for SNA nodes and associated resources and to configure advanced options such as performance, tuning, security, and transaction programs. SNA configurations initialize SNA nodes and enable client/server and peer communications.

IMPROVED PACKAGING FOR EASY INSTALLATION

For convenience and ease of use, PCOMM is available in two packages:

- ◆ Personal Communications AS/400 Version 4.11 for Windows, Windows 95, Windows NT, and OS/2, which provides 5250 emulation and connections to AS/400 and S/3X systems
- ◆ Personal Communications AS/400 and 3270 Version 4.11 for DOS, Windows, Windows 95, Windows NT, and OS/2, which provides 3270 and 5250 emulation and connections to S/390, AS/400, and S/3X systems.

These packages are available on separately orderable CD-ROMs and include online documentation along with the product code. The CDs include a new menu-driven installation process that simplifies updates and changes. Client installation can be done from a centralized server.

THE PCOMM FAMILY

The entire Personal Communications family of products gives you a comprehensive set of tools for accessing applications and data that reside on either midrange or mainframe computers. With a common look-and-feel across operating systems, these products help you navigate easily between operating systems and hosts. By masking the complexity of connecting to and using host applications, these products also enable higher productivity while minimizing retraining costs.

A variety of standard programming interfaces for client/server-based applications—including support for CPI-C and APPN applications—are available. These APIs allow you to access and process information on peer workstations or host systems. By accessing applications on other systems, you

Which PCOMM Product Do You Need?

The following guidelines can help you determine which PCOMM 4.1 family product is right for you.

Situation	Recommendation
Need for outstanding broad-based application development capabilities, from Visual Basic® and scripting to EasyREXX	PC/3270 and PCOMM 4.1 Toolkit
Need for premier emulation with comprehensive SNA API support across all platforms	PC/3270 or PC400 for each desktop
Need for productivity applications and access to the IBM Global Network with high performance	PC/3270
New desktop requiring 5250 emulation on a LAN	PC400 for each desktop
New desktop requiring 3270 and 5250 emulation on a LAN with an existing gateway	PC/3270 and PC400
Need for mobile desktop requiring switched ASCII 3270 connectivity	PC/3270 and/or PC400 for each desktop
Need for terminal emulation with power user and application interoperability features	PC/3270 or PC400 for each desktop
Need for outstanding emulation with low memory and hard disk requirements	PC/3270 or PC400 for each desktop
Need for 3270 and 5250 emulation for SNA, TCP/IP, or IPX/SPX networks	PC/3270 or PC400 for each desktop
Need for emulators with a common look-and-feel across both OS/2 and Windows environments	PC/3270 or PC400 for each desktop
Need for 5250 emulation with shared folders and data transfer support for OS/2 and Windows	PC400 for each desktop
Need for premier terminal emulation function and expanded API support for APPC/CPI-C or LUA	PC/3270 and/or PC400 for each desktop
Need for a powerful multiprotocol gateway and desktop communication	IBM Communications Server for OS/2 Warp, Version 4 services (http://www.networking.ibm.com/cm2/cm2prod.html)

can create a common design for applications relatively independent of the operating system platform. This helps streamline the entire application development process and reduces the overall cost of creating and maintaining applications.

For more information

Visit the PCOMM home page at <http://www.networking.ibm.com/pcf/pcfprod.html>

Information Where You Need It... When You Need It

- *IBM's TCP/IP solutions provide a solid infrastructure for Internet and intranet applications*

From the time that Chairman Lou Gerstner announced IBM's increased focus on "network computing" in November 1995, that term has come to mean a lot of different things to different people. For instance, network computing means that a real estate agent can open her notebook computer in her car or in a client's home and view up-to-the-minute listings via a wireless connection to the host computer at her office. It also means that businesses on IBM's World Avenue Web site can display products, receive orders, and process credit card information as securely as in-store transactions.

IBM TCP/IP Products by Platform

System 390

- ◆ OS/390™ built-in communications capabilities
- ◆ Communications Server for MVS
- ◆ TCP/IP for MVS
- ◆ TCP/IP for VM

AIX

- ◆ TCP/IP in the AIX operating system
- ◆ Communications Server for AIX

AS/400

- ◆ TCP/IP for OS/400®

OS/2

- ◆ TCP/IP in OS/2 Warp
- ◆ Communications Server for OS/2

Windows 3.x and Windows 95

- ◆ Internet Connection Corporate Kit for Windows 3.1 and Windows 95

Windows NT

- ◆ Communications Server for NT (currently in beta)



Soon, perhaps before the decade is over, network computing will mean that:

- ◆ A business traveler with a notebook computer can quickly and securely access the World Wide Web, check E-mail, or use host applications—by plugging in from a hotel room or even by using a wireless connection from a car.
- ◆ A development engineer can read and update data in various corporate sites without needing to know where the data is located or what network protocols and operating systems are used to gain access to it.
- ◆ A salesman can use agents to monitor the Web pages of his key customers and competitors, alerting him to new sales opportunities and keeping him on top of the marketplace.

TCP/IP LEADERSHIP FOR TODAY AND TOMORROW

Although no one can accurately predict exactly how information will need to be accessed and shared (even in the near future), one thing is clear: businesses and their customers will continue to expect fast, easy, secure, and dependable sharing of information. Nowhere else is this trend more apparent than in the tremendous growth of Internet and intranet applications, which depend on a reliable TCP/IP infrastructure.

Already the established leader in networking solutions, IBM has become the leading provider of TCP/IP technology and is committed to continuing its leadership. To that end, IBM is actively integrating advanced TCP/IP technology into its operating systems and other software products—to provide comprehensive solutions that are rock-solid, affordable, and easy to use. These new solutions are designed to meet the communications needs of today while providing you with the flexibility to adapt to the inevitable changes tomorrow will bring. This flexibility is possible, in part, because of the wide range of platforms supported. From laptops and remote offices to corporate data

centers around the globe, no other company has such a wide range of offerings.

EASY ACCESS TO CRITICAL DATA

No matter what your information access needs are, IBM has the technology leadership and products to help take you anywhere you want to go. Its TCP/IP solutions continue to extend the reach of enterprise servers by providing simplified, reliable access to mission-critical data (an estimated 60 to 70 percent is still stored in enterprise servers) from an IP-based intranet or the Internet. At the core of this world of easy, secure information access is the IBM Enterprise Communications Family:

- ◆ Products such as IBM Personal Communications (PCOMM), Communications Server, and NetWare for SAA provide a pipeline from workstations running one operating system to host computers running another.
- ◆ IBM Host On-Demand (see page 4) uses Java-based technology to enable access to host applications from a browser on a corporate intranet or on the Web.
- ◆ The IBM ARTour™ wireless connections platform enables data access from anywhere.
- ◆ Two host-emulation products, Personal Communications and Communications Server, now support the Microsoft® Windows NT environment (see page 10).

MORE ENHANCEMENTS ON THE WAY

In the next 18 months IBM plans to introduce a wide range of new TCP/IP technology designed to enhance scalability and security in open, standards-compliant environments. These enhancements include the following technology:

- ◆ **Secure remote access** provides a major breakthrough for commerce over the Internet. Secure remote access means that sensitive data, such as customer order status and credit-card numbers, can be transmitted without being corrupted, intercepted, or viewed by anyone without proper authorization.
- ◆ **Low-cost TCP/IP clients** extend the reach of enterprise networks and corporate intranets to the "thin client"—the point at which network computing delivers information to the people who need it.
- ◆ **Audio/video transport** makes it possible to transmit dramatic new forms of information like telephony, real-time video, and videoconferencing between IP-based and non-IP-based networks.
- ◆ **Easy migration of current transactional environments to TCP/IP** enables traditionally host-based applications to run in the IP space and provides single protocol access to these applications from intranet- and Internet-based clients.

For more information

Visit the IBM Networking home page at <http://www.networking.ibm.com>

Continued from page 1

the SNA network. This provided the multiprotocol connectivity needed to run Sockets-based SAP R/3 over SNA.

IBM's AnyNet solutions simplify multiprotocol networking by letting users add and connect many types of applications, unconstrained by network protocols. Parallel networks to support applications of different types can be combined to reduce complexity and cost. With AnyNet/2 access node, for instance, users on TCP/IP workstations can access any APPC database, terminal emulation, or printer application running on the host—such as CICS, IMS™, DB2, or TSO. OS/2 users can also use Sockets applications—such as DCE, FTP, NFS, SAP R/3, and Telnet—across an IPX, NetBIOS, or SNA network.

By extending the scope of an SNA or TCP/IP backbone to embrace multiprotocol support, AnyNet gateways provide the remote stores on TCP/IP with SNA efficiency and reliability. The AnyNet Sockets over SNA gateway technology is integrated in IBM's Communications Server for OS/2 Warp Version 4. Communications Server is a high-performance, multiprotocol gateway that incorporates the comprehensive support provided in Communications Manager/2 and AnyNet products.

BETTER LINE UTILIZATION SAVES TIME AND MONEY

Using Communications Server, Filiadata was able to successfully introduce a new IP-based application—SAP R/3—on top of its existing SNA network without impacting the operation of that network. Müller states, "IBM's solution gave us the ability to make application decisions independent from the existing network protocols so we could install SAP R/3. Without AnyNet it would have taken much longer to introduce SAP R/3, because we had no IP skills available. Also, we are convinced that there is better line utilization with SNA protocols, compared to an IP router network."

"Better line utilization is very important," Müller continues, "because the gateways in the eastern part of Europe are only connected, initially, by 9600 baud lines. In these countries it is very difficult and expensive to get higher speed links from the telephone companies. We would have needed additional lines for a separate IP router network, or we would have had to replace our entire SNA network. There wasn't time or money available to do that."

So far, the new network configuration has helped improve the efficiency of Drogerie markt's business processes while adding flexibility for future growth. "We are very satisfied with the response time and throughput of running SAP R/3 over SNA," says Roman Melcher, Filiadata department manager. "Users at our store locations are now taking advantage of the ability to use SNA's Class of Service for TCP/IP traffic prioritization."

For more information

Visit <http://www.networking.ibm.com/ecf/ecfover.html>

Where Is Network Computing Headed?

Advanced Peer-to-Peer Networking Implementers Workshop advances networking standards

IBM recently hosted the 12th Advanced Peer-to-Peer Networking Implementers Workshop (AIW) in Raleigh, North Carolina. The AIW is an industry consortium of 45 member companies formed for cooperative work on APPN and SNA-related implementations and standards. Members work to facilitate the development of interoperable APPN products from a wide variety of vendors. Other key goals of the AIW include:

- ◆ Sharing information about APPN, its implementations, and customer experiences
- ◆ Helping one another solve difficult implementation problems
- ◆ Establishing requirements and developing any necessary technology enhancements
- ◆ Promoting the use of APPN throughout the industry

The AIW has been especially focused on the issues and challenges of merging existing networks with the advanced high-speed networks of the near future. Key topics have included SNA-over-ATM, switching vs. routing, and the widespread integration and convergence of High-Performance Routing (HPR) and Internet Protocol (IP) technologies. Following are some of the recent developments from the AIW.

HPR EXTENSIONS FOR ATM NETWORKS

HPR Extensions for ATM Networks has gained final approval as an AIW standard after a peer review by the ATM Forum. This standard is a milestone in the integration of switching and routing, combining networked business applications with leading-edge transport technology in an open standard. IBM has announced VTAM's support for the new standard on the 155 Mbit/sec Open Systems Adapter as part of Communications Server for OS/390 Release 3, which will be available soon. This support lets S/390 programs take advantage of ATM without having to change existing applications. IBM has also previewed APPN/HPR over ATM support on the 2216 Nways Multiaccess Connector. (For more information about APPN/HPR, see page 6.)



Until now, relatively few applications have been able to leverage ATM's full capability to support different service levels for different kinds of traffic. SNA applications are ATM-ready, because they have always specified a Class of Service (COS). The COS defines acceptable priority, response time, cost, security, and other criteria important to users. By mapping COS to ATM Quality of Service, the AIW standard strengthens the interface between HPR and ATM. It also lowers the cost of networking while providing better service, since it uses ATM capacity more fully. Private networks will run more economically by delivering equal response time for a lower capital cost with smaller, less-expensive ATM switches. Public carrier ATM charges might even be lower, because users will need less bandwidth.

APPN INTERNETWORKING

The AIW progressed towards defining a border node specification that can be implemented by its members. The draft standard, being made available by IBM through the AIW, progressed to Approved Pages status, the last stage before final approval. The standard is expected to be complete by mid-1997. Border node is an APPN technology to replace SNA Network Interconnect (SNI) gateways. It can interconnect different APPN enterprise intranets while providing security firewalls, or it can divide a large APPN network into several connected subnetworks. Border node is available today on IBM's Communications Server/390 (VTAM Releases 4.2 and above) and Communications Server/400 (OS/400 Release 3.1 and above).

For more information

Visit the AIW home page at
<http://www.networking.ibm.com/app/aiwhome.htm>

Upcoming Events

SHARE Winter Technical Conference

San Francisco, CA
MARCH 2-7, 1997
<http://www.share.org>

Uniform/Enterprise Communications

San Francisco, CA
MARCH 12-14, 1997

CeBit™ '97

Hannover, Germany
MARCH 13-19, 1997

APPN Implementers' Workshop (AIW 13)

Raleigh, NC
MARCH 24-27, 1997
<http://www.networking.ibm.com/app/aiwhome.htm>

NetWorld+Interop Singapore

APRIL 7-11, 1997
<http://www.interop.com>

COMDEX® Japan

Tokyo
APRIL 8-11, 1997
<http://www.comdex.com>

COMDEX Rio

Rio de Janeiro, Brazil
APRIL 8-13, 1997
<http://www.comdex.com>

Database and Client/Server World

Toronto, Canada
APRIL 15-17, 1997

COMDEX U.K.

London
APRIL 22-25, 1997
<http://www.comdex.com>

NetWorld+Interop

Las Vegas, NV
MAY 6-8, 1997
<http://www.interop.com>

IBM Technical Interchange

St. Louis, MO
MAY 12-16, 1997
<http://www.software.ibm.com/ibmti/>

NetWorld+Interop

Frankfurt, Germany
MAY 13-15, 1997
<http://www.interop.com>

Database and Client/Server World

Boston, MA
MAY 20-22, 1997

COMDEX Infocom Argentina

Buenos Aires
MAY 20-23, 1997
<http://www.comdex.com>

Internet World U.K.

London
MAY 20-22, 1997
<http://www.learned.co.uk/events/iw-uk/>

APPC Programming Seminar

New York, NY
MAY 28-30, 1997

COMDEX Spring

Atlanta, GA
JUNE 2-5, 1997
<http://www.comdex.com>

NetWorld+Interop

Tokyo, Japan
JUNE 2-6, 1997
<http://www.interop.com>

Internet World Mexico

Mexico City
JUNE 4-6, 1997

Internet World Israel

Jerusalem
JUNE 16-18, 1997
<http://www.globes.co.il/iworld/>

Networks Expo

New York, NY
JUNE 17-19, 1997

COMDEX Canada

Toronto
JULY 9-11, 1997
<http://www.comdex.com>

APPN Implementers' Workshop (AIW 14)

San Jose, CA
JULY 14-17, 1997
<http://www.networking.ibm.com/app/aiwhome.htm>

Internet World Japan

Tokyo
JULY 23-25, 1997

Internet World Australia Pacific

Sydney
AUGUST 12-14, 1997

COMDEX Korea

Seoul
AUGUST 26-30, 1997
<http://www.comdex.com>

Network Asia

Singapore
SEPTEMBER 2-5, 1997

These events represent select conferences and trade shows of potential interest to *Network Connection* readers. IBM makes no claim as to the value of these events. To list an event that is not shown here, send E-mail to appcnews@vnet.ibm.com.

Register Today for IBM Technical Interchange '97

IBM Technical Interchange '97, scheduled for May 11 to 15 at America's Center in St. Louis, Missouri, will feature more than 300 educational sessions, industry-renowned speakers, in-depth tutorials, and a wide variety of exhibits. The conference is expected to attract more than 4,000 software professionals from around the world to explore technical and business issues regarding open connectivity, networking, and the Internet.



The comprehensive exhibition and educational conference is designed to help current and potential IBM software users prepare their businesses for an interconnected, interactive, transaction-intensive world. IBM Technical Interchange '97 will feature IBM products and services designed for both IBM and non-IBM platforms, such as Windows NT. The conference is ideal for application developers, independent software vendors, IT managers, analysts, solution providers, business managers, and system administrators.

IBM Technical Interchange '97 will address issues ranging from application development and business management to data management and electronic commerce, with a focus on IBM's comprehensive product offerings, convenient business partnerships, latest technologies, and vision for open business connectivity and networking.

• ***For more information or to register:***

In the U.S., call 800-872-7109

In Canada, call 508-440-9700

or

Visit the IBM Technical Interchange '97 Web site at

<http://www.software.ibm.com/ibmti>



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