eNetwork Connection

IBM ®

Inside

Bank of Montreal Provides Global Services Using eNetwork Software

Financial Institution Meets Bandwidth-on-Demand Needs With Communications Server's New Dial-Up Feature

One day soon, the sun will no longer set on the Bank of Montreal. Heaquartered in Toronto, the 180-year-old financial institution is putting in a system to keep its worldwide network humming 24 hours a day.

Today, the bank provides a complete portfolio of financial services and is the tenth largest financial institution in North America, with more than 1,200 branches in Canada, the United States, and Mexico. The company's network stretches to Central and South America, Europe, and East Asia, putting it in a strong position to compete in the global financial market.

Bank of Montreal operates an SNA network of hosts running CICS® transaction processing software and Communications Server for OS/390™, which connects diverse application and network environments to S/390® servers. In addition, the bank is meeting customer needs in North America using an IBM eNetwork Communications Server solution for the OS/2® platform.

In its largest branches, the bank uses Communications Server for OS/2 to control its teller stations and communicate with the enterprise network. But during peak periods, such as the Christmas holidays and the tax season, the bank needs additional bandwidth between the branch servers and its host IBM 3745/46 communications controller so that it can keep transactions flowing, provide better service to customers, and extend its reach for e-business.

BANDWIDTH ON DEMAND

To meet these occasional surges in bandwidth requirements, the bank will implement a new function within Communications Server for OS/2 called Multi-Link Transmission Groups (MLTG), which will boost the communications capabilities to the server. Each of the largest branches already has a 56 Kbps leased line from the server to the 3745/46; with MLTG, the bank can add dial-up connections

Networked Businesses, Networked Lives

In this issue, as always, *eNetwork Connection* looks at how successful businesses are using eNetwork Software to create industry-leading networking solutions. On the cover, we spotlight one of Canada's leading financial institutions, the Bank of Montreal. The bank plans to provide financial services around the clock, around the world, using eNetwork Software. In past issues, we've focused on how eNetwork Software extends the reach of businesses in industries such as retail, insurance, and public safety.

With eNetwork Software, employees can do their jobs better. Customers and clients can communicate with the company more easily. And the business has the opportunity to grow.

But even when you're not at work, eNetwork Software may still be part of your life. If you use an ATM to deposit or withdraw money from your bank, there's a good chance that eNetwork Software is at work behind the scenes. The last time you bought or sold stock, the transaction might well have been handled by eNetwork Software.

With this in mind, we recently added a button to our Web site that provides a light-hearted look at how much eNetwork Software is part of your everyday life. Go to our home page (http://www.networking.ibm.com/eNetwork), click on "eLife," and see for yourself what the world would be missing without eNetwork Software!

I hope you'll enjoy this issue of *eNetwork Connection*. If you have comments or suggestions, please don't hesitate to write me at enetwork@vnet.ibm.com.

Larry Kunz

Larry Kunz
Editor, *eNetwork Connection*

eNetwork Software Services

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IBM provides services such as pre-solution consulting, design/consulting, migration, conversion (from Attachmate or Rumba), installation, and custom coding. For more information, contact Mary Ann Cappelletti at 1-919-254-7960 or e-mail her at cappell@us.ibm.com.

The SNA Client and Gateway Markets

International Data Corporation has researched the worldwide SNA client and Gateway markets and the results are reproduced on IBM's Web site. Here is a sampling of what the reports say.

CLIENT REVIEW
Worldwide SNA client shipments increased 12.2 percent to reach 6.8 million units, and revenues rose 6 percent to reach $1.27 billion (U.S.). IBM continues to dominate the SNA client market, leading with breadth of operating system coverage and range of pricing options, and accounting for 44.4 percent of the market. As the value of the SNA access solution migrates to the server, SNA client sales will decline at a CAGR of 5.3 percent to 966.4 million in 2001. Worldwide SNA client shipments will increase at a CAGR of 3.9 percent, from 6.8 million units in 1996 to 8.2 million units in 2001. The new browser-based approach will require new pricing models, but will ultimately lead to an additional 2 million users accessing IBM systems by 2001.

GATEWAY REVIEW
Worldwide SNA gateway shipments increased 6 percent to reach 154,400 units and revenues rose 7 percent to $391.8 million. IDC expects the market to reach $1.09 billion by 2001, representing a CAGR of 22.7 percent. Growth in sales is a result of WWW-to-host gateway products hitting the market. In 1997 and 1998, successful vendors will provide a "market basket" of features as well as flexible pricing options on advanced operating systems such as UNIX® and Windows NT™. IBM is the leader in the SNA gateway market, with broad operating system coverage and a range of pricing options that account for 50 percent of the market. IBM's recent Host On-Demand announcement, coupled with shipments of Communications Server for NT, will assure IBM's continued strength in the market.

This information is provided with the permission of IDC. While IBM cooperated in IDC's preparation of the report, IDC is solely responsible for the accuracy of the information and for the opinions expressed here.

Attachmate 6.9%
Eicon 8.7%
Other 15.5%
Microsoft 18.7%
IBM 27.1%
IBM/Novell 23.1%
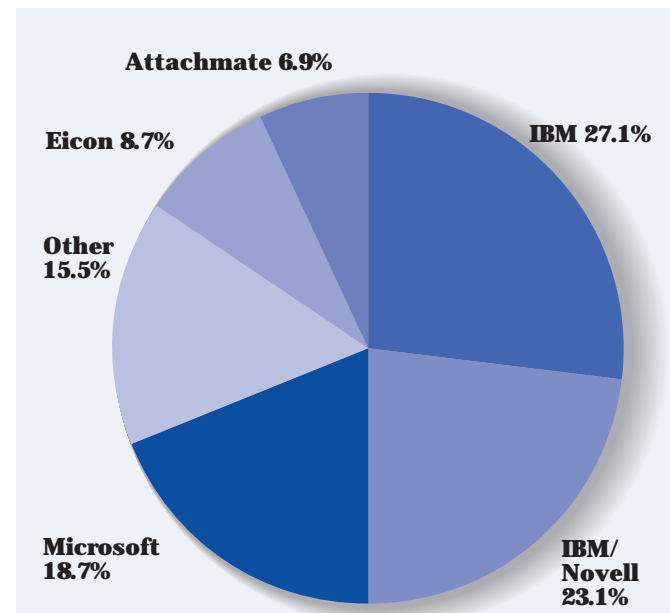
Worldwide SNA Gateway Market Share by Shipments, 1996
Source: International Data Corporation, 1997

NetSoft 4%
Other 10%
Net Manage 7%
Wall Data 8%
Attachmate 27%
IBM 44%
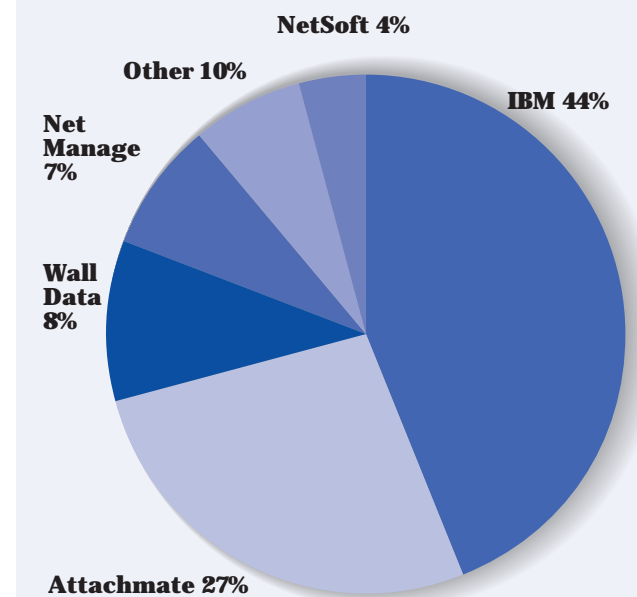
Worldwide SNA Client Market Share by Shipments, 1996
Source: International Data Corporation, 1997

For more information

Visit **http://www.networking.ibm.com/ene/idc_forecast.html**
and **http://www.networking.ibm.com/ene/idc2_forecast.html**

IBM eNetwork
Host On-Demand Version 2

One-click secure access to your mission-critical data

As Web usage grows, more and more computer users are becoming accustomed to browsers. Often, these same people need to access host computer information and services. They may not, however, have a traditional terminal emulator, either because they did not need host access in the past or because it was not cost-effective for their companies to provide them with one.

IBM Host On-Demand Version 2 answers the dual need for a browser and host data access. A member of IBM's eNetwork Software family, it uses the power of Java™ to provide access to enterprise data—whenever it is needed, wherever it is needed—directly from a browser. One click launches a Java applet that gives broad access to host data, with TN3270, TN5250, and VT 52/100/220 emulation in a single package.

THE SIMPLEST WAY TO REACH ENTERPRISE DATA

Host On-Demand is the simplest way ever for users to access critical enterprise data, because they do not have to load or configure any software. Users simply click on a hyperlink that launches a session with the host. In fact, any number of sessions can be launched with multiple hosts, so users can operate at maximum efficiency. Because Host On-Demand launches in its own window, users can continue to access Web-based data while connected to the host.

SECURE ACCESS ACROSS THE INTERNET

Several levels of security are available with Host On-Demand. Existing Web techniques can be used, such as requiring a user ID and password or implementing firewall filters. However, a persistent connection improves network security compared to common HTML connections that connect and disconnect to the server many times during a session—a situation that leaves users vulnerable to an unauthorized access to their data when the HTML connection is inactive.

In addition, traditional central computer security mechanisms can be used, such as Resource Access Control Facility (RACF) and ACF2. Host On-Demand also provides the option of using Secure Sockets Layer (SSL) Version 3.0 encryption between the client and the Host On-Demand

redirector on a server (initially a Windows NT server) within a corporate intranet.

Server authentication can be provided using publicly available certificates of authority, ensuring that the proper server is providing the Host On-Demand applet. An SSL encrypted "pipe" is established between the client and the redirector so that all the data is encrypted.

IMPROVED PRODUCTIVITY AND LOWER TRAINING COSTS

Host On-Demand significantly improves productivity and greatly diminishes training costs because the Java-based user interface is the same in every operating environment, including the new network computers. What's more, users can define host access preferences, which are stored on the server and returned with the Java applet each time it is accessed. Versions are available in several languages, including versions for double-byte character sets.

## REDUCED SOFTWARE MAINTENANCE COSTS

Host On-Demand is typically installed on the Web server, where it is maintained, including new releases or upgrades. Because a new version of the applet is downloaded each time a user clicks for access, system administrators no longer need to schedule maintenance upgrades for user workstations. Furthermore, the consistency of user interfaces across operating environments and the guarantee that every user has the latest version of the applet make the process of problem determination easier. Server maintenance is also less complex with Web-based configuration and administration. With today's rapid rate of change in workstation software, simplified administration justifies the use of Host On-Demand.

FAST CONNECTIONS OVER THE TELEPHONE NETWORK

Host On-Demand Express, a standard function of Host On-Demand, speeds up access over low-speed circuits. The Express technology uses patented differencing techniques and caching to minimize the amount of data transmitted. It also compresses the data so that the network load is minimized. For low-speed links, this can significantly improve response times.

RESQ!NET GRAPHICALLY PRESENTS HOST APPLICATIONS

ResQ!Net is a thin Java applet that works with IBM's eNetwork Host On-Demand to improve the appearance of host applications. In addition to the product's
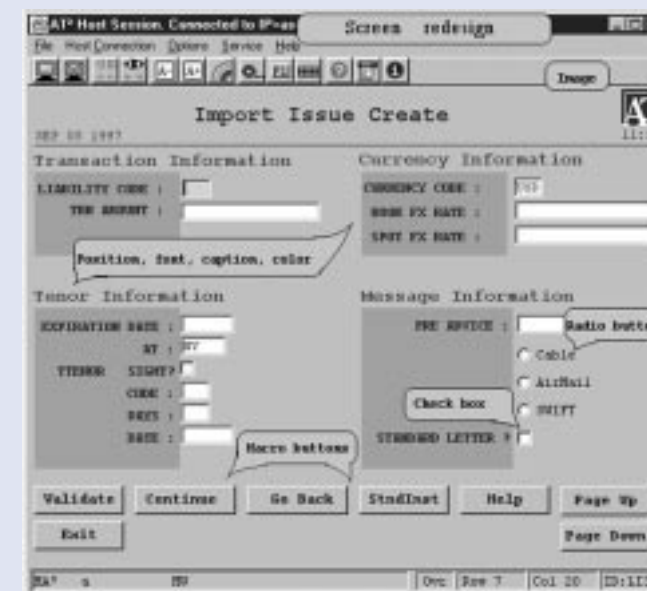
Example of how ResQ!Net can enhance the appearance of a 3270 screen.

default GUI, which provides menu buttons and hot spots, users can optionally customize the presentation by adding new fonts, macros, images, check boxes, and more. A simple drag-and-drop interface makes customization easy, even for non-technical personnel. No programming or scripting is needed. For a demonstration, see www.att-inc.com/resqdemo/demonet.html.
    ResQ!Net for Host On-Demand was developed by Advanced Transition Technologies, Inc. (AT2), an IBM eNetwork Partner in Development. Using the new Host Access APIs, ResQ!Net works as both an applet with Java-enabled browsers and a Java application. Users can download this small applet in seconds to get multiple persistent host sessions connected to a host application.

For more information, contact:

Advanced Transition Technologies
33 Maiden Lane
New York, NY, 10038
Tel: 212-294-8800
Fax: 212-294-8822
Web: http://www.att-inc.com

OTHER ADVANTAGES OF THE HOST ON-DEMAND APPROACH

Host On-Demand has several advantages over other approaches to providing host access through browsers. Unlike HTML mapping, where connections to the Web server are constantly being terminated and reconnected, Host On-Demand provides a persistent connection to its server. A persistent connection avoids the network overhead associated with reconnecting and terminating the connection to the host. The advantages are:

- Network security is strengthened
- Network traffic is reduced
- Dynamic screen updates are enabled because the screen is always connected to the host
- Response time is improved because the reconnection time is avoided

WHAT'S NEW IN VERSION 2?

New user functions: Users can now cut and paste to and from the desktop clipboard. They can also quickly re-map keys on the keyboard. The displayed host screen can be printed to any locally defined printer. And for those users needing to perform file transfers between the workstation and an S/390 host, Host On-Demand supports file transfers using the traditional IND$FILE protocol.

Enhanced Host Application Access: Host On-Demand R1 provides basic TN3270 access to host applications. Host On-Demand V2 adds support for additional popular 3270 models plus VT52, VT100, and VT220 emulation for connectivity to UNIX systems, PCs, DEC® VAX® systems, and others. In addition, Host On-Demand can now be a client to the CICS Gateway for Java, and hence to access any CICS application.

Application Programming Interface: The eNetwork Host On-Demand Host Access Class Library API (Host Access API) is a new Java application programming interface. With it, customers can access the datastream and present customized user interfaces tailored to their needs. Compared to the industry-standard EHLLAPI interface, it is object-oriented, much easier to understand, and much more concise. Thus, Host Access API reduces the time and costs for developing new applications.

For more information

Visit **http://www.networking.ibm.com/enetwork/ ondemand/hod.html**

Access Options
Expand for Electronic Business

In September, IBM announced updated versions of IBM eNetwork Software that provide users with simplified and broader access to enterprise and Internet information. All of these products are now available worldwide.

Al Zollar, general manager of IBM Networking Software, says, "Our customers require strong capabilities in networking technologies that can grow rapidly while maintaining uptime, reliability, and security. We're delivering all of this, as well as bringing forward new technologies that include Java and wireless communications."

ENETWORK COMMUNICATIONS SERVER GETS FINE-TUNING FOR SPEED BOOST

Communications Server software for OS/390, Windows NT, and OS/2 has been updated to use data compression and other technologies to deliver faster transmission speeds and help reduce overall network costs.

Communications Server for OS/390 has gained new, high-performance TCP/IP software that can dramatically improve S/390 Web server performance, allowing servers to support four times as many user requests as before. Communications Server can fully use the IBM Parallel Enterprise Server, IBM's largest system, when scaling up to handle increasing numbers of users.

Functions have been added to Communications Server for OS/390 to support the IBM Network Station family. IBM's affordable network computer line allows software to be stored on a server and delivered to low-end desktop computers upon request. The devices and software can be easily managed from a central site and can reduce support costs associated with individual workstations.

Easy access to host applications from a Java-enabled Web browser on any Java-enabled platform is made possible by packaging IBM's eNetwork Host On-Demand Release 1 with Communications Server for OS/390. This version of Host On-Demand is a 100 percent Pure Java application that incorporates industry-standard Telnet 3270 protocols and requires no customer programming or additional hardware. Users can initiate Host On-Demand by clicking on an SNA application hot link within their Java-enabled Web browser.

Performance and communications over TCP/IP connections between DB2® on the S/390 and SAP R/3™ application servers on AIX® or Windows NT have been improved with support for the High Performance Data Transfer (MPC+) User Data Protocol (UDP).

Communications Server for Windows NT has been enhanced with these and other features:

- SNA data compression optimizes network utilization, which can reduce network costs. Unlike competing products on the Windows NT platform, Communications Server for Windows NT offers session-level data compression to increase throughput.
- NetWare® IPX/SPX clients can now access SNA application programming interfaces (APIs) without requiring SNA protocols to flow between the clients and server. This remote API enables a systems administrator to perform most SNA configurations at the central server and could reduce the time and expense of multiple configurations at individual workstations. This capability helps customers support multiple protocols and helps with the migration to

Communications Server for Windows NT.

- Centralized network administrators can now designate which users have access to certain host applications by using TN3270E IP address filtering. This access is based on IP addresses and removes the burden of having to request a specific LU name for each connection.
- Investments in S/390 Information Management System (IMS) applications are leveraged through Session Level Interface (SLI) API support on the server, resulting in improved access to applications, particularly those used in the banking industry.

Communications Server for Windows NT was recently designated "Designed for Microsoft BackOffice®." This means that it is fully compatible with systems that use Microsoft BackOffice.

Communications Server for OS/2 has gained the following enhancements:

- The software now incorporates IBM's new Branch Extender technology (see story on page 9), which optimizes network traffic.
- HPR Multi-Link Transmission Group (MLTG) support enables customers to dial up additional data transmission capacity during peak periods. This reduces the need for costly, high-speed links that are used infrequently.
- High network availability and protection from a single point of failure are provided by High Performance Routing (HPR) over wide area networks, resulting in fewer network outages. Dynamic rerouting keeps the connection up even when parts of the network are down. Reduced downtime for the network can result in more productivity and lower network costs.
- Communications Server for OS/2

can be accessed from any standard Web browser using the new remote Web-based administration, enabling systems personnel to perform dynamic administration and configurations via the Web.

- Windows 95 and Windows NT client workstations have gained SNA connectivity. Customers can now use this feature to write their own SNA applications on OS/2, Windows 3.1, Windows 95, and Windows NT platforms.

PERSONAL COMMUNICATIONS ENHANCES DESKTOP, ENTERPRISE INTEGRATION

Personal Communications is the industry's premier solution for multi-protocol connectivity, complete host access APIs, and emulation support. It provides client connectivity to S/390, AS/400®, System/36™ systems, and UNIX hosts via terminal emulation and host data access for desktop applications. It exploits existing SNA-based applications, as well as those requiring TCP/IP. A wide range of connectivity options lets users connect from anywhere across LAN, WAN, and even wireless network connections.

New functions in the eNetwork Personal Communications software for Windows 95 and Windows NT enable access to enterprise information for integration with users' desktop applications. For example, a word processor or spreadsheet could be used in combination with Personal Communications to view personnel records stored on an S/390 server.

Highlights of the new capabilities of IBM eNetwork Personal Communications 4.2 include:

- A new **Host Access Class Library** simplifies access to host application data with a set of powerful programming objects. These host access classes are accessible through ActiveX™ automation interfaces, LotusScript® extensions, and native C++ objects. Personal Communications Host Access classes are compatible with the new Host On-Demand Version 2.

- **ActiveX/OLE Support** improves productivity by enabling users to embed and automate a Personal Communications session in applications such as Lotus 1-2-3®, Lotus Notes®, and Microsoft Word.
- **New terminal emulators** (VT52, VT100, VT220) and ASCII-host file transfer make it possible to access UNIX hosts with the same consistent look and feel of Personal Communications' 3270 and 5250 emulators.
- Users can now **access databases** on AS/400s and S/390 hosts from PC relational database applications such as Microsoft Excel, Lotus 1-2-3, dBASE®, Oracle®, and Sybase®.
- Users can **access AS/400 files** from Windows 95 and Windows NT in a way that the files appear as if they were on a PC drive.

eNETWORK WIRELESS SOFTWARE HELPS MOBILE WORKERS

Enhancements to the IBM eNetwork Wireless family of products (formerly known as ARTour™) became available on October 31 in beta form for eNetwork Emulator Express, eNetwork Wireless Gateway/Client, and eNetwork Web Express. Full pricing and availability information will be announced later this fall.

The IBM eNetwork Wireless family of middleware products extends the reach of the network by providing mobile users with access to existing IP-based applications over wireless and dial-up networks, without complex reprogramming. This can reduce the cost, complexity, and time required to deploy mobile computing solutions.

IBM eNetwork Emulator Express extends existing host applications to mobile users over wireless or dial-up networks. When used with IBM eNetwork Wireless Gateway and Clients, it delivers multiprotocol support and reduces the amount of data transferred over the network by as much as 50 percent—critical in a low-bandwidth wireless environment. Performance is improved by transmitting

only modified data and caching the unchanged data. In addition, Express provides the same familiar screens and commands that in-office workers would use if directly connected to the network, enabling users to build on their existing knowledge.

The **IBM eNetwork wireless gateway and client** provide TCP/IP communication over wireless and dial-up networks and offer performance-enhancing applications. A beta version of the Windows NT client widens the range of devices supported. Other enhancements for this beta version include:

- Support for DATARADIO® private wireless networks extends network integration capabilities by enabling client linkages to DATARADIO networks, such as those serving the public safety arena.
- Europe's PRI (called ISDN 30) is now supported; therefore, European users have access to 30 ISDN channels, which can save money compared to multiple Basic Rate ISDN channels.
- TCP/IP Optimization improves the performance over all networks, resulting in shorter connect times and lower air time and dial-up charges. This optimization dramatically improves process flows between the gateway and client through data compression and stripping.

eNetwork Web Express provides wireless access to the Internet and intranets and reduces data traffic from 70 to 90 percent through caching unchanged information. It can be used with most popular Web browsers and enables background queuing of requests and disconnected operations. Several performance and usability enhancements to this beta version of eNetwork Web Express mean more network efficiency and better user productivity.

IBM Fortifies Networking Infrastructure

ATM switch and MSS enhancements boost campus network performance

IBM recently released a new Asynchronous Transfer Mode (ATM) switch and enhancements to its Multiprotocol Switched Services (MSS) server to increase campus network performance by as much as 400 percent. IBM announced the 8265 Nways™ ATM Switch, as well as ATM and non-ATM enhancements to MSS. The 8265 is a follow-on to the popular 8260 multiprotocol switching hub. The new capabilities strengthen the ability of customers to migrate from expensive and complex router-based backbones to faster, more scalable switched networks that are easier to manage.

The 8265 is a 17-slot, non-blocking, 12.8-Gbps ATM switch that supports 56 OC-3 (155 Mbps) or 14 OC-12 (622 Mbps) ports. Pricing is an aggressive $1,300 per port when the switch is fully configured with 56 OC-3 ports. The switch supports ATM Forum 4.0-standard traffic management and priority queuing. On the wide-area network (WAN) side, ATM over Synchronous Optical Network, E-1/T-1, and E-3/T-3 interfaces are supported.

IBM's MSS, available as a stand-alone device or as a module for IBM's 8260 and 8265 switching hubs, allows router-based LANs to interoperate with ATM switched networks. MSS has now been enhanced to include native Next Hop Resolution Protocol (NHRP), which means non-ATM clients can achieve zero-hop—or direct—routing through an ATM network. In addition, MSS has gained Multicast Address Resolution Server support to enable customers to run IP Multicasting applications over ATM networks.

ROUTERS, CONTROLLER ENHANCED TO BEEF UP SERVER ACCESS

IBM has also enhanced its WAN routers—the 2210 Nways Multiprotocol Router and the 2216 Nways Multiaccess Connector—as well as its 3746 Nways Multinetwork Controller to speed up and expand users' access to server resources. The routers, for example, now load-balance requests among multiple servers for improved response time. In addition, new Fast Ethernet, Fiber Distributed Data Interface, and ATM adapters allow faster network connections into servers, and IBM's Dial In Access to LANs (DIALs) remote LAN access software has been integrated into the 2210 router. The devices have also gained TN3270e support for access to SNA applications over IP as well as over SNA High Performance Routing networks.

In addition, IBM has doubled the line and connections capacity of the 3746 host access gateway, allowing larger numbers of users to access servers through the device.

IBM 2216 Router Outpaces the Cisco 7507

IBM recently commissioned The Tolly Group®, an independent networking industry testing organization in Manasquan, New Jersey, to test the IBM 2216 Nways Multiaccess Connector. Tolly tested the ESCON®/Token-Ring SNA throughput and ESCON/Token-Ring IP routing performance of the device running version 1, release 1.1, and compared it with Cisco® Systems' 7507 router, version 11.1. In both cases, IBM's 2216 delivered more than twice the routing throughput of the Cisco 7507.

The 2216 delivered 46.9 Mbps throughput of 4 KB Response Units (RUs)—the user data payload—from mainframe to LAN via two ESCON channels and six Token Rings, compared with 21.8 Mbps delivered by the Cisco 7507. The 2216 delivered 87.5 Mbps throughput of 16 KB RUs, while the 7507 was unable to complete that test successfully.

For IP routing throughput, routing from mainframe to LAN across two ESCON channels and eight 16 Mbps Token Rings, the 2216 demonstrated aggregate throughput of 103.6 Mbps when sending 4 KB frames compared with 47.6 Mbps delivered by the Cisco 7507. The 7507 supports 16 KB frame sizes on Token Ring, but not across the ESCON interface; so 16 KB frame delivery could not be tested on the Cisco product. The 2216, however, supports both, and delivered 112.4 Mbps throughput of 16 KB frames.

For complete details of the tests, including aggregate test results, methodology, and other data, visit The Tolly Group's Web site at http://www.tolly.com.

For more information

Visit **http://www.networking.ibm.com/netprod.html**
Visit **http://www.networking.ibm.com/216/216prod.html**

HPR-based Offerings Broaden Network Reach

Branch Extender, Enterprise Extender streamline network overhead

Two new IBM technologies build upon High Performance Routing (HPR) to help organizations cost-effectively expand the reach of their enterprise networks.

The first, Branch Extender, blends the intelligence of routing and the performance of switching to allow HPR networks to grow very large before requiring segmentation. Enterprises with hundreds to thousands of branch sites, running SNA applications in the data center and SNA clients in the branches, can save up to 50 percent on network costs with Branch Extender. Branch Extender is packaged with IBM Communications Server 5.0 for OS/2 Warp™.

Large enterprise networks can benefit greatly from advanced HPR functions such as automatic resource discovery and route selection. However, the price of dynamic network operation has been the need to advertise the network topology or search the network for resources. In a small network, the overhead of these "network control" messages is insignificant. But in a large network made up of many relatively slow lines, even a small overhead may be unacceptable. IBM has introduced Branch Extender to enable such enterprises to gain the benefits of HPR throughout their entire network without these concerns.

Branch Extender adds features to HPR to reduce network control messages and quickly switch traffic between branches, while maintaining HPR's key features, such as congestion control and class of service. This significantly increases the number of branches that can participate in a single network by enabling the full utilization of available bandwidth, uncluttered by network control information, while quickly and efficiently forwarding time-critical traffic. These functions let a network manager guarantee service levels to meet business and user demands.

For enterprises that cannot tolerate network downtime, Branch Extender includes two types of redundancy safeguards. The first is that a single Branch Extender can send data traffic simultaneously on multiple wide-area links so that if one link fails, HPR automatically reroutes to the links that remain operational. For even more outage-sensitive installations, Branch Extender protects against outages caused by equipment failures. Users can install two Branch Extenders in the same site and both remain active and share data loads. If one device should lose power, computers in that site can automatically switch to the other one.

INTRANET-ENABLER INTEGRATES IP, SNA

A cousin to Branch Extender, Enterprise Extender is a new intranet-enabling technology that extends SNA applications to IP networks. Enterprise Extender is a simple set of extensions to HPR. To the HPR network, the IP backbone is a logical link; to the IP network, the SNA traffic is UDP datagrams that are routed without hardware or software changes to the IP backbone.

Unlike gateways, there is no protocol conversion in running SNA over IP with Enterprise Extender, and, unlike common tunneling mechanisms, the integration is performed at the routing layers without the overhead of additional transport functions. This advanced technology enables efficient use of the intranet infrastructure for support of IP-based clients accessing SNA-based data (for example, 3270 emulators or Web browsers using services such as IBM's Host On-Demand), as well as SNA clients running any of the SNA LU types.

Enterprise Extender seamlessly integrates enterprise data and SNA application access into real-world intranets. Intranet services such as TN3270 servers can be distributed in the network with either an SNA or an IP infrastructure and, therefore, placed in locations that provide the best scalability and availability regardless of backbone protocol. SNA application access from SNA clients or distributed SNA servers can also be provided.

Enterprise Extender extends the reach of SNA applications and data to include IP networks and IP-attached clients with similar levels of reliability, scalability, and control enjoyed by SNA users. Since it provides this integration using standard IP technology, it requires no new hardware or software in the IP backbone network. Because it will be available to the industry through both the APPN® Implementers' Workshop (AIW) and the Internet Engineering Task Force (IETF), the integration functions will be both seamless and interoperable.

For more information

Visit **http://www.networking.ibm.com/ene/bxwhite.html**
Visit **http://www.networking.ibm.com/ene/exwhite.html**

Open for Business

IBM e-commerce solutions for the banking industry

The Internet today is wide open and ready for business. By some estimates, e-commerce is already a $2 billion (U.S.) industry. In 1997, Web users alone will spend an estimated $700 million online. By 2010, that number might reach $1 trillion or more.

Where will all that money go? Sooner or later, it's going to wind up in the banks. And just like other forms of business, banking can be far easier and more convenient over the Internet—so it's no wonder that financial institutions are perceiving a big opportunity on the Web. Soon, their competitive edge is likely to depend on their ability to offer services electronically.

What automatic tellers and proprietary online services have begun, Internet access could elevate to the next level. Internet banking could enhance banks' quality of service and decrease unnecessary in-bank visits. As e-commerce technology develops, some of the constants of bank customers' lives—long lines at teller windows and bulky statements in the mail—will almost certainly disappear.

IBM'S E-COMMERCE TECHNOLOGY AND SOLUTIONS
Today, almost every major retail bank is investigating electronic banking solutions and asking difficult questions about security and how to measure return on investment. IBM is helping to answer these questions by creating networked solutions that enable bank customers to manage their finances in smart new ways. For example:

• Working with MasterCard, Visa, and other technology vendors, IBM is making online purchasing more secure than traditional credit card activities such as mail and telephone ordering.
• IBM joined forces with a consortium of banks, which has made online banking immediately available to half the retail banking population in North America—more than 60 million households in all. Now, banks can leverage a common network infrastructure instead of having to build their own.
• IBM is now delivering all the necessary connectivity and tools for bank customers to manage sophisticated personal banking tasks online.

E-commerce is growing rapidly and most banks already offer some kind of online service, but only a few have

Point and click   Buy and sell

E-commerce is selling products and services on the Internet. Many people confuse it with e-business. That's understandable. Commerce, after all, is a primary element of business. Commerce is the exchange of goods or services—buying and selling. Even in its traditional form, commerce is a dynamic business process where customers interact with salespeople. And that's why e-commerce is a natural step for any e-business.

ONLINE SHOPPING. THE NEXT BIG THING.
E-commerce is online shopping—both wholesale and retail. And it's happening now. Every day, more and more people gain access to the Web. And every day, more and more of them are shopping online. It provides a level of convenience they want, need, and will soon demand. e-commerce is a unique opportunity for businesses of any size. And for those who automate their supply chain, the opportunity for business-to-business e-commerce is even greater.

GET TO KNOW YOUR CUSTOMERS—INDIVIDUALLY.
E-commerce can expand your marketplace. And consequently, your customer database. Which presents another, potentially greater opportunity. By linking your Web site to your database, you can track actual visits, sales, buying patterns and trends, and product preferences—all at the customer level. You can then present your customers with products they're most likely to buy—on an individual basis. It's the ultimate target marketing tool.

A SUPERMARKET OF OPPORTUNITIES.
E-commerce is happening now. And IBM's e-commerce team is ready whenever you are to help leverage your existing technology investment and establish a secure and reliable online shopping environment. Just like we've already done for hundreds of companies, like the Kosher Grocer, a virtual supermarket that sells kosher products to customers worldwide at prices that beat conventional retailers. And as any business owner can tell you, that kind of competitive edge is a recipe for success, no matter what you're selling.

major operations in place. It is likely, however, that these services will soon become competitive differentiators; in other words, banks that offer online banking will attract new customers who recognize the value of being able to bank from their personal computer.

WHY ENETWORK SOFTWARE?
The hypothetical scenario that follows illustrates some of the benefits of an IBM Internet and intranet solution. The bank in this scenario wants to exploit the profit potential of the Internet, but is concerned about how system upgrades and changes might disrupt its ongoing operations.

Our story begins with the vice president of electronic commerce at a financial institution. He sees Internet usage growing exponentially, and starts thinking about how his bank could leverage the business potential of the Internet without disrupting the existing IT operation. He imagines business and home banking customers reconciling accounts, transferring funds, and requesting service transactions from the bank's Web site. Many business customers have also requested online credit card processing. The possibilities appear almost limitless.

The bank's existing system consists of an SNA backbone network that uses High Performance Routing (HPR). This connects the bank's central S/390 to 300 branch offices. Within the branch offices, PCs are connected on TCP/IP LANs.

After researching the offerings of several vendors, the vice president hears about IBM's complete Internet and intranet solutions. He immediately realizes that the bank's existing central site server can easily handle the addition of a Web site and the additional Internet traffic. Parallel servers at corporate headquarters could provide customers with Internet access to their account information in the bank's system and connect employees to the Internet. Servers at each branch could connect the branch employees to the bank's systems, employees at other locations, and customers on the Internet.

> *"Banking customers are choosing to do business anytime, anywhere. The Internet adds a new dimension to account access. But banks require a predictable, secure environment for delivering these online, real-time services. With IBM Internet and intranet solutions, we can meet these new challenges and maintain the quality of service that our customers depend on."*—The bank's vice president of electronic commerce
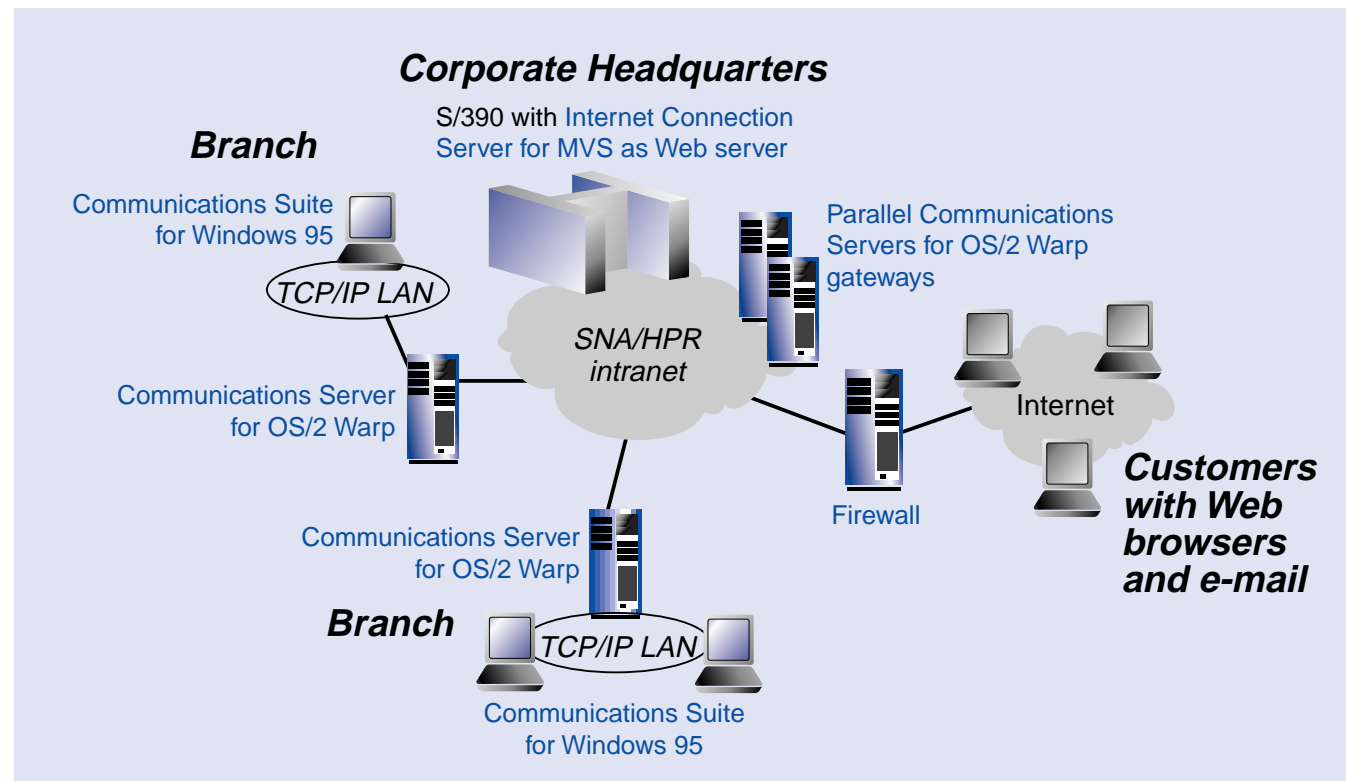
REQUIREMENTS
The bank begins its e-commerce project by defining its requirements. First, the vice president has to determine whether the bank really needs to replace the current system, which is stable, reliable, and secure. Like most businesses, the bank wants to implement the e-commerce solution without interrupting business. (This is a particularly important requirement for banks, which rely on IT systems for all transactions—any outages are unacceptable.) The ideal solution would Internet-enable the current network without requiring changes to existing applications or their use.

Fortunately, one of the fundamental benefits of IBM's eNetwork Software is that it enables existing network infrastructures to access the Internet, rather than requiring a complete changeover to new systems. As a result, eNetwork Software customers can migrate at their own pace to Internet applications such as e-commerce.

ONLINE ACCESS AND COMMUNICATION
Today, the bank's customers are accessing account information via mail, phone, fax, ATM, and bank visits. They are unlikely to want to make the transition to online access unless the bank can offer them solid security. The vice president feels comfortable with IBM because it has been providing secure banking connections for many years. The same techniques, called Session-Level Security, are part of eNetwork Software and are being used on the Internet. Thus, security is built into each home banking connection.

Like the customers, employees at the bank's branches are currently communicating via postal mail, fax, and phone. E-mail would provide a new way not only for customers to contact bank employees, but also for bank employees to work with one another. To respond to customer inquiries and research the bank's competition, the employees need Internet access. In this environment, IBM recommends installing the eNetwork Communications Suite on all desktops, giving the bank a broad range of Internet and intranet capabilities.

Corporate Headquarters

S/390 with Internet Connection
Server for MVS as Web server

Branch

Communications Suite
for Windows 95

TCP/IP LAN

Communications Server
for OS/2 Warp

SNA/HPR
intranet

Parallel Communications
Servers for OS/2 Warp
gateways

Firewall

Internet

**Customers
with Web
browsers
and e-mail**

Communications Server
for OS/2 Warp

Branch   *TCP/IP LAN*

Communications Suite
for Windows 95

The bank's network after installing IBM's eNetwork Software

With the new system, employees could easily access the bank's central systems. In addition, employees at all locations could collaborate electronically and share information using intranet Web sites and e-mail. They could publish documents directly to the bank's Web site for public distribution. And a Web browser means that competitive research is only a point-and-click away.

A COMPREHENSIVE SOLUTION FROM IBM
IBM's eNetwork Software provides all the network infrastructure needed for the bank to offer e-commerce services to its customers (see the Figure above). Major components of the solution are as follows:

• Upgrade VTAM® and TCP/IP for MVS® on the S/390 to Communications Server for MVS/ESA™.
• Install Internet Connection for MVS/ESA 5.2 as the Web server on the S/390.
• Install parallel Communications Servers for OS/2 Warp at the central site so that Internet customers can access the mainframe.
• Install a Communications Server for OS/2 Warp at each branch office.
• Install Communications Suite for Windows 95 on all desktops to upgrade access to the S/390 and enable Internet access.
• Install a firewall for Internet security.

A WIDE RANGE OF BENEFITS
As soon as the installation of the IBM eNetwork Software solution is complete, the bank realizes the following benefits:
• **Improved image with customers and increased revenue from electronic commerce**—Offering advanced Internet services as well as traditional services helps the bank create an image as the provider for current and future financial needs.
• **Minimal costs and no major disruptions**—By eliminating the need to build a separate, parallel IP network, the bank avoids the cost of a new network and minimizes support costs by reducing complexity and maintenance.
• **Reduced content production time and cost**—Electronic communication among team members working on projects—marketing collateral, financial reports, and customer support documentation, for example—improves results, cuts costs, and speeds project completion. Customers see the bank providing a higher level of service than other banks. By serving customers better, the bank will increase its revenues.

For more information

Visit **http://www.networking.ibm.com/enetwork**

as needed for extra bandwidth. The ability to add switched network capacity on-the-fly provides a competitive edge for the bank by allowing it to improve response times, thus reducing customer wait times and improving overall service. The solution is cost-effective, because the bank pays only for bandwidth it uses.

Another use for the MLTG feature of Communications Server is to ease the pain sometimes associated with software distribution. As a full-service bank, new data is distributed to servers almost every day, but there are very few hours in any week that the network can be used to distribute large updates to the system software. Scheduling is complex, and updates can take place over a series of weekend nights. Today, most system software changes are mailed to each branch and installed by IT professionals who travel to the site.

MLTG, by allowing the random addition of bandwidth, will enable more flexibility in scheduling large system updates with minimal disruption to the customers and the staff.

"With the new functions in Communications Server, we can give our customers better service while saving money on software updates," says David Myles, technical specialist at the Bank of Montreal. "We get continuous availability at a very affordable price. We can also take advantage of other technologies such as frame relay as they develop."

With an eye on the international finance market, Bank of Montreal has a goal of 24-hour availability, 365 days a year. The High Performance Routing (HPR) feature of Communications Server provides dynamic switching for unscheduled outages. If a link should fail, HPR will dynamically reroute the data to a different link without disrupting the session. Traffic can also be easily balanced, and scheduled outages will have minimal impact on the network.

PARTNERSHIP WITH IBM
Bank of Montreal worked with the IBM team in Research Triangle Park, North Carolina, to refine the requirements for MLTG and tested the beta code for MLTG and HPR. The bank says it is happy with the new function and sees the benefits of improved customer service and system availability. Communications Server on the OS/390 and OS/2 platforms is helping the bank reach its goal of continuous availability. The bank sees that as critical for its success in the global market.

For more information

Visit **http://www.networking.ibm.com/cms/commserv.html**

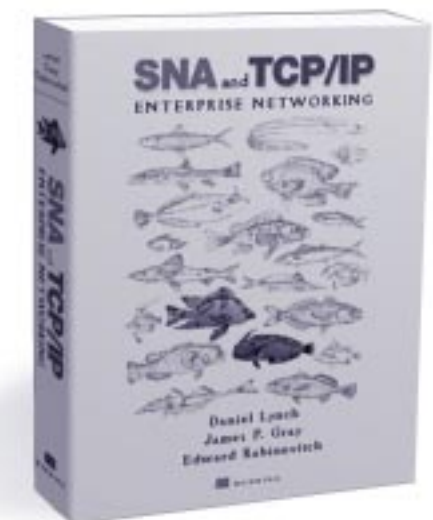# Another book on networking! What's special about this one?

SNA and TCP/IP Enterprise Networking
Edited by Daniel C. Lynch, James P. Gray, and Edward Rabinovitch
Softbound, 540 pages, $60
ISBN 0131271687

Most textbooks concentrate on presenting the theory, concepts, and products, with examples of implementations in some cases. The distinctive quality of *SNA and TCP/IP Enterprise Networking* is in its structure. It answers not only "What?", "Why?", and "How?", but also "What's next?" It shows the reader how enterprise networking evolved, what approaches and techniques can be used today, and where tomorrow's trends lie, illustrating among others, Web-to-SNA connectivity and Java-based integration approaches.

Published by Manning Publications, *SNA and TCP/IP Enterprise Networking* was written by visionaries, scientists, networking product developers, industry experts, consultants, and end-user representatives, who not only implement the products, but also participate in defining open networking standards. It should be equally appealing to the network practitioners implementing technology as the senior managers making strategic decisions on enterprise networking.

For more information

Visit **http://www.browsebooks.com/lynch/index.html**

Networking Software and the Year 2000

IBM Networking Meets the Year 2000 Challenge

The Year 2000 challenge is real and imminent. It stems from the programming practice begun years ago to store year data with two digits to save space and time. When January 1, 2000 arrives, software applications and databases could be a disaster unless the proper modifications and upgrades are made.

Independent consultants estimate that several hundred billion dollars will be spent worldwide to update systems so they function smoothly when 2000 arrives. Every element of a computing system will have to be checked: the hardware, the system software, and the applications. Ignoring the Year 2000 challenge is not an option.

Finding and fixing all the date fields in complex systems written in many languages is a daunting task, and IBM is determined that its networking products will not be a part of the problem. The IBM eNetwork Software products currently being marketed and serviced support the transition to the Year 2000. This is consistent with the basic premise of IBM eNetwork Software, combining IBM's expertise in providing industrial-strength solutions for the enterprise environment with the latest networking technologies of today and tomorrow.

The IBM Year 2000 Product Readiness database (http://wwwyr2k.raleigh.ibm.com/) lists the major Year 2000 Ready product families. Although these networking products have been certified, the operating systems and applications with which they work must also be Year 2000 Ready.

COMMUNICATIONS SERVERS
Communications Server/390 Versions 1-4 (part of OS/390)
Communications Server for MVS/ESA
TCP/IP Version 3 for MVS
VTAM Versions 3 and 4
TCP/IP Version 2 for VM
Communications Manager/2 Version 1
Communications Server for OS/2 Version 4.1
eNetwork Communications Server for OS/2 Version 5
SNA Client Access for AIX Version 1.2
SNA Application Access for AIX Version 1.2
IBM SNA Server for AIX Version 3.1

Communications Server for AIX Releases 4.2 and 5
Communications Server for Windows NT Version 5
NetWare for SAA 2.2
IntranetWare for SAA: AS/400 Edition 2

COMMUNICATIONS CLIENTS
Communications Manager/2 Version 1
Personal Communications Version 4.x
eNetwork Communications Suite
Host On-Demand
Files On-Demand
Mobile Computing
eNetwork Wireless Gateway and Gateway Clients
eNetwork Emulator Express Clients and Server
eNetwork Web Express Clients and Server

For more information

IBM's Year 2000 Technical Support Center
Visit **http://www.software.ibm.com/year2000/**

Other resources and programs
Visit **http://www.ibm.com/IBM/year2000**

Upcoming Events

GUIDE SHARE Europe 2nd Technical Symposium: Systems Management
Rome
NOVEMBER 3-4, 1997
http://www.gse.org/confrenc.htm

APPN Implementers' Workshop (AIW 15)
Raleigh, NC
NOVEMBER 3-6, 1997
http://www.networking.ibm.com/app/aiwhome.htm

COMMON Regional Conference
Nashville, TN
NOVEMBER 5-7, 1997
http://www.common.org

COMDEX® Fall
Las Vegas
NOVEMBER 17-21, 1997
http://www.comdex.com

NetWorld + Interop® Sydney
Sydney, Australia
NOVEMBER 24-28, 1997
http://www.interop.com.au/

COMDEX India
New Delhi
DECEMBER 3-6, 1997
http://www.comdex.com

Fall Internet World '97
New York
DECEMBER 8-12, 1997
http://events.internet.com/fall97/

COMDEX Miami '97
Miami Beach, FL
DECEMBER 9-11, 1997
http://www.comdex.com

COMDEX Pacific Rim
Vancouver, Canada
JANUARY 20-22, 1998
http://www.comdex.com

Networks Expo
Boston
FEBRUARY 2-5, 1998
http://www.networksexpo.com/boston98/index.html

COMDEX IT France
Paris
FEBRUARY 2-6, 1998
http://www.comdex.com

SHARE Technical Conference
Anaheim, CA
FEBRUARY 22-27, 1998
http://www.share.org

COMDEX Mexico
Mexico City
FEBRUARY 24-27, 1998
http://www.comdex.com

Spring Internet World '98
Los Angeles, CA
MARCH 9-13, 1998
http://events.iworld.com/spring98/spring98.html

APPN Implementers' Workshop (AIW 16)
Raleigh, NC
MARCH 16-18, 1998
http://www.networking.ibm.com/app/aiwhome.htm

CeBIT
Hannover, Germany
MARCH 19-25, 1998
http://www.messe.de/ch98/

COMDEX Enterprise West '98
San Francisco, CA
MARCH 23-27, 1998
http://www.comdex.com

COMDEX China
Beijing
MARCH 24-27, 1998
http://www.comdex.com

COMMON
New Orleans, LA
APRIL 19-24, 1998
http://www.common.org

COMDEX Spring
Chicago, IL
APRIL 20-23, 1998
http://www.comdex.com

IBM Technical Interchange
Orlando, FL
MAY, 1998

NetWorld + Interop
Las Vegas, NV
MAY 4-8, 1998

COMDEX INFOCOM Argentina
Buenos Aires
MAY 19-22, 1998
http://www.comdex.com

GUIDE SHARE Europe
5th International Conference
Göteborg, Sweden
MAY 25-27, 1998
http://www.gse.org/confrenc.htm

APPN Implementers' Workshop (AIW 17)
San Jose, CA
JULY, 1998
http://www.networking.ibm.com/app/aiwhome.htm

Summer Internet World '98
Chicago, IL
JULY 13-18, 1998
http://events.internet.com/

COMDEX Enterprise East '98
Boston, MA
AUGUST 8-10, 1998
http://www.comdex.com

This is a list of selected conferences and trade shows of potential interest to eNetwork Connection readers. IBM makes no claims as to the value of these events. To list an event that is not shown here, send e-mail to enetwork@vnet.ibm.com.

Extending the Reach of Your Network

By Al Zollar, IBM General Manager, Networking Software

Since we launched our newest round of enhancements to eNetwork Software in September, I've spent quite a bit of time talking about eNetwork Software with members of the press, with consultants, and—most important—with our customers.

I'm excited by the tremendously positive response I've received: You recognize that IBM's e-business initiative means real benefits for you and your business. As I've talked with many of you, I've emphasized that eNetwork Software is an integral part of our e-business initiative, and that we're delivering on our promises to provide a comprehensive set of computing solutions to enhance your business.

Now more than ever, IBM eNetwork Software extends the reach of your network, tying together users with data and applications, across virtually any set of hardware configurations, any set of operating systems, and any set of networking protocols. Our integrated solutions provide unparalleled flexibility and cost efficiency.

Our new product releases will help your business increase opportunities, increase efficiency, and reduce costs:

• New PCOMM features in desktop integration, intelligent network access, performance, and adapter support to make your organization's information more valuable than ever because it's within reach of all your users.

• Communications Servers that handle more data, perform more efficiently, and deliver information to a wider range of devices—including the IBM Network Station family—and across the Windows NT and OS/390 platforms.

• Host On-Demand Version 2.0 that extends your reach to enterprise data whenever you need it, wherever you need it. A powerful new API, the eNetwork Host On-Demand Host Access Class Library, lets you tailor data and application access to your users' specific needs.

• New Wireless offerings to give you more choices and flexibility by offering a greater range of device and protocol support. In addition, enhancements to performance and to the user interface mean a more efficient network and more productive users.

In the coming months, our new Enterprise Extender technology will be introduced in eNetwork Software products. Enterprise Extender will give you seamless access to S/390 server-based SNA applications over IP networks. You reap the benefits of both environments: failure protection, scalability, and traffic control. Your network costs go down while the value of your investment in legacy software and data goes up.

If you haven't looked recently at what we have to offer, I cordially invite you to do so. You'll find that IBM eNetwork Software truly leads the industry in providing solutions for your business.

IBM®

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IBM Network Technology Marketing
Department CLJA/501, P.O. Box 12195
Research Triangle Park, NC 27709 USA