

eNetwork Connection

February 1998

IBM

THE IBM NETWORKING SOFTWARE NEWSLETTER

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DEETYA Stays Connected

*Australian employment
agency installs IBM
Communications Server for
Windows NT to provide
robust, reliable host access*

Located in Canberra, the Department of Employment, Education, Training, and Youth Affairs (DEETYA) is the Australian government agency responsible for developing comprehensive policy solutions to continually improve the learning and working lives of all Australians.

Using an IBM DB2® database that contains a vast amount of job listings and training providers, case managers work with job seekers to match them to current job vacancies or identify what training might help them find a job. To accomplish this, more than 2,500 users at 700 locations around the country need terminal emulation access to the core database as well as access to a local client/server application.

To help ensure that these users have reliable access and that the government's objectives are met, DEETYA depends on a skilled and effective staff who, in turn, require a highly efficient host integration solution. One key component of that solution is IBM eNetwork Communications Server for Windows NT™ 5.0.

UNRELIABLE CONNECTIONS WERE IMPACTING PRODUCTIVITY

In early 1997, while upgrading its computing infrastructure to scale up for anticipated



growth, DEETYA installed a new SNA gateway system designed to provide easier, more reliable access for remote users. Unfortunately, it wasn't long before the DEETYA technical staff realized that the new solution was far from ideal.

According to Jane Kozak, assistant director of communications, "We found

Continued on page 13

Enterprise-Class Dependability

• **Enterprise-class dependability.** It's one of the four "e-values" for IBM eNetwork Software, but what does it really mean? Of course, it describes reliability and security—eNetwork Software products function well, even under heavy networking loads, while keeping your data and applications safe from unwanted change and unauthorized access.



But enterprise-class dependability also means that you can depend on eNetwork Software for solutions that meet your business needs today. eNetwork Software already provides client/server, wireless, intranet, and extranet solutions to meet your specific business needs today, and we plan to continue adding new function to help you grow in the future.

Enterprise-class dependability means that you can rely on eNetwork Software to leverage industry-leading technology for meeting your business needs. On page 3, we show you how Java™ can give your business users consistent, user-friendly access to data and applications on a host processor. On page 8 we explain how our Communications Server for S/390® product improves performance and reduces cost in your network by means of Multipath Channel (MPC+). On page 7 we describe Enterprise Extender, which will soon be a key ingredient in a number of e-business solutions.

Finally, enterprise-class dependability means that you can depend on IBM to give you the tools and support your need to make everything work together. We have listened to your suggestions and developed Web pages that are making it easier for you to find information about products, report problems, and obtain fixes. (Read about these Web pages on page 12.) We're also offering a set of free tools, described on page 14, that make it easy for you to update your configuration files for migrating to Communications Server.

IBM eNetwork Software: it's the one brand you can depend on, today and in the years to come. 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@us.ibm.com.

Larry Kunz

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eNetwork Software: Delivering on Our Promises

The more you read about the computing industry, the more you read about new products and emerging technologies. You read that this product or that technology is the hottest new thing. Then, a little while later, you read that maybe it isn't so hot—that it's just a passing fad or that something else even newer and hotter is on the way.

By comparison, our eNetwork Software messages might sound a little old. They're the same ones we gave you last year when we launched eNetwork Software, and they can be summed up as follows: we deliver real e-business solutions that address your network computing problems and extend the reach of your business. We don't just make promises...we deliver real solutions that embody the following "E-values:"

- ◆ Enterprise-class dependability
- ◆ End-to-end universal access
- ◆ Easy implementation, configuration, and usage
- ◆ Effective utilization of network assets

Don't get me wrong. When it comes to developing and exploiting new technology, IBM is second to none. We are constantly developing and delivering new solutions to address your e-business needs. But we do so with one objective in mind: delivering products and services that actually solve your business problems.

In the last few months we've kept our promise by rolling out a major new version of Host On-Demand (Host On-Demand V2), a 100% Pure Java solution that gives your desktop users easy, inexpensive access to programs and data on the host. We've also enhanced our wireless products to provide easy network access for the growing numbers of remote users. Our host integration solution, incorporating products such as Communications Server for Windows NT, helps customers like DEETYA (see page 1) meet today's business needs while preparing for tomorrow.

In 1998, we will offer even more robust solutions. Look for plenty of enhancements to our product line, and look for even more comprehensive e-business solutions that integrate security and directory functions while leveraging the strengths of OS/2® solutions like Workspace On-Demand. The bottom line is that IBM eNetwork Software remains committed to delivering dependable, leading-edge solutions that will continue to extend the reach of your business for a long time.

James Neiser

James Neiser
IBM Vice President, Networking Products Marketing

Getting the Most Out of Host On-Demand

Q: To access the corporate host, my users start Host On-Demand several times a day. How can I minimize the time it takes to start Host On-Demand?

A: The current level of Host On-Demand, V2.01, includes a "persistent cache" option that minimizes the time needed to download the Host On-Demand applets to the desktop. When you use the persistent cache option, which is available on the latest versions of most popular Web browsers, each user can maintain a cached version of the Host On-Demand code on the workstation.

This cached version is checked against the server's copy each time a Host On-Demand session is started, and the user is informed if a new version is on the server. The user can then choose to download the new version immediately or defer the download until a more convenient time. Dial-up customers benefit the most from the persistence option, since the download time (up to several minutes over a 28.8 line) is almost completely eliminated.

Q: I'm trying to connect users in several different branch offices with the corporate S/390 server. They use a variety of different Web browsers. Which browsers can be used with Host On-Demand V2?

A: Host On-Demand supports any Java-enabled client platform. The basic functions of Host On-Demand are supported by any browser that supports Java Virtual Machine (JVM) 1.02. Supported browsers include some of the most popular browsers available—such as Netscape Navigator™ 3.0 and Microsoft® Internet Explorer 3.0. However, some of the functions in Host On-Demand V2 (cut/copy/paste, print screen, and all non-English language support) require browser support for JVM 1.1, which is generally found in newer versions of the standard browsers.

Because browsers are continually being updated, you might want to consult the latest list of supported browsers on the Host On-Demand Web site at <http://www.networking.ibm.com/hex/hodv2env.html>.

Q: What languages does Host On-Demand support?

A: Host On-Demand is currently translated into 17 languages, including English, German, French, Spanish, Brazilian Portuguese, Italian, Danish, Japanese, Dutch, Korean, Chinese (Traditional), Chinese (Simplified), Norwegian, Russian, Finnish, Swedish, and Turkish. You can find code pages for these languages in the online documentation for Host On-Demand.

Building Secure Data Tunnels Through the Internet

Companies target Virtual Private Networks for inexpensive communications access across the Internet

With the explosive growth of the Internet, many companies are starting to look beyond using it just to promote a corporate image or a set of products on World Wide Web home pages. Their focus is shifting to e-business: using the Internet's global reach for inexpensive access to key business applications and data that reside in traditional computer systems. One way to securely and cost-effectively do this is with a Virtual Private Network (VPN).

To meet this demand, IBM plans to roll out a series of eNetwork VPN products over the next year, enabling users to build secure tunnels dedicated to their own company's traffic through public IP networks. VPNs will allow them to piggyback corporate data access, for example, onto the Internet services they have already purchased for browsing and serving their own corporate Web sites.

SECURELY EXTENDING THE CORPORATE NETWORK

VPNs securely convey information across the Internet, connecting remote users, branch offices, and business partners/suppliers into an extended corporate network. A 1997 VPN research report by Infonetics Research, Inc., in San Jose, California, estimates savings from 20 to 47 percent of WAN costs by replacing leased lines to remote sites with Internet-based VPNs. For remote access VPNs supporting mobile or home users, savings can be 60 to 80 percent of corporate remote access dial-up costs.

To maximize the value of VPNs, companies must evolve their VPNs as their business needs change. Thus, these companies must be able to easily upgrade to future TCP/IP technology. Today, VPN solutions run primarily in the IPv4 environment, but it is important that users have the capability to upgrade to IPv6 to remain interoperable with others' VPNs.

To help ensure interoperability, IBM plans to develop the widest breadth of VPN offerings in the industry, including firewalls, clients, servers, routers, ISP services, and consulting services. The solutions will be backed by IBM's security expertise in leading-edge Internet security technologies, such as Data Encryption Standard, Hashed Message Authentication Code, and Secure Electronic Transactions.

While most VPN solutions today consist only of firewalls, IBM eNetwork VPN solutions will also encompass

multiplatform VPN-enabled clients and servers, routers, and management functions. These forthcoming VPN solutions will enable secure IP tunnels all the way from the client to an IBM server without requiring any changes to existing applications.

IBM uses IPSec, an Internet Engineering Task Force (IETF) industry security standard, as an integral element to its eNetwork VPN solutions. IPSec provides transparent cryptography-based protection of all data at the IP layer of the communications stack. IBM's AIX® Firewall already has VPN capabilities and includes IPSec (see "About IPSec and VPNs" on page 6).

VPN COVERAGE TO EXPAND

Within the next year, IBM plans to extend its VPN coverage to include VPN-enabled OS/390™ and OS/400® platforms with integrated firewall functions and IPSec security. In addition, IBM intends to develop routers with embedded IPSec and firewall technology. In the future, IBM plans to incorporate VPN management capabilities—such as policy, certificate, IP address, and key management—into its solutions and will "future-proof" offerings by adding critical functionality, such as IPv6, to all products.

VPN CUSTOMER SCENARIOS

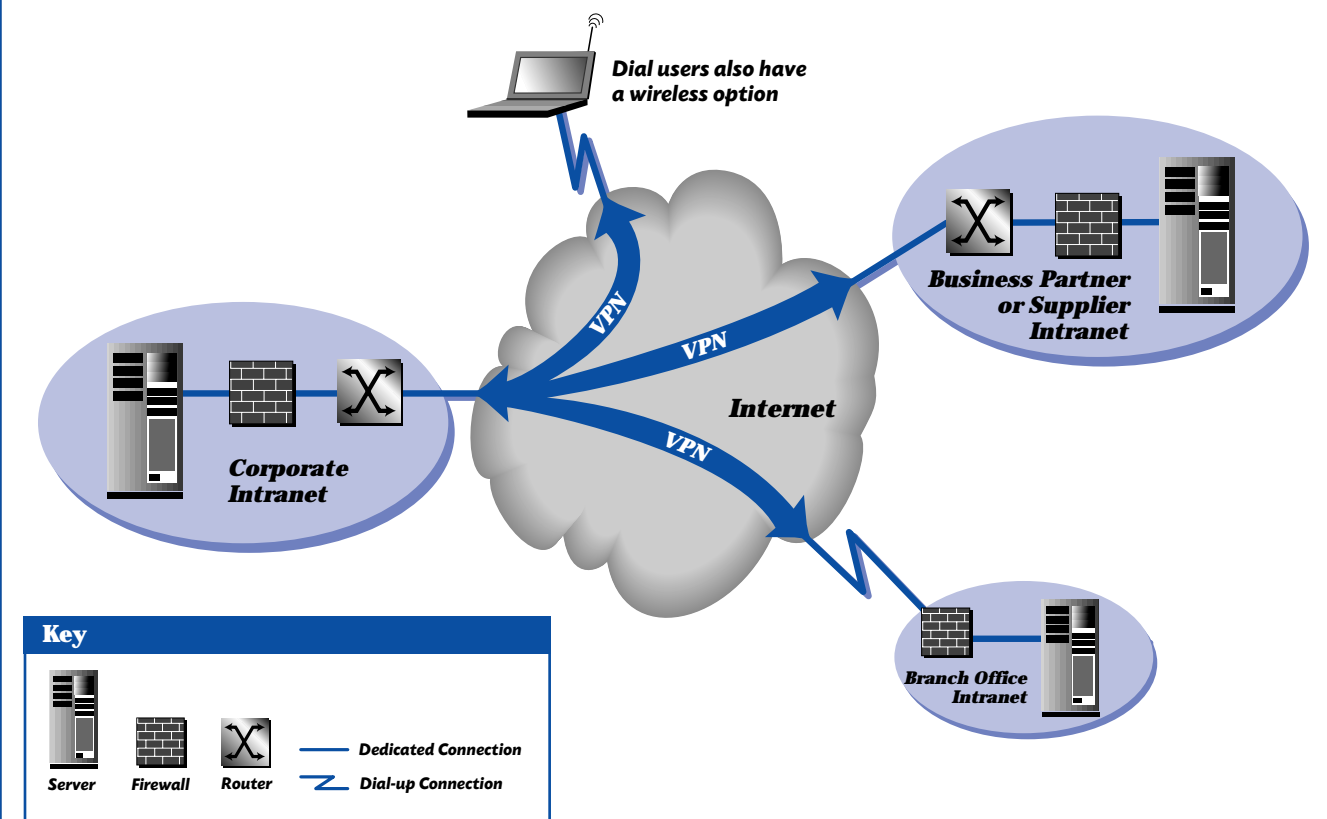
IBM eNetwork VPN offerings are designed to help companies easily develop reliable communications solutions. Consider the following three business scenarios, which are well suited to the implementation of a VPN solution: the business partner/supplier network, branch office connection network, and remote access network.

Business partner/supplier network:

Suppose you are a major parts supplier working with manufacturers. Since it is critical that you have the specific parts and quantities at the exact time required by the manufacturing firms, you must always be aware of the manufacturers' inventory status and production schedules. Building an extranet with these companies using VPN technology can help solve this business challenge.

The parts supplier and manufacturers can implement an eNetwork VPN running between a client workstation in the parts supplier's intranet and a server in the manufacturer's

VPNs Extend Network Reach



Using authentication, encryption, and data integrity checking techniques, VPNs allow disparate corporate users and networks to safely exchange data across the public Internet.

intranet. The clients can authenticate themselves either to the firewall protecting the manufacturer's intranet, directly to the manufacturer's server, or to both, depending on the company's security policy. Then a tunnel could be established, encrypting all data packets from the client as they travel through the Internet to the required server.

Through the VPN, the parts supplier can have global, online access to the manufacturer's inventory plans and production schedules at all times. Access to this information can help the supplier with planning in order to avoid costly inventory buildup and achieve just-in-time delivery, while also preventing customers from having to wait for parts.

Branch office connection network:

The branch office scenario connects two secure intranets within a single organization safely across the public Internet. The idea is to increase connectivity among intra-company departments to boost users' ability to access the data they need across inexpensive Internet links. The security focus is on protecting your company's intranet against external intruders and securing your company's data while it flows over the public Internet.

One way to implement this VPN connection between the corporate headquarters and a branch office is for the company to purchase Internet access from an ISP, such as IBM Global Services. IBM eNetwork firewalls, or routers with integrated firewall function, would be placed at the boundary of each intranet to help protect corporate traffic from Internet hackers. The IPSec-enabled firewalls (or routers) would provide data packet authentication and encryption. With this approach, the inventory and pricing information would be hidden from untrusted Internet users, with the firewall denying access to potential attackers.

Remote access network:

A remote user, whether at home or on the road, wants to be able to communicate back to the corporate intranet. Long-distance and toll-free costs can be greatly minimized by exploiting the Internet for this function. By obtaining Internet access in the form of a dial-in connection to an ISP, you can communicate with the server in your intranet and access a required file.

This design can be implemented by using an eNetwork VPN IPSec-enabled remote client and firewall. The client accesses the Internet via a dial-up connection to an ISP, then

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establishes an authenticated and encrypted tunnel between itself and the firewall at the intranet boundary. By applying IPSec authentication between the remote client and the firewall, you can protect your intranet from unwanted and possibly malicious IP packets.

It is quite possible that a company might require elements of all three of these VPN scenarios. For example, you might want to incorporate remote users into your supplier and branch office networks.

BROAD MANAGEMENT SUPPORT

Inherent in network expansion for all these scenarios are concerns of manageability. IBM plans to include in its eNetwork VPN solutions management functions such as policy management, automated key management capabilities, certificate management, secure Domain Name Server (DNS), and Lightweight Directory Access Protocol (LDAP) support.

When implementing a VPN, you need to establish a set of security configuration criteria. Decisions such as which security algorithms are to be used by each IPSec-enabled box—and when the keys are to be refreshed—are all aspects of policy management. Almost all of today's currently popular security protocols use public key cryptography. Each user is assigned a unique public key. Certificates, in the form of digital signatures, validate the authenticity of your identity and your encryption key. These certificates can be stored in a public key database.

THE BOTTOM LINE

Extending the reach of your network in a secure manner over inexpensive public networks is what VPN technology is all about. The larger the number of entities that can communicate on your network, the more useful your network is and the bigger your potential business payback becomes.

About IPSec and VPNs

The IP Security (IPSec) standard defines security protocols that authenticate TCP/IP connections, add data confidentiality and integrity to TCP/IP packets, and are transparent to the application and the underlying network infrastructure. Authenticated data cannot be modified by third parties, and encryption conceals the content of packets. IPSec is an underpinning of Virtual Private Networks.

IPSec is designed for multivendor interoperability. Its flexible key management scheme, the Internet Security Association Key Management Protocol (ISAKMP), allows two parties to quickly and dynamically agree on security keys, encryption, and authentication algorithms before any communications takes place. Thus, any equipment implementing IPSec is interoperable.

Finding the right VPN solution is a complex question that should be discussed with experienced networking and security experts. With years of experience in these areas, IBM specialists can address these questions and determine the right eNetwork VPN solution that will meet the needs of your business today and in the future.

For more information

Visit <http://www.networking.ibm.com/ene.vpn.html>
Visit <http://www.software.ibm.com/enetwork/firewall>
Visit <http://www.ibm.com/enetwork/commsuite>

eNetwork Software Demos

Now you can see how IBM eNetwork Software solutions can work for you by viewing Lotus® ScreenCam® demos. ScreenCam is Lotus Development's popular PC screen recording and viewing application. If you don't already have the free ScreenCam Player to view the demos, you can download it from the Lotus Web site (<http://www.lotus.com/home.nsf/welcome/screencam>).

The Web site also contains easy instructions for launching ScreenCam demos from your PC (for Windows™ 3.1, Windows 95, and Windows NT 4.0) after you have downloaded and "unzipped" either of the following files:

- ◆ Personal Communications demo
- ◆ Host On-Demand demo

A New Ride for SNA Applications

Enterprise Extender provides superior integration of SNA applications into IP networks

In 1992, IBM invented Data Link Switching (DLSw) as a means for transporting SNA and NetBIOS data across a TCP/IP network. As the only open TCP/IP encapsulation scheme, DLSw has gained widespread acceptance by all routing vendors. Now, IBM has created Enterprise Extender as an even better way to integrate SNA applications into an IP network. The following is a quick look at some of the differences between DLSw and Enterprise Extender.

WHAT IS ENTERPRISE EXTENDER?

Enterprise Extender integrates SNA application traffic using User Datagram Protocol (UDP) frames in the IP network and HPR-capable devices located at the edges of the network. Existing UDP datagrams can be routed through the IP network without requiring hardware or software changes. As an enhancement to HPR, Enterprise Extender (with IP network support) eliminates many shortcomings of DLSw TCP encapsulation. As with DLSw, IBM offers Enterprise Extender to the industry as an open standard.

SUPPORT FOR LARGER NUMBERS OF SNA USERS

At both the sending and receiving locations, DLSw-capable routers terminate SNA connections and locally acknowledge transmissions. Both termination and acknowledgment are a significant router burden and very often, a data center's DLSw router is incapable of supporting more than a few hundred SNA users at a time. Enterprise Extender eliminates the termination and acknowledgment workload, enabling the routers to handle a much larger number of users.

NO SINGLE POINT OF FAILURE

With DLSw, a data center router—the place where termination and acknowledgment occur—is a single point of failure. If this router fails, all SNA connections are disrupted and have to be reestablished even though an alternate path might exist. Enterprise Extender helps eliminate system disruption by maintaining the connection and switching to an alternate path. And when you combine Enterprise Extender with S/390 Parallel Enterprise Servers (Parallel Sysplex), you can maintain SNA sessions even during application outages.

MORE EFFECTIVE TRAFFIC PRIORITIZATION

Most routers provide some form of prioritized queuing (IBM routers use a class-based queuing mechanism called Bandwidth Reservation System). The difficulty is correctly identifying the priority at which an SNA packet should be sent. With DLSw—where traffic prioritization is handled on a link basis—you must define multiple links to the same SNA device. Other traffic prioritization techniques either have no capability to provide SNA priority or they require guesswork or adherence to addressing conventions. Enterprise Extender ends this guesswork and configuration overhead—and provides real priority—by mapping the priority of SNA packets to UDP port numbers that routers within the IP network can easily use to prioritize the traffic correctly.

EFFICIENT MESSAGE SEQUENCING

DLSw uses TCP/IP reliable transport to avoid having messages arrive at their destination scrambled or out of sequence. Even though higher layers of SNA could correct scrambled messages, correction can require significant retransmission that would severely impact response times. Enterprise Extender employs congestion avoidance, adaptive rate-based, and selective retransmission of lost packets. When only an occasionally missing message part has to be selectively retransmitted—instead of the missing segment and all segments following it—the HPR-capable endpoints manage the retransmission and resequencing with only minor effect on response times.

ENTERPRISE EXTENDER OR DLSW?

Today, there are no ubiquitous network solutions. Thousands of native SNA transport networks provide unsurpassed reliability and predictability, and TCP/IP networks are rapidly expanding the way companies do business. The challenge most organizations face is deciding when and how to merge these networks with Enterprise Extender, DLSw, or the support of multiple protocols across a single switched backbone (such as ATM or Frame Relay). Although IBM intends to support your decision-making process by providing the best possible open industry solutions, your unique organizational requirements will ultimately determine what path you take.

For more information

Visit <http://www.networking.ibm.com/ene/exwhite.html>

MPC+: Autobahn for the S/390

- A new feature in Communications Server for OS/390 boosts networking performance

IBM has recently introduced the latest technological advances in Multipath Channel (MPC), MPC+, as a new function in eNetwork Communications Server for OS/390 (CS for OS/390). MPC+ provides the most cost-effective networking attachment for S/390 by fully utilizing the capabilities of the channel and minimizing the cycles expended in the S/390. By combining the benefits of a high-performance transport technology with advanced I/O scheduling algorithms, MPC+ can significantly improve networking performance and reduce costs. Read on to learn about the evolution of channel technologies and more specifically, MPC, that led to IBM's new MPC+ solution.

THE BASIC RULES OF THE ROAD

Much like a roadway, a channel is the physical connection used to attach networks to an S/390 server. You can consider the channel as a highway infrastructure in which all roads lead to and from the S/390 system. A "subchannel" identifies the logical connection or road name or number (for example, Interstate 95 or Miami Boulevard). Just as large highways and local roads can share portions of the overall highway infrastructure, subchannels can share the channel and its capacity.

The channel protocols define the rules of the road, determining how the subchannel can be used by each partner subchannel. Although it is imperative that each partner obey the protocols for the subchannel, these rules can vary from one subchannel to the next. After all, different countries have their own rules of the road.

ONE LANE ROAD AHEAD

Many of the early channel protocols used only a single subchannel for communications. This approach meant that at any point in time the subchannel could only be sending or receiving data. If you have ever come upon a "ONE LANE ROAD AHEAD" sign, you can immediately recognize the shortcomings of this approach in terms of traffic flow or throughput. Another limitation in this approach was that the subchannel was a single point of failure. Obviously, some major technology improvements were needed.

The early versions of MPC in the Virtual Telecommunications Access Method (VTAM®) addressed the "ONE LANE ROAD" problem by simply allowing multiple paths (lanes) or subchannels to be grouped for communications across the channel. Each one of these subchannels was dedicated to either sending or receiving data. The capacity of this MPC group was then determined by the number of

channels allocated. As a result, outages on a single subchannel did not necessarily affect the connection—improving both throughput capabilities and availability. From a networking perspective, MPC functioned very much like a multilink transmission group to an S/390 server, with multiple logical connections appearing as a single physical connection.

The original MPC in VTAM Version 4 Release 1 supported only subarea SNA between two VTAM hosts. In VTAM Version 4 Release 3, MPC supported APPN® and HPR traffic via APPN Host-to-Host Channel (AHHC). Along the way, usability enhancements, such as the sharing of subchannel definitions between OS/390 and VTAM, were made. In addition, VTAM supported dynamic addition and deletion of subchannels from the group, which enabled users to add capacity or manage planned outages non-disruptively.

The design of the AHHC protocols and the peer-to-peer nature of APPN also enabled outboard devices to use MPC for S/390 server attachment. This valuable technology was (and still is) licensed to other networking vendors to facilitate more open access to the S/390. In this way, MPC became a highly scalable and available solution for S/390 attachment. If channel protocols of the past were considered a "ONE LANE ROAD," MPC could be described as a major highway. But even though MPC addressed many of the shortcomings in channel protocols, the best was yet to come.

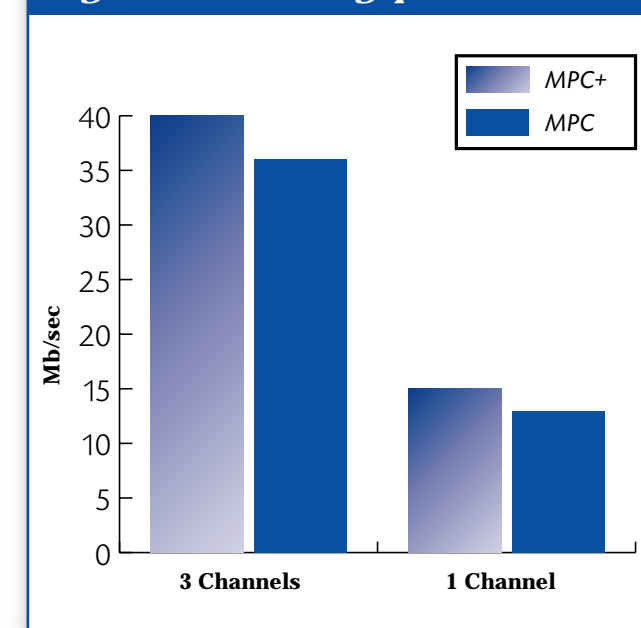
THE EVOLUTION OF ENETWORK MULTIPATH CHANNEL

Although the earlier versions of MPC focused on the channel protocols and SNA connectivity, IBM realized that to provide truly state-of-the-art S/390 channel attachment, it had to consider MPC in the context of the overall S/390 software solution. In March 1997, IBM introduced the MPC+ solution as part of the CS for OS/390 Release 3.

In that release of Communications Server, IBM introduced the High Performance Data Transport (HPDT) family of services. The concept behind HPDT was to improve the buffering capabilities on the S/390 while reducing data movement. In environments where large amounts of data are sent or received from the S/390, this movement of data can consume a significant number of machine cycles. For example, when an application sends a 60 kilobyte message, up to 40 percent of the cycles can be spent just on moving the data.

However, HPDT makes it possible for an application to request a buffer with that same buffer being passed all the way through the protocol stacks without data movement. HPDT-MPC completes the picture by using this same buffer to transmit the data on the channel. It also employs new buffering techniques that enable the networking and protocol headers to be discontinuous from the user data. As a result, user data flows through the channel, unobstructed by headers.

Figure 1: Data Throughput



In addition to using the HPDT family of services, MPC+ improves I/O scheduling interactions with OS/390. Once again, the result is higher throughput and continued reduction in machine cycles. After all, if you need to drive on the highway, you don't want to deal with a series of speed bumps that impact your transit time.

While this new technology has been used initially for SNA connectivity, MPC+ will eventually support multiple network protocols such as TCP/IP. These capabilities make MPC+ the optimal protocol for not only S/390-to-S/390 connectivity, but for other networking devices as well. In the near future, IBM plans to provide MPC+ on the IBM 2216 Nways™ Multiaccess Connector and 3746 Nways Multiaccess Enclosure.

THE RESULTS SPEAK FOR THEMSELVES

As part of the CS for OS/390 performance measurements, MPC+ was compared to the previous version of MPC in several scenarios. In each case, the configuration used three processors (logical partitions) on each of two S/390 servers—one functioning as the server and one as the client, attached via MPC.

In the first case, "3 Channels," the MPC group consisted of three channels with each channel supporting one subchannel sending data and one subchannel receiving data. The client side sent a 40-byte request to the server side, which then responded with four megabytes of data. The client established three sessions to the server. In the "1 Channel" case, a single session was used with a single channel. The results speak for themselves, as MPC+ drove the channel to its effective capacity by improving throughput over MPC by 16 to 23 percent (see Figure 1).

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Software Building Blocks for Customized Networks

IBM recently introduced new features and enhancements to the common software for its Nways routers and the 3746 Nways Multiprotocol Controller. These enhancements enable S/390 hosts to leverage the power of intranets while maintaining SNA's class of service and dependability. These enhancements also improve high-speed LAN and WAN access, remote-site concentration, and scalability—helping to reduce the cost of computing through increased network performance and operating efficiency.

With the new enhancements, users of the IBM 2210 Nways Multiprotocol Router, 2216 Nways Multiaccess Connector, and 3746 Nways Multiprotocol Controller now have a reliable solution that can help them move to IP without degrading access to existing SNA applications. In addition, current SNA users can use the new software to double network connectivity, performance, and capacity without having to alter applications or redesign networks.

The new enhancements provide the following features and benefits:

IBM releases new and enhanced software for its network routers and controllers

- ◆ A channelized T1/E1 interface configuration option for ISDN PRI adapters supports multiple connections on one interface.
- ◆ IETF Layer 2 Tunneling Protocol (L2TP) standard support for the 2210 enhances security over private or public networks.

Improved protocol and dial-in support for 2210 and 2216 users—including X.25 enhancements—increases security, connectivity, and the number of supported switched virtual circuits for X.25 communication. In addition, SDLC dial-in support now enables PU Type 2 devices to dial in over a switched network. IP RIP “outage-only” advertisements, which prevent dial-on-demand circuits from being activated solely for RIP advertisements, are also supported.



2216 Nways Multiaccess Connector

Enhanced capacity and protocol support for 2216 and 3746 users—including HSSI, FDDI, and Fast Ethernet support—provides high-bandwidth, high-capacity connectivity to backbones or servers from attached LANs, WANs, ATM networks, or ESCON® channels. This support also provides High Performance Data Transfer (HPDT) MultiPath Channel (MPC+) to improve communications throughput and 128 MB memory expansion to handle the most demanding environments.

TN3270E server access to SNA applications over both IP and High Performance Routing (HPR) backbones—when distributed throughout the network—provides a scalable, cost-effective, high-availability user session solution.

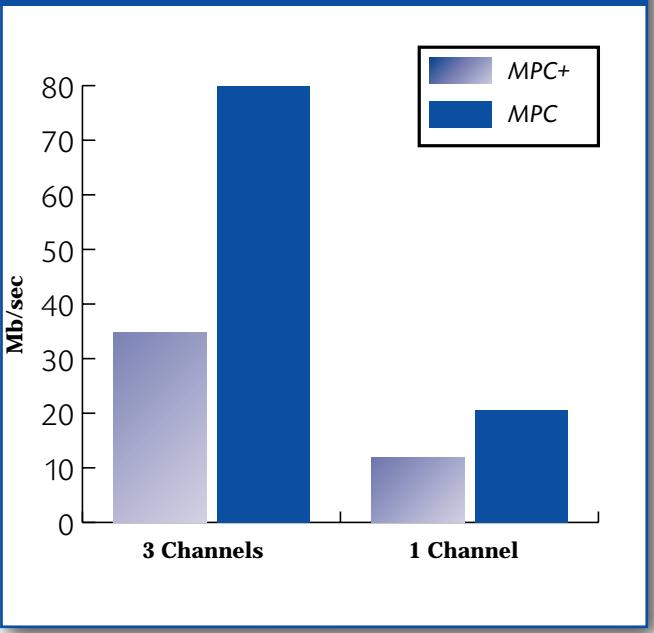
For more information

- Visit <http://www.networking.ibm.com/376/376prod.html>
- Visit <http://www.networking.ibm.com/216/216prod.html>
- Visit <http://www.networking.ibm.com/220/220prod.html>

Software Enhancements at a Glance

- ◆ L2TP standard support for the IBM 2210 improves security over a private or public network.
- ◆ Enterprise Extender support gives SNA users higher session availability over a TCP/IP network.
- ◆ TN3270E server access to SNA applications over IP and HPR backbones improves scalability, cost-effectiveness, and availability.
- ◆ High-speed Fast Ethernet™ and FDDI support for the IBM 2216 and 3746 Models 900 and 950 provides high-bandwidth and high-capacity access to campus backbones or servers.
- ◆ T3/E3 HSSI support for the 2216 and the 3746 Models 900 and 950 provides intersite connectivity and cost-effective consolidation of Frame Relay connections.
- ◆ 128 MB memory expansion and the 200-MHz processor options for the 2216 and the 3746 Models 900 and 950 MAE feature increased throughput and processing capacity for demanding APPN, DLSw, or TN3270E environments.

Figure 2: Average CPU Utilization



Continued from page 9

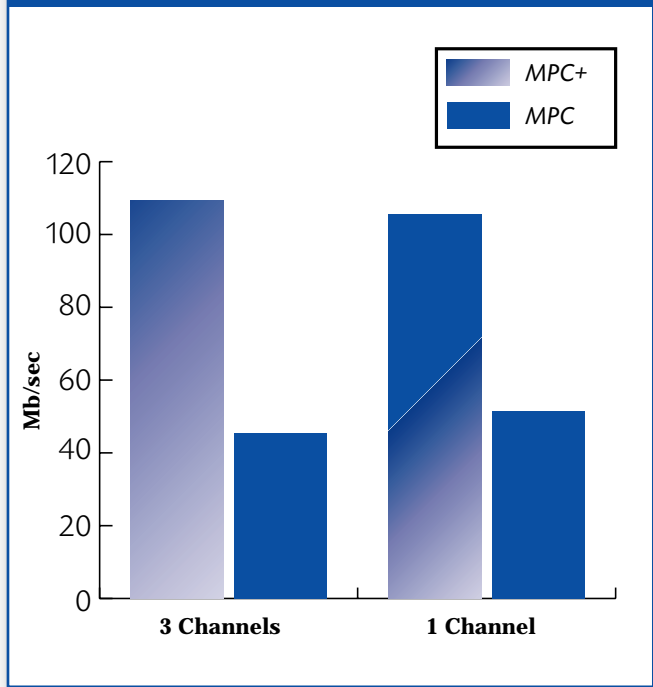
More importantly, there was a reduction of roughly 40 to 50 percent in machine cycles used on each processor in all cases (see Figure 2).

The combination of improved throughput and a smaller number of machine cycles results in a two times improvement in throughput per CPU (see Figure 3). In these sample configurations, the reduction in machine cycles could amount to over \$350,000 (U.S.) in savings (based on CPU costs) for the same throughput.

Using this new MPC+ technology, we can estimate that sustained throughput greater than one gigabit/sec is possible on an S/390 G4 Server—clearly taking S/390 networking capabilities to new heights.

ENTERPRISE-CLASS CONNECTIVITY
As an integral part of CS for OS/390, MPC+ has reset the benchmark in S/390 attachment technologies. It is far more than a change in channel protocols. Instead, it is a set of innovative technologies tightly coupled to OS/390 facilities.

Figure 3: Throughput Per CPU



Although these technologies have been deployed initially for SNA connectivity, the future for MPC+ is in seamless support for multiple network protocols (including TCP/IP)—enabling enterprise-class connectivity between the S/390 and the network.

In this way, Communications Server for S/390 has definitely taken the primitive roadways of the past and evolved them into a new enterprise-class, high-speed transportation system with substantial improvements in throughput, response time, and machine cycles. Today, these throughput improvements are already enabling more efficient use of the channel capacity by MPC+. And they promise even more benefits in the near future.

For more information

Visit <http://www.networking.ibm.com/cms/cs3abt.html>

Want to see previous editions of eNetwork Connection online?

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

NSTC 1997 Was a Major Success

The 1997 Networking Systems Technical Conference (NSTC), held in October, proved to be a very successful and widely attended conference. Over 1,000 attendees from



around the world participated in technical sessions, networked with peers, saw product demonstrations, and heard keynote speeches by IBM executives.

Attendees of the NSTC also took part in a wide variety of elective sessions, many of which represented topics that previously were covered

at the APPC/APPN Technical Conference. These sessions included such topics as:

- ◆ **Networking software**—Learning about new technologies such as ATM, HPR, and Frame Relay
- ◆ **Networking hardware**—Improving network performance and reliability by using new products and enhancements to existing products
- ◆ **Internet/intranets**—Migrating from a client/server network model to an intranet and making SNA data accessible via the Internet/intranets
- ◆ **Systems management**—Using Tivoli TME™ 10 to enhance data collection, security, and network monitoring

Among the most popular venues at this year's conference were the hands-on labs where attendees learned how to design applications for an intranet, how to configure workstations for APPN, and how to set up an ATM network. One participant, who said she had "dreaded" converting 3,000 workstations from Communications Manager/2 to Personal Communications (PCOMM) said that she now actually looked forward to getting started as soon as she returned to her office.

With the 1997 NSTC such a success, be sure to start making plans to attend the 1998 NSTC, slated for Las Vegas, Nevada from September 21 to 25.

For more information

Visit <http://www.training.ibm.com/ibmedu/conf.htm>

Self-Serve Networking Software Support and Service

Do you prefer to resolve problems without having to call technical support? Do you ever get frustrated trying to find an answer to a product-specific question? Do you wonder whether anyone has already developed a workaround for your situation? Would you like to find some tips about installation before you begin?

If these questions sound familiar to you, IBM's new eNetwork Software support Web pages might be just what you've been looking for. Each eNetwork Software product now has its own set of coordinated and consistent support pages with a variety of information, including product-specific FAQs, tips and techniques, fix packages, forums, and more.

If you want to try self-serve Web support for yourself, just follow these three easy steps:

1. Start at the eNetwork Software Support Home Page (<http://www.software.ibm.com/enetwork/support.html>).
2. Select a software product from the drop-down list: Communications Servers, Personal Communications, Communications Suite, Host On-Demand, or Wireless.
3. Surf through the support data, methodically organized for your convenience.

In addition to the eNetwork Software support information, IBM is also implementing the same self-service concepts for its VTAM and TCP/IP Service Support Web pages:

- ◆ For VTAM support, visit: <http://www.networking.ibm.com/vta/vtaserv.html>
- ◆ For TCP/IP support, visit: <http://www.networking.ibm.com/tcm/tcmserva.html>



Continued from page 1

that our host access product wasn't particularly robust in the way it handled SNA. In some situations, it would drop its connections to the mainframe. The SNA gateway solution was just not robust enough. We didn't think it was going to scale up."

"Even when the server did stay up and we weren't rebooting it, we actually had users drop out because of problems with the dial-up service we were using," Kozak continues. "Users would get kicked off, they would dial back up again, but then they couldn't access any of their mainframe services because the service log thought they were already logged in. When we got into that situation, the only thing we could do was stop and restart all the other services."

DEETYA SWITCHES TO IBM COMMUNICATIONS SERVER FOR WINDOWS NT

After experiencing these and other frustrations with the existing SNA solution, DEETYA realized it would have to migrate to a more reliable host integration solution that would handle its ever-increasing capacity requirements without dropping users. DEETYA decided to try an IBM solution featuring eNetwork Communications Server for Windows NT. Communications Server for Windows NT is a powerful multifunction gateway that can support diverse applications and network environments with enterprise-class dependability, security, and scalability.

The IBM eNetwork Software host integration solution helps organizations interconnect people and applications over diverse platforms and network configurations. In particular, IBM eNetwork Software gave DEETYA the freedom to select applications based on its business needs—without being dependent on network protocols. Now, using the IBM host integration solution, DEETYA can access business applications on its mainframe from both TCP/IP networks and SNA networks.

COMMUNICATIONS SERVER INCREASES SCALABILITY AND RELIABILITY

DEETYA implemented Communications Server for Windows NT at its Canberra site as TN3270E and SNA gateways attached via Token-Ring to the host. Each Communications Server for Windows NT has four or five multiple Physical Units (PUs)—currently with up to 130 Logical Units (LUs)—to give DEETYA an extremely scalable solution that can support a high number of sessions. DEETYA now has two Communications Servers, with each supporting 500 users.

An unexpected benefit of Communications Server was the easy migration. Roy Stockman, communications specialist at DEETYA, states, "We migrated to Communications Server overnight, and all the problems went away the next day. It was a very, very smooth changeover—it took only two to three hours."

Executive Summary

Problem

Australian government agency was experiencing very unreliable performance from its existing host integration solution, impacting user productivity and creating unnecessary expense

Solution

IBM eNetwork Software host integration solution featuring Communications Server for Windows NT

Benefit

More reliable host access has increased productivity and reduced maintenance while enabling more scalability for continued growth

So far, the new host integration solution has easily met DEETYA's expectations. Kozak says, "We have been extremely happy with Communications Server for Windows NT. It has been far more robust. The capacity, in terms of being able to expand it and add more users, has also been significantly better."

DEETYA NOW HAS A STRONG FOUNDATION FOR GROWTH

Communications Server for Windows NT has also made the network administrators' lives easier. Now, if a user drops off unexpectedly, DEETYA can clean up just the individual LU that caused the problem. Kozak explains, "We could not do that with our previous product—it just didn't clean up the LU properly."

Stockman adds, "It used to take an hour to release the LU that hadn't cleaned up, so we had to tell the client to wait an hour or until the next morning when we could reboot the whole machine. Now, with Communications Server, we just go in and inactivate the LU and bring it right back up again. The process is very easy."

When asked to name the main benefit of Communications Server for Windows NT, Kozak says, "It is robust and scalable—and it doesn't break. We have rolled out the solution to several sites, and we haven't seen any performance degradation in the servers. They're just humming along nicely."

For more information

Visit <http://www.software.ibm.com/enetwork/commserver>
Visit <http://www.networking.ibm.com/cms/csnabt.html>
Visit <http://www.deet.gov.au/>

Fast, Easy Migration to Communications Server and PCOMM

Keeping your network up to date with the latest technologies can help it run better while positioning your organization for a significant competitive advantage. Migrating to IBM's latest eNetwork Software products can give your network a boost today and help it run smoothly well into the future.

And, because Communications Manager/2 will no longer be in service as of March 31, 1998, you might want to consider taking advantage of the benefits of eNetwork Communications Server and Personal Communications right away.

COMMUNICATIONS SERVER

IBM eNetwork Communications Server can help you meet the challenges of today's ever-changing business environment. Communications Server provides a variety of Internet and intranet solutions that enable you to take advantage of network computing advances such as increased information access, electronic commerce, and collaborative groupware. By enabling you to choose applications based on your business needs, not on your network protocols, Communications Server provides the flexibility to keep pace with your dynamic enterprise.

Communications Server enables true networking by interconnecting people and applications, even when platforms and network configurations are diverse. With Communications Server, your network is able to connect applications, data, and people—regardless of where they are and regardless of all the LANs, mergers, consolidations, and changes most organizations face on a daily basis.

PERSONAL COMMUNICATIONS

IBM eNetwork Personal Communications (PCOMM) brings the power of personal networking to your workstation by providing a variety of connectivity options that support both LAN and WAN environments. Whether you need it for host terminal emulation, client/server applications, or connectivity, PCOMM provides a robust set of communications, networking, and administrative features. PCOMM is an entire suite of application development, communication, connectivity, and emulation products for multiple networks, multiple operating systems, and multiple server platforms. Moreover, PCOMM masks the complexity of information management and distribution, regardless of the underlying data source or network structure.

Now, IBM provides migration utilities that can help you move to Communications Server and PCOMM quickly and easily. You can even download these time-saving utilities free of charge right from IBM's Web site.

IBM lets you download new utilities for migrating to Communications Server and PCOMM—at no charge

MIGRATING TO COMMUNICATIONS SERVER FOR WINDOWS NT

IBM now has a free migration utility that converts Communications Manager/2 and Communications Server for OS/2 Warp™ configurations to Communications Server for Windows NT—with just a push of a button. Rather than spending days reconfiguring your network, you can use this new utility to get your system ready to go in just minutes.

This utility, which you can run on Windows 95 or Windows NT, helps simplify migration by:

- ◆ Migrating single or multiple configuration files at the same time
- ◆ Migrating an entire directory of configuration files without entering a single specific name
- ◆ Leveraging the Java-based GUI or a command-line interface

You can download the migration utility at <http://www.networking.ibm.com/cms/cs2dwn01.html>.

There is also a new utility to help you migrate quickly and easily from Microsoft SNA Server to Communications Server for Windows NT. You can download the utility at <http://www.networking.ibm.com/cms/cs2dwn02.html>.

MIGRATING TO IBM ENETWORK PERSONAL COMMUNICATIONS

This free migration utility is designed to create configuration files for IBM eNetwork Personal Communications (PCOMM) Version 4.20 for Windows 95 and Windows NT. It reads and converts configuration files from Communications Manager/2 or Communications Server/2, known as "response" files (extension .RSP), to produce two kinds of PCOMM configuration files: SNA node configuration files (extension .ACG) and workstation files (extension .WS). The migration utility supports 3270 and 5250 emulation through Token Ring.

You can download the PCOMM migration utility at <http://www.networking.ibm.com/cms/cm2topcomm.html>.

Upcoming Events

Networks Expo

Boston, MA

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>

Internet World Spring

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 and JavaOne

San Francisco, CA

MARCH 23-27, 1998

<http://www.comdex.com>

COMDEX Japan

Tokyo

APRIL 6-9, 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>

NetWorld + Interop®

Las Vegas, NV

MAY 4-8, 1998

http://www.interop.com/events/ni_vegas98/index.html

IBM Technical Interchange

Orlando, FL

MAY 5-8, 1998

<http://www.software.ibm.com/events/ti>

GUIDE SHARE Europe 5th International Conference

Goteborg, Sweden

MAY 25-27, 1998

<http://www.gse.org/confrenc.htm>

PC Expo

New York, NY

JUNE 16-18, 1998

<http://www.pcexpo.com>

APPN Implementers' Workshop (AIW 17)

San Jose, CA

JULY, 1998

<http://www.networking.ibm.com/app/aiwhome.htm>

Internet World Summer

Chicago, IL

JULY 13-18, 1998

<http://events.internet.com/>

COMDEX Enterprise East '98

Boston, MA

AUGUST 8-10, 1998

<http://www.comdex.com>

SHARE/GUIDE Technical Conference

Washington, DC

AUGUST 16-21, 1998

<http://www.share.org>

Windows NT Intranet Solutions

San Francisco, CA

SEPTEMBER 8-10, 1998

Networking Systems Technical Conference

Las Vegas, NV

SEPTEMBER 21-25, 1998

COMDEX Asia

Singapore

SEPTEMBER 23-25, 1998

<http://www.comdex.com>

Smau

Milan

OCTOBER 1-5, 1998 (tentative)

<http://www.smau.it>

Internet World Fall

New York, NY

OCTOBER 5-9, 1998

<http://events.internet.com/>

NetWorld + Interop

Atlanta, GA

OCTOBER 21-23, 1998

<http://www.interop.com>

COMMON

Anaheim, CA

OCTOBER 25-29, 1998

<http://www.common.org>

APPN Implementers' Workshop (AIW 18)

Raleigh, NC

NOVEMBER, 1998

<http://www.networking.ibm.com/app/aiwhome.htm>

NetWorld + Interop Paris

Paris

NOVEMBER 5-7, 1998

This is a list of selected conferences and trade shows of potential interest to eNetwork Connection readers. The information listed here is subject to change, and 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@us.ibm.com.

WANTED: Solution Developers



IBM Technical Interchange '98 May 5th to 8th in Orlando, Florida

Do you need to learn about e-business? Develop cross-platform solutions? Build up your skills on Domino™, Java, and Windows NT? If so, IBM Technical Interchange '98 is the place to be.

Technical Interchange is the premier annual IBM software education event, and this year's conference promises to give you all the tools and hands-on training you need to put profitable applications and technologies to work in a cross-platform world.

Running May 5th to May 8th in sunny Orlando, Florida, TI '98 is ideal for IT professionals, independent software vendors, IBM BESTeam software program members, developers, network managers, system architects, system designers, system integrators, technical managers, technical specialists, and many others.

With TI '98's intense workshops, hands-on training, and technical demonstrations, you'll get:

- ◆ *Unmatched training from IBM, Lotus, Tivoli, and industry experts*
- ◆ *The opportunity to take IBM professional certification tests at no extra charge*
- ◆ *Invaluable experience with hot technologies like Domino, Java, and NT*
- ◆ *Tips on how to make money, improve customer service, and create new possibilities that can give you a competitive advantage*

Register as a Team and Save!

Now, for a limited time, you can register two or more people at the same time and receive a \$200 (U.S.) discount per person. A team is defined as two or more people registering and paying at the same time. No other affinity is required.

For more details, visit the TI '98 Web site at
<http://www.software.ibm.com/events/ti/home.html>.

In the U.S., call 1-800-872-7109
Outside the U.S., call 1-201-577-7292



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